6

Science

Teacher's Guide

This Teaching Guide is a work in progress. Despite several rounds of revision and evaluation, this material may still contain some mistakes, errors, duplications or omissions that can be revised and updated to correct learning. DepEd Region VIII welcomes corrections, feedback and recommendations to further improve this Teaching Guide.

We value your feedback and recommendations.

Department of Education – Regional Office No.8
Republic of the Philippines

Science– Grade 6
Teacher's Guide
First Edition 2017
ISBN:

Published by the Department of Education – Regional Office No. 8
Regional Director: Ramir B. Uytico, Ph.D., CESO IV
OIC, ARD: Atty. Rhoan L. Orebia
Pedro T. Escobarte Jr., Ph. D., CESO V – Ormoc City Schools Division Superintendent
Sherlita A. Palma, Ed. D., CESE - Ormoc City Assistant Schools Division Superintendent

DEVELOPMENT TEAM OF THE TEACHER'S GUIDE

Writers: Faustina R. Cruz, Bonita C. Tolero, Flordeliza J. Tan, Rizza M. Alvarez, Rizza M. Alvarez, Rosita P. Paragoso, Lorna S. de Pio

Language Editor:
Reviewers:
Judith Montebon
Reme Puno

Focal Person:

Henrietta T. Managbanag
LRMDS Education Program Supervisor

Printed in the Philippines by _____

Department of Education – Learning Resource Management and Development System (LRMDS)
Office Address : DepEd RO – 8
Ormoc City Division, Narra St., Brgy. Don Felipe , Ormoc City, Leyte
Tel. Number : (053) 561-2284
E-mail : ormocdeped.lrmds@gmail.com

Science 6

(1st Quarter) Lesson 1

I. OBJECTIVE

Describe mixtures. **(S6MT-Ia-c-1)**

Value Focus: Observe precautionary/safety measures in using mixtures of solid and liquid. materials.

II. SUBJECT MATTER

A. Skill: Describing mixtures

B. Reference: Science for Active Minds 6 pp. 55-59, Science, Health and Environment 5 pp. 269-272, Cyber Science 6 pp. 2-4

http://blog.pawnhero.ph/wp-content/uploads/2015/05/halo-halo-philippines.png

https://www.google.com.ph/search?q=image+mixtures&source=lnms&tbm=isch&sa=X&ved=0ahUKEwiSr7amlffTAhVFUbwKHQjoCD0Q_AUICigB&biw=1242&bih=611#tbm=isch&q=filipino+spaghetti+for+kids&imgrc

http://complicatedmelody.com/sites/naiad.blushama.com/files/field/image/IMG_3467.jpg

https://farm3.staticflickr.com/2642/4169031076_d1624cf515.jpg

http://www.theglowingfridge.com/wp-content/uploads/2016/03/SAM_2960.jpg

http://www.potsandpans.com/wp-content/uploads/2014/05/Classic-Macaroni-Salad.jpg

http://lh4.ggpht.com/-UtHwhhUwo24/TpZyz4MuG3I/AAAAAAAAG84/YVecIlWh8O4/111008_soil_finished_02_thumb.jpg?imgmax=800

C. Materials: 3 small clean bottles with water, sugar, sandy soil, flour

III. INSTRUCTIONAL PROCEDURE

A. Engagement

- Ask the pupils: Do you like to eat halo-halo? If you were to prepare halo-halo, what ingredients would like to use?

- How will you prepare your halo-halo?
- What are we going to do with the ingredients that we have identified? (Mix/combine all the ingredients.)

Teacher presents the lesson about describing mixtures.

B. Exploration

1. Organize the class into small groups.
2. Check the materials brought by the students. Give them the activity sheet, manila paper and marking pen.
3. Give the necessary instructions in doing the activity (allotted time for the activity, the data to be accomplished, group presenter/member's role/ responsibility, precautionary measures, etc.)
4. Let the students perform the activities.
5. Supervise the students while doing the activity.

Activity for all Group

Title: Describing Mixtures

Materials: 3 small clean bottles with water, sugar, sandy soil, flour

Procedure:

1. Label the bottles A, B and C.
2. Fill half of each bottle with water. Put a spoonful of sugar into the bottle

A. Label it Sugar. Stir the mixture and taste the water.

3. Put a spoonful of flour. Label it Flour. Stir the mixture.
4. Put two spoonfuls of sandy soil into Bottle C. Label it Sandy Soil.
5. Observe the particles of the substances added to the water in each bottle. Look at the color of each mixtures.
6. Record your observations. Use the table below.

Substance Mixed with Water	Color of Mixture	Effect of Water in the Mixture
1. Sugar		
2. Flour		
3. Sandy Soil		

What have you observed?

1. What happened to the particles in each mixture?
   BottleA
   _____
   BottleB
   _____

BottleC

_____

2. What is the color of each kind of the three mixtures?

_____

3. In which mixture did the added substance spread evenly?
4. Which substance sank to the bottom of the bottle?

_____

C. Explanation

1. Have the group representative present the results of the activity. Five minutes maybe given per group presentation.
2. Analysis and discussion of group output.
   How do mixtures differ?
   Describe mixtures.

D. Elaboration

1. Have the pupils formulate the generalization by asking:
   What is mixture?
2. Teacher discuss further the lesson.
3. Have the pupils understand the following concepts:

A mixture is a combination of two or more substances that are not chemically combined. The substances are put together but no new substance is formed. In your activity, you prepared some mixtures. The first mixture you prepared is a combination of sugar and water. The next mixture is a combination of flour and water. The last mixture is a combination of sandy soil and water.

A mixture can come in any form. It may be solid, liquid, or in gaseous form. Fruit salad, 3-in-1 coffee powder, chicken breeding, and mixed gravel are examples of solid mixtures. Your fruit juices, hot coffee, hot chocolate drink, and hot milk are liquid mixtures. Air is a gaseous mixture.

E. Evaluation:

Name some mixtures that you have seen.
How are mixtures formed?

IV. ASSESSMENT:

Describe the following mixtures:




V. ASSIGNMENT

Ask the students (by group) to bring the following materials for the next activity. (You may choose any of these group of materials)

Activity 1: Mixtures

clear plastic jar with cover, gravel, sand, loam soil, water, newspapers

Activity: "You Mix Me, You Mix Me Not"

Sugar, carrots (cut into small cubes), medium-sized bowl, 500 mL mayonnaise, cold water, kaong (green and red), powdered **orange** juice (one sachet), pitcher, 250 g macaroni noodles (cooked), ladle, one can condensed milk, spoon, cheese, glass

Science 6

(1st Quarter) Lesson 2

I. OBJECTIVE

Identify the kinds of mixtures. **(S6MT-Ia-c-1)**

Value Focus: Observe precautionary/safety measures in using mixtures of solid and liquid materials.

II. SUBJECT MATTER

A. Skill: Identifying the kinds of mixtures

B. Reference: Science and Health 4 pp. 107- 109, High School Science Today pp. 74-75

DCCM VIII Food & Local Products

http://triggos.com.br/wp-content/uploads/2016/12/coffeebreak-simples.jpg

https://5.imimg.com/data5/XE/HU/MY-5080454/concrete-hollow-block-250x250.jpg

http://dreamicus.com/data/balloon/balloon-01.jpg

https://bevecobeverage.com/wp-content/uploads/2015/03/orangejuice-1.png

C. Materials: Science for Active Minds 6 pp. 59-60

clear plastic jar with cover, gravel, sand, loam soil, water, newspapers

Sugar, carrots (cut into small cubes), medium-sized bowl, 500 mL mayonnaise, cold water, kaong (green and red), powdered orange juice (one sachet), pitcher, 250 g

macaroni noodles (cooked), ladle, one can condensed milk, spoon, cheese, glass

III. INSTRUCTIONAL PROCEDURE

A. Engagement

1. Review

   Say: Give examples of mixtures? How are mixtures formed?

2. Introduce the lesson by asking:

   Do you know how to prepare lemonade?

   You can make lemonade by adding sugar and freshly squeezed calamansi juice to water. The ratio of the amount of sugar and calamansi juice may vary depending on your taste.

   Lemonade is a mixture. Do you know that there are kinds of mixtures?

   Today you will be assigned to perform an activity in identifying mixtures.

B. Exploration

1. Divide the class into small groups.
2. Introduce Lesson 2 Activity: Mixtures
3. Check the materials brought by the students. Give them the activity sheet, manila paper and marking pen.
4. Give the necessary instructions in doing the activity (allotted time for the activity, the data to be accomplished, group presenter/member's role/ responsibility, precautionary measures, etc.)
5. Let the students do any of the following activities:

Activity 1: Mixtures

Materials: clear plastic jar with cover, gravel, sand, loam soil, water, newspapers

Procedure:

1. Cover your work area with newspaper.
2. Place gravel up to 1 cm high in a clear plastic jar. Flatten the gravel layer.
3. Repeat step 2 using sand and then loam soil to create three distinct layers in the jar.
4. Fill the jar with water.
5. Cover the jar tightly and shake it. Turn it upside down, then right side up. Leave it undisturbed for 10 minutes or until the sediments settle. Which particles settled first? Which settle next? Last?
6. Describe the resulting material.
7. What do you call the resulting material?
8. How many substances can you recognize from the materials in the bottle?
9. What kind of mixture is this?

Activity: "You Mix Me, You Mix Me Not"

Materials: Sugar, carrots (cut into small cubes), medium-sized bowl, 500 mL mayonnaise, cold water, kaong (green and red), powdered orange juice (one sachet), pitcher, 250 g macaroni noodles (cooked), ladle, one can condensed milk, spoon, cheese, glass

Procedure:

1. Wash your hands thoroughly.
2. Fill a pitcher with one liter of cold water.
3. Open the sachet of orange juice. Pour its contents on a glass and dissolve it by adding a glass of water. Stir evenly.
4. When the juice powder is already dissolved, put the mixture in a pitcher of cold water. Add sugar for the desired taste. Stir to dissolve the sugar and set aside.
5. Wash your hands thoroughly. Put the macaroni noodles in a medium-sized bowl.
   Add the carrots, kaong, condensed milk, cheese, and mayonnaise. Set aside.

Questions:

1. What are mixed to make the orange juice?

   _____

2. What happened to the juice and sugar?

   _____

3. How many phases can you see inside the pitcher of juice?

   _____

4. What kind of mixture is the orange juice?

   _____

5. How did you prepare the salad? Can you still identify the ingredients?

6. What kind of mixture is the salad? Why do you say so?

   _____

7. Fill out the data table.

Data table

Mixture	Ingredients	Number of Phases Observed	Kind of Mixture
Juice			
Macaroni salad			
What is the difference between the juice and the macaroni salad?			

C. Explanation

1. Discuss group outputs. Let each group present their work in class.
2. Give feedback.
3. Discuss the answer of the question in the activities.

D. Elaboration

Teaching Part:

Mixtures can be homogeneous. A mixture is **homogeneous**, or what is commonly called as a solution, when the materials in the mixture cannot be recognized from one another. You were able to identify the different components that were mixed because they were not evenly distributed in the mixture. The components retained their own characteristics. The mixture produced in this activity is a **coarse** or **heterogeneous mixture**.

Formulation of Generalization through questions:

- What are the kinds of mixture?
- Give examples of homogeneous mixture found in our locality.
  (buko juice, calamansi juice, calamay etc.)
- Give examples of heterogeneous mixture found in our locality.
  (nilupak, biko, masi etc.)

Value Focus: (Observe precautionary/safety measures in using mixtures of solid and liquid materials.)

- Have you experienced having accidents during mixing the substances?
- What should you do to avoid it?

E. Evaluation

Identify the different substances into **homogeneou**s or **heterogeneous mixture:**

"Palitaw"

Coffee

Hollow blocks

Landang "Stew"

IV. ASSESSMENT

Identify the kind of mixtures as to **homogeneous** or **heterogeneous mixture**:

1. Milk
2. Buko juice
3. Halo-halo
4. Lemonade
5. Fruit salad

V. ASSIGNMENT

Write 5 examples of mixtures and identify its kind.

Science 6

(1st Quarter) Lesson 3

I. OBJECTIVE

Describe uniform and non-uniform mixtures. **(S6MT-Ia-c-1)**

Value Focus: safety measures in using mixtures of solid and liquid.

II. SUBJECT MATTER

A. Skill: Describing uniform and non-uniform mixtures.

B. Reference: Cyber Science 6 pp. 2-4

https://www.thoughtco.com/examples-of-mixtures-608353
https://s-media-cache-ak0.pinimg.com/originals/2f/20/9b/2f209b067232769d8f277eea82e4779f.jpg
https://jhiannamadla.files.wordpress.com/2014/07/ice_tea.jpg
https://www.ontrack-media.net/science8/s8m1l2image7.jpg
http://assets.eatingwell.com/sites/default/files/imagecache/standard/recipes/SP69640.JPG https://dr282zn36sxxg.cloudfront.net/datastreams/f-d%3A42a6b7985cea24ee93753d14109eab3dd4f46faad430c4870cbe15a7%2BIMAGE%2BIMAGE
https://fthmb.tqn.com/Lp9BXyUcPepy4QddRcMYl1Nsm2Q=/735x0/about/scoring-rubric- 56a563385f9b58b7d0dc9e86.JPG

C. Materials: four glasses, tap water, teaspoon, salt, powdered milk, oil, gravel

III. INSTRUCTIONAL PROCEDURE

A. Engagement

Ask: What are they doing?
Do you also help your mother prepare food?

What do you use in preparing juice, salad and sandwiches?
In this lesson, you will describe uniform and non-uniform mixtures.

B. Exploration

1. Divide the class into three groups.
2. Set norms to follow during group activity.
3. Have each group put out the materials assigned for them to bring.
4. Say: "The materials you brought are needed for the activity that we will be performing today".
5. Instruct the students on how to go about Lesson 3.
6. Go around and inspect what the students are doing. Ask or answer question if necessary.

Activity 1

Forming & Describing Mixtures

***Let's find out*:** How can you form mixtures?

Let's use these materials: four glasses, tap water, teaspoon, salt, powdered milk, oil, gravel

Let's do it this way:

1. Half-fill the four glasses with tap water.
2. Put a teaspoon of salt in one glass. Stir. Label it as "Mixture A."
3. Put a teaspoon of powdered milk in another glass. Stir. Label it "Mixture B."
4. Put a teaspoon of oil in the third glass. Stir. Label it as "Mixture C."
5. Put a teaspoon of gravel in the fourth glass. Stir. Label it as "Mixture D."
6. Leave the set-ups for about 1 minute. Observe each set-up. Compare them.
7. Fill in the table below.

Mixture	Components (Before mixing)	Phase after Combining the Substances	Can you still distinguish the components?
A			
B			
C			
D			

1. Which mixtures can you not distinguish the components?
   _____
2. Which mixtures can you still distinguish the components? Give the components.
   _____

Let's share our knowledge:

Describe uniform mixtures

_____

Describe non-uniform mixtures

_____

C. Explanation

1. Ask each group to present the results of their experiment and the answer to the guide questions.
2. Analysis, Discussion and Abstraction of group output
   Ask:
   - What are the characteristics of each mixture?
   - How do each mixture differ?
   - What did you learn in this activity?

D. Elaboration

(Comprehensive discussion by the teacher)

Homogeneous refers to a substance that is consistent or **uniform** throughout its volume. They consist of a single phase, be it liquid, gas, or solid, no matter where you sample them or how closely you examine them.

Examples: Air is considered a homogeneous mixture of gases.

A ***heterogeneous*** mixture is a mixture having a ***non-uniform composition***. The composition varies from one region to another, with at least two phases that remain separate from each other, with clearly identifiable properties. If you examine a sample of a heterogeneous mixture, you can see the separate components.

EXAMPLES OF HETEROGENEOUS MIXTURES

- Concrete is a heterogeneous mixture of an aggregate, cement and water.
- Sugar and sand form a heterogeneous mixture. If you look closely, you can identify tiny sugar crystals and particles of sand.
- Ice cubes in cola form a heterogeneous mixture. The ice and the soda are two distinct phases of matter (solid and liquid).
- Salt and pepper form a heterogeneous mixture.
- Chocolate chip cookies are a heterogeneous mixture. If you take a bite from a cookie, you may not get the same number of chips as you get in another bite.
- Soda is considered a heterogeneous mixture. It contains water, sugar, and carbon dioxide, which forms bubbles. While the sugar, water, and flavorings may form a chemical solution, the carbon dioxide bubbles are not uniformly distributed throughout the liquid.
- Generalization

Answer the Guide Questions:

Are the mixtures the same?

How do they differ?

Describe uniform and non-uniform mixtures.

F. Evaluation (Fixing Skills)

What kind of mixtures are the following. Describe each.




- **Valuing**
  Safety measures in using mixtures

IV. ASSESSMENT

Describe uniform mixtures

_____

Describe non-uniform mixtures.

_____

Scoring Rubric:

Points	Description
5	• Students understanding of the concept is clearly evident • Student uses effective strategies to get accurate results • Student uses logical thinking to arrive at conclusion.
4	• Student understanding of the concept is evident. • Student uses appropriate strategies to arrive at conclusion. • Student shows thinking skills to arrive at conclusion.
3	• Student has limited understanding of a concept. • Student uses strategies that are ineffective. • Student attempts to show thinking skills.
1	• Student lacks understanding of the concept. • Student makes no attempt to use a strategy. • Student shows no understanding.

V. ASSIGNMENT

Write 3 examples of uniform mixtures and another 2 examples of non-uniform mixtures. Describe them.

Science 6

(1st Quarter) Lesson 4
Duration: 2 days

I. OBJECTIVE

Describe the appearance and uses of solutions such as:

- Liquid to liquid
- Liquid to gas
- Gas to liquid
- Solid to solid
- Gas to gas

(S6MT-Ia-c-1)

Value Focus: safety measures in using mixtures of solid and liquid.

II. SUBJECT MATTER

A. Skill: Describing the appearance and uses of solutions.

B. Reference: Cyber Science 6 pp. 4, Moving Ahead with Science 4 pp. 160-161.
http://niwreazogara.blogspot.com/2011/01/solutions-and-kinds-of-solutions.html
https://www.teachengineering.org/lessons/view/cub_mix_lesson3
https://www.youtube.com/watch?v=sTrvSXJW8zw
https://powersteelzone-xvseq0vovbnnj0.netdna-ssl.com/wp-content/uploads/2016/02/stainless-steel-fittings.jpg

C. Materials: laptop, projector, pictures, video clips

III. INSTRUCTIONAL PROCEDURE

A. Engagement

1. Review
   Say: What are uniform and non-uniform mixtures?
   Describe uniform mixtures.
   Describe non-uniform mixtures.
2. Introduce the lesson by asking:
   Have you ever made a drink with water and a powder? How about lemonade from a mix? This is an example of a solution. What does the powdered drink look like after you stir it in water? Is it all the same color and consistency? It probably is, and that is one characteristic of a solution — that it is homogeneous (or that it is uniform throughout). What other solutions have you made? (Solicit answers like: salt water, mud pies, bubbles, etc.) Solutions are types of mixtures.

   Today we are going to describe the appearance and uses of solutions such as:
   - Liquid to liquid
   - Liquid to gas

- Gas to liquid
- Solid to solid
- Gas to gas

B. Exploration

1. Group the pupils into three.
2. Recall standards in conducting an activity.
3. Distribute activity cards to each group and let them do the activity.
4. Supervise the pupils' work during the conduct of activity

Activity: (For all group)

Title: Mix, Mix, Mix

Materials: alcohol, water, sugar, lemon juice, glass, bottle of soft drinks

Procedure:

Solution A

1. Mix sugar, lemon juice in a glass of water
2. Describe its appearance.
3. What is the use of this solution?

Solution B

1. Mix the alcohol and water.
2. Describe its appearance.
3. What is the use of this solution?

Solution C

1. Observe a bottle of soft drinks.
2. What phase of matter did you see?
3. Describe its appearance. Tell what phase of matter are the bubbles?
4. What is the use of this solution?

Solution D

1. How do you feel today?
2. Why do you feel hot/cold?
3. Is air important?

3. Do you know its components?
4. What is its use?

Solution E

1. Watch the video clips on how to make stainless steel.
   https://www.youtube.com/watch?v=sTrvSXJW8zw
   (Use picture if video is not available)

1. Answer the following questions:
2. Describe its components.
3. What is its use?

C. Explanation

1. Posting / reporting activity result by group.
2. Analysis and discussion of the activity results and answers of the pupils.
3. Outline pupil's answers on the board.

D. Elaboration

1. Further discussion on describing the appearance and uses of solutions.
2. Giving more examples of solutions.
3. Refer to other books for more explanations and additional information.

BACKGROUND INFORMATION FOR TEACHERS

A ***solution*** is a homogeneous mixture. Homogeneous mixture has the same properties throughout the sample. It means that the substances mixed thoroughly, after stirring, appeared as one substance. You can no longer distinguish one component from the other.

An example is a mixture of sugar in water. When sugar dissolves in water, the two substances appear as one. The sugar particles can no longer be identified. However, the taste of the water proves that the sugar was not lost after mixing. Its chemical property is retained and so the water taste sweet.

There are four types of solutions. All these types are homogeneous.

1. Solid in liquid

A solid substance is dissolved in a liquid substance. Examples are sugar in water, salt in water, juice powder in water, or coffee in water.

2. Liquid in liquid

A liquid substance can also be dissolved in another liquid and these two substances can be mixed thoroughly. Examples of these are alcohol and water, wine and soda water, concentrated fruit juice in water, or liquid milk and water.

3. Gas in liquid

Certain liquids contain gaseous substances. Soft drinks appear as liquid, but they actually contain carbon dioxide gas. This can be observed when a bottle of soft drink is shaken or opened, bubbles appear and gas is released.

Oxygen is also present in water. Plants use them during the food – making process. There is also oxygen in the blood, and this makes our cells function well.

4. Gas in gas

Air is a very good example of gas in a gas solution. It is a mixture of several gases – oxygen, nitrogen, carbon dioxide, and others.

5. Solid in solid

- Steel, basically a solution of carbon atoms in a crystalline matrix of iron atoms.
- Alloys like bronze and many others.
- Polymers containing plasticizers.

F. Evaluation

Brainstorming: As a class, have the students engage in open discussion. Remind students that in brainstorming, no idea or suggestion is "silly." All ideas should be respectfully heard. Take an uncritical position, encourage wild ideas and discourage criticism of ideas. Have them raise their hands to respond. Write their ideas on the board. Ask the students:

What are some common solutions or mixtures that you know of? (Possible answers: powdered lemonade, Kool-Aid®, powdered iced tea, chocolate milk, gasoline, household cleaners, etc.)

- Describe its appearance.
  Its color changes because of the mixtures.
  It appeared as one substance.
  You can no longer distinguish one component from the other.

- What are its uses?
  Expected answers:
  Alcohol- use to disinfect
  Juices- give refreshment
  Air bubbles use as preservatives
  Stainless steel to avoid rust, for durability and to improved products.

IV. ASSESSMENT

Have students create a list of solutions they find around their home or school. Describe the appearance and uses of solutions such as:

- Liquid to liquid
- Liquid to gas
- Gas to liquid
- Solid to solid
- Gas to gas

V. ASSIGNMENT

Assign the students by group to bring the materials for the next activity:
four glasses filled with water, salt, powdered juice, tissue paper, small basin with water, spoon, detergent, sugar, black pepper

Science 6

(1st Quarter) Lesson 5

I. OBJECTIVE

Differentiate solutes from solvents. **(S6MT-Ia-c-1)**

Value Focus: safety measures in using mixtures

II. SUBJECT MATTER

A. Skill: Differentiating solutes from solvents.
B. Reference: Moving Ahead With Science 4 pp. 169 – 174, Science and Health 4 pp. 112 - 113
https://www.youtube.com/watch?v=e-2EoyDYamg
C. Materials: four glasses filled with water, salt, powdered juice, tissue paper, small basin with water, spoon, detergent, sugar, black pepper

III. INSTRUCTIONAL PROCEDURE

A. Engagement

1. Ask: Have you experienced preparing sugar solutions?

A sugar solution is prepared by adding dissolving sugar in water. Sugar solution consists of two components, namely, sugar and water. In general, solute is the substance that is being dissolved and solvent is the medium in which solute is dissolved.

2. Present the topic.

Today, you will do an activity that will help you understand the difference between solutes from solvents.

B. Exploration

1. Organize the class into small groups.
2. Introduce the activity below:

Activity 1: ABRACADABRA

Problem: How do solvents work?
Materials: four glasses filled with water, salt, powdered juice, tissue paper, small basin with Water, spoon, detergent, sugar, black pepper
Procedure:

1. Put one tablespoon of sugar in a glass filled with water. Stir with spoon and observe. Do the same with the salt, powdered juice, and black pepper in separate glasses.

2. Place the bar of detergent into the basin with water. Place also the tissue paper beside it. Leave it for a few minutes.

Substance	Dissolved (Solute)		Dissolving Substance (Solvent)
	Yes (✓)	No (X)	
Salt			
Sugar			
Black pepper			
Juice powder			
Detergent			
Tissue paper			

Observation:

1. What happened to the substances in the glasses after stirring?
   _____
2. Did all the substances dissolve when placed in the water?
   _____
3. Which among the substances dissolved thoroughly? Conclusion
   _____
   _____

3. Guide the pupils in doing the activity.

E. Explanation

1. Allow them to share their answers and results of the activity.
   Ask: How did you feel about the activity?
2. Process the answers of the pupils and point out the difference between solutes from solvents.

F. Elaboration

(Comprehensive discussion by the teacher)

Solution is a mixture consisting of a solute and solvent. Solvent is the substance that dissolves another substance. Most substances can be dissolve in water, which makes it a universal solvent. While *solute* is the substance dissolved by the solvent.

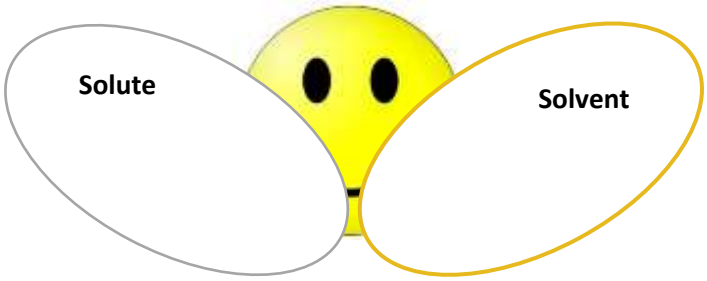
G. Evaluation:

Identify the solute and solvent in the following solutions?

Solution	Solute	Solvent
1. carbonated drink		
2. coffee		
3. sea water		
4. vinegar		
5. wine		

IV. ASSESSMENT:

Refer to the Venn diagram below to differentiate solutes from solvent. Write your answer on the ears of the figure.



Scoring Rubric:

Points	Description
5	• Students understanding of the concept is clearly evident • Student uses effective strategies to get accurate results • Student uses logical thinking to arrive at conclusion.
4	• Student understanding of the concept is evident. • Student uses appropriate strategies to arrive at conclusion. • Student shows thinking skills to arrive at conclusion.
3	• Student has limited understanding of a concept. • Student uses strategies that are ineffective. • Student attempts to show thinking skills.
1	• Student lacks understanding of the concept. • Student makes no attempt to use a strategy. • Student shows no understanding.

V. ASSIGNMENT:

1. What are solutions?
2. Differentiate solute from solvent.
3. Give example of each.

Science 6

(1st Quarter) Lesson 6
Duration: 2 days

I. OBJECTIVE

Infer that not all solutes dissolve in all solvents. **(S6MT-Ia-c-1)**

Value Focus: safety measures in using mixtures

II. SUBJECT MATTER

A. Skill: Inferring that not all solutes dissolve in all solvents.

B. Reference: Moving Ahead With Science 4 pp. 171 - 174
https://www.youtube.com/watch?v=e-2EoyDYamg

C. Materials:

III. INSTRUCTIONAL PROCEDURE

A. Engagement

1. Have students stand in a circle and toss the ball to each other. Each time they toss the ball, have them name a mixture. One round can be "Name a Mixture," the next round can be "Name a Solution," etc.
2. Ask: Do all solutes dissolve?

B. Exploration

1. Group the pupils into three.
2. Recall standards in conducting an activity.
3. Distribute activity cards to each group and let them do the activity.
4. Supervise the pupils' work during the conduct of activity.

Title: Do all solutes dissolve in all solvents?
Materials: 4 glasses, water, sugar, sand
Procedure:

1. In a glass of water put 1 tablespoon of sugar.
2. Stir and observe what happen to the sugar.
3. In another glass of water put 1 tablespoon of sand.
4. Mix and observe what happen to the sand.
5. Pour 1 tablespoon of salt in a glass of water.
6. Does it dissolve?
7. Pour a tablespoon of oil in a glass of water.
8. What happen to the oil?
9. Does it dissolve?
10. Do all solutes dissolve in all solvents?

C. Explanation

1. Ask each group to present the results of their experiment and the answer to the guide questions.

2. Analysis, Discussion and Abstraction of group output

Ask:

- Do all solutes dissolve in all solvents?
- Give examples of solutes that do not dissolve in solvents.

D. Elaboration

(Comprehensive discussion by the teacher)

Not all substance can be dissolved in water. Substances that can be dissolved are ***soluble***. Substances that cannot be dissolved are ***insoluble***.

Some substances dissolve faster than others. Your mother can compare which detergent soap bar dissolves faster. It is one factor to be considered in choosing the soap to buy.

The size of the particles of the solute affects the rate of dissolving substances. Smaller particles dissolve faster than substances with bigger particles.

- Watch the video about solutes & solvent
  https://www.youtube.com/watch?v=e-2EoyDYamg

E. Evaluation

Answer the following:

1. Do all solutes dissolve in all solvents?
2. What is the difference between soluble and insoluble?
3. Give examples of insoluble materials.

IV. ASSESSMENT

Infer whether the following solutes dissolve in solvents. Mark if ✓ it dissolves in solvent and ✗ if it does not dissolve.

_____ 1. Sand
_____ 2. Salt
_____ 3. Soil
_____ 4. Oil
_____ 5. Milk powder

V. ASSIGNMENT

Do all solutes dissolve in all solvents? Give five examples of solutes that do not dissolve in solvents.

SCIENCE 6

1ST Quarter

Lesson 7

Duration: 2 days

I. OBJECTIVES:

Perform experiment to show factors affecting solubility of solutes in a solvent. **(S6Mt-la-c- 1)**

Value Focus: Practice good health habits.

II. SUBJECT MATTER:

Topic: Factors Affecting the Solubility of Solutes in a Solvent

References: Curriculum Guide for Science Grade 6

Science, Health and Environment (SHE) 6 pp. 198-199

By: Felix G. Escaldre, Elizabeth Siringan-Rasalan et. Al.

Science, Health and Environment (SHE) 5 pp.276-277,

By: Felix G. Escaldre, Elizabeth Siringan-Rasalan

Science for Daily Use 4 pp. 123- 125

By: Carmelita C. Coronel and Inocencia M Abracia

RBEC Lesson Plan IV Lesson 46 pp. 131- 133 ,

Into the Future: Science and Health 4 pp - 125 – 127

By: Danilo S. Gutierrez and Inocencia V. Makil

Process Skills: Observing, describing, comparing, identifying

Materials: test tubes, test tube rack, chocolate powder, teaspoon, stirring stick, stopwatch, cold water, hot water, sugar, tap water, alcohol, oil, gasoline, milk powder, black pepper (powder and grains), nail polish and acetone.

III. INSTRUCTIONAL PROCEDURE:

A. Engagement:

1. Drill: Reading of Science terms in flashcards/in screen like solubility, solute, solvent , stirring, grinding, miscibility, particles, nature of solute, nature of solvent, temperature
2. Review: Classify materials as solute and solvent. Ex. Salt, milk, water, chocolate powder, etc.
3. Presentation of the new lesson:

Say: Today we will find out some factors affecting solubility of solutes in a solvent.

B. Exploration:

1. Group the class into four.
2. Recall the standards to follow when doing an activity.
3. Distribute the activity cards to each group and perform the assigned activity.

ACIVITY WORKSHEET

I. Problem:

What factor affects the solubility of a substance?

II. Materials:

2 Test tubes, test tube rack, 1 teaspoon chocolate powder, water, bamboo stick, stopwatch/timer

III. Procedure:

1. Label 2 test tubes A and B and place them in the test tube rack.
2. Put equal amount of chocolate powder in each test tube (about ¼ of tsp.)
3. Fill half of both test tubes with water.
4. Using a bamboo stick, stir the water and chocolate powder in test tube A. Don't stir the mixture in test tube B.
5. Using a stopwatch, record the time it takes the chocolate in each test tube to dissolve.

IV. Questions:

1. In which test tube did the chocolate powder dissolve faster?
2. What made the chocolate powder in a certain test tube dissolve faster?

V. Conclusion:

Answer the questions to come up a conclusion on the activity you have performed.

1. In which test tube did the chocolate powder dissolve faster?
2. What made the chocolate powder in a certain test tube dissolve faster?
3. So therefore, what factor affects the solubility of the chocolate powder?

Activity 2

I. Problem: What factor affects the solubility of a substance in a solvent?

II. Materials: 2 Test tubes, test tube rack, 20 ml. cold water and 20 ml. hot water, Bamboo stick, stopwatch/ timer

III. Procedure:

1. Put equal amount of chocolate powder in 2 test tubes. Label them C and D.
2. Place the test tubes in test tube rack.
3. Measure 20 ml. cold water and pour it in the test tube C. Measure 20 ml. hot water and pour it in test tube B.
4. Stir both mixtures for 15 minutes.
5. Record the time it takes the chocolate powder in each test tube to dissolve.

IV. Questions:

1. In which test tube did the chocolate powder dissolve faster?
2. What made the chocolate powder in a certain test tube dissolve faster?

V. Conclusion:

Answer the questions to make a conclusion from the activity you performed.

1. In which test tube did the chocolate powder dissolve faster?
2. What made the chocolate powder in a certain test tube dissolve faster?
3. So therefore, what factor affects the solubility of the chocolate powder?

Activity 2

I. Problem: What factor affects the solubility of a substance in a solvent?

II. Materials: 2 Test tubes, test tube rack, 20 ml. cold water and 20 ml. hot water, Bamboo stick, stopwatch/ timer

III. Procedure:

1. Put equal amount of chocolate powder in 2 test tubes. Label them C and D.
2. Place the test tubes in test tube rack.
3. Measure 20 ml. cold water and pour it in the test tube C. Measure 20 ml. hot water and pour it in test tube B.
4. Stir both mixtures for 15 minutes.
5. Record the time it takes the chocolate powder in each test tube to dissolve.

IV. Questions:

1. In which test tube did the chocolate powder dissolve faster?
2. What made the chocolate powder in a certain test tube dissolve faster?

V. Conclusion:

Answer the questions to make a conclusion from the activity you performed.

1. In which test tube did the chocolate powder dissolve faster?
2. What made the chocolate powder in a certain test tube dissolve faster?
3. So therefore, what factor affects the solubility of the chocolate powder?

Activity 4

Problem:

I. Problem: What factor affects the solubility of a substance in a solvent?

II. Materials:

III. Procedure:

1. Put equal amount of chocolate powder in 2 test tubes.
2. Label the test tubes G and H. Put them in a test tube rack.
3. Measure 10 ml. tap water and pour it in test tube G.
4. Measure another 50 ml. of tap water and put in test tube H.
5. Record the time it takes the chocolate in each test tube to dissolve.

IV. Questions:

1. In which test tube did the chocolate bar dissolve faster?

2. What made the chocolate bar in a certain test tube dissolve faster?

V. Conclusion:

Answer the questions to make a conclusion from the activity you performed.

1. In which test tube did the chocolate powder dissolve faster?
2. What made the chocolate powder in a certain test tube dissolve faster?
3. So therefore, what factor affects the solubility of the chocolate powder?

C. Explanation:

1. Reporting of group outputs.
2. Analysis and discussions of pupils answers.
3. Outline the pupils answers on the board.
   The teacher asks questions to develop critical thinking.

D. Elaboration:

1. Teaching part.

For further discussions use BIT and give explanations on factors affecting the solubility of solute in a solvent:

- manner of stirring
- nature of the solute and solvent
- temperature of the solvent
- amount of the solute
- size of the solute particles
- miscibility of the substance

BACKGROUND INFORMATION FOR TEACHERS

Solubility is the ability of a solute to dissolve in a solvent at a given temperature. Usually the higher the temperature, the faster a solute can be dissolved in a solvent. The nature of solute and the amount of solvent also determine how fast the solute dissolves in a solvent. The size of the particles affects the dissolving process. The finer the particles are, the faster the solute dissolves. The manner of stirring is also a factor to dissolve a solute in a solvent.

Miscibility is another factor that affects the solubility of substances. It is the property of a substance to mix evenly and completely with another substance. Some liquids are miscible like alcohol and water that dissolve completely with one another. Other liquids are immiscible like oil and water which will not mix together or do not dissolve completely with one another. There are also liquids that are partially miscible like gasoline and alcohol that mix only to some extent.

2. Generalization:
   - What are some factors that affect the rate of dissolving solutes in solvents?
   - How does each factor affect the solubility of a solute in a solvent?

3. Valuing:

Patrick eats his meal regularly and drink water after eating. But he feels pain every time he removes his bowel because of constipation. What should Patrick do to avoid constipation? How much water will he take everyday? Why?

4. Application:

Group the class into six. Each group will perform an activity then tell the factors that affect the solubility of the solutes in solvents.

Group 1 – Apply nail polish on your nails. When it dries up, remove the nail polish with acetone. Identify the factor that affect the solubility of the nail polish in acetone. (miscibility or nature of the solute and the solvent)

Group 2 – Dissolve 3 tablespoons of milk powder in a glass of hot water and stir it.
What factor helps the solubility of the milk powder instantly?
(temperature of the solvent, size of the solute particles or nature of the solute)

Group 3 – Dissolve the black pepper powder in hot water. Then dissolve grains of black Pepper in hot water. Compare the results.
Which mixture dissolve faster? What factor helps the fast solubility of the black pepper powder? (nature of the solute and temperature of the solvent)

Group 4 – Mix alcohol with water.
What makes alcohol and water mix completely with one another?
(miscibility / nature of the solute and solvent)

Group 5 – Mix 1 tablespoon of cooking oil with water.
Did they mix together? Why?
What factor affects the solubility of the solute and the solvent?
(Immiscibility / nature if the solute and solvent)

Group 6 – Mix 1 tablespoon of gasoline with water
Did they mix together? Why?
What factor affects the solubility of the solute and the solvent?
(Partial miscibility / nature of the solute and solvent)

E. Evaluation

Match the factors affecting the solubility of the solute in a solvent in column A to the situations in column B.

Column A	Column B
1. _____ Amount of solvent	A. Dissolving coffee with coffee mate (synecdoche for creamer) in a water using a spoon or a stick.
2. _____Manner of stirring	B. Dissolving three tablespoons of milk powder in a glass of warm water.
3. _____ Size of the solute particles	C. Mix baby oil with water. They do not mix completely with one another.
4. _____ Temperature of the solvent	D. Some grains of sugar settle at the bottom of the glass of the water while black coffee has already dissolved.
5. _____ Immiscibility	E. A sachet of fruit juice powder dissolves in a half glass of water slower than in a pitcher of water.

IV. ASSESSMENT

The pupils are grouped into two as Group A and Group B to perform three activities each. Show the factor affecting the solubility of a substance by filling up the chart. Refer to the lists of factors in the box.

Group A

ACTIVITY	Factors Affecting the Solubility
1. Salt dissolves in water but not in alcohol.	
2. It is easier to dissolve powdered chocolate in hot water.	
3. Detergent powder dissolves more easily in water than a detergent bar.	

Group B

ACTIVITY	Factors Affecting the Solubility
4. It will take more time to dissolve a cup than a teaspoon of flour in water.	
5. Pebbles will not dissolve in water.	
6. A sugar of ¼ kilogram can no longer be dissolved in a glass of water. It will only settle at the bottom of the glass.	

Factors affecting solubility:

a. Amount of solute
b. Size of solute particles
c. Temperature of solvent
d. Nature of solute
e. Nature of solvent
f. Amount of solvent

The group will be marked according to the following criteria.

CRITERIA	EXCELLENT	GOOD	AVERAGE	POOR
Perform the activity in collaborative way.				
Follow the procedures stated				
Practice cleanliness while doing the activity				

Had shown the factors affecting the solubility(3 pts. each group)				

V. ASSIGNMENT

Explain in two (2) to three (3) sentences for each item.

1. What will happen when milk is mixed with cold water? Why?
2. Why does a mixture of flour and tap water poured to a boiling water become sticky?

SCIENCE 6
1st Quarter
Lesson 8
Duration: 1 day

I. OBJECTIVE

Describe the appearance and the uses of suspension. **(S6MT-la-c-1)**

Value Focus: Following directions carefully.

II. SUBJECT MATTER

Topic: Appearance and Uses of Suspension

References:

- Science, Health and Environment (SHE) 5 pp. 277-279

  By: Felix G. Escaldre, Elizabeth Siringan-Rasalan et. Al.
- Chemistry Textbook: Science and Technology III pp. 38-43

  By: Amelia P. Mapa Ph. D., Trinidad B. Fidelino, and Lilia M. Rabago Ph. D.
- http://www.livestrong.com/article/497691-apple-cider-vinegar-olive-oil-for-the-gallbladder/ (for Activity 2)
- http://www.thekitchn.com/beyond-olive-oil-vinegar-10-more-ways-to-make-a-vinaigrette-202072 (for Activity 2)
- https://www.youtube.com/watch?v=7pk-sdBd-cE (for Activity 2)
- https://www.youtube.com/watch?v=eaXtmt-kB0A (for Activity 4)
- https://en.wikipedia.org/wiki/Trimethoprim/sulfamethoxazole (for Activity 4)

Process Skills:

Observing, describing, comparing, inferring, identifying, measuring

Materials:

Flour, water, clear glasses, oil, vinegar, sand, sugar, stirring rod/bamboo stick, milk of magnesia, cotrimoxazole

III. INSTRUCTIONAL PROCEDURE

A. Engagement:

1. Drill: Reading of Science terms in flashcards/ in screen.

   Suspension, milk of magnesia, mayonnaise, cotrimoxazole, appearance, substance

2. Review:
    - Checking of assignment.
    - What are the factors affecting the solubility of solute in a solvent?
3. Presentation of the new lesson:

    Say: Today we will find out what is the appearance of a suspension and tell its uses.

B. Exploration:

1. Group Activity
2. Recall the standards to follow when doing an activity.
3. Distribute the Activity Cards.

ACTIVITY WORK SHEET

Activity 1

I. Problem: Describe the appearance and uses of suspensions
II. Materials: ½ cup flour, 1 clear glass of water,
III. Procedure:
    1. Prepare a half cup of flour, 1 clear glass with water.
    2. Pour the flour into the glass of water.
    3. Stir until the flour mix with the water.
    4. Wait for 2 – 3 minutes and observe.
    5. Record the appearance of the mixture.
IV. Questions:
    1. When the solute particles mixed with water, what do they become? **(mixture)**
    2. How do the solute particles behave after mixing with solvent?**(settle at the bottom / float in the water)**
    3. Describe the appearance of the mixture done. **(cloudy)**
    4. What kind of mixture did you make? **(suspension)**
    5. In what preparation can this mixture be useful? **(food preparation as thickening agent)**
V. Conclusions:

    Answer the questions to make a conclusion.

    1. What is the name of the mixture that you make? **(gaw-gaw)**
    2. Based on the appearance and characteristics, what type is this mixture? **(suspension)**
    3. So therefore, what is a suspension and how can this be useful? **(A suspension is a heterogeneous cloudy mixture in which solute-like particles settle out of a solvent-like phase some time after their introduction. This gaw-gaw mixture can be used in food preparations as thickening agent.)**

Activity 2

I. Problem: Describe the appearance and uses of suspensions
II. Materials:
    1 tablespoons of apple cider vinegar and 3 tablespoon of olive oil, 1 clear glass (container)
III. Procedure:
    1. Put the oil in the glass and pour the vinegar after. Stir with a stick until it becomes a mixture.
    2. Wait for 2 – 3 minutes and observe.
    3. Record the appearance of the mixture.
IV. Questions:
    1. When the 2 ingredients are combined, what do they become? **(mixture)**
    2. Describe the appearance of the mixture done. **(cloudy)**
    3. What kind of mixture did you make? **(suspension)**
    4. In what preparation can this mixture be useful? **(for vegetable salads) *see reference**
V. Conclusions:
    (Guide questions)
    1. What is the name of the mixture that you make? **(oil and vinegar mixture)**
    2. Based on the appearance and characteristics, what type is this mixture? **(suspension)**
    3. So therefore, what is a suspension and how can this be useful? **(A suspension is a heterogeneous cloudy mixture in which solute-like particles settle out of a solvent-like phase sometime after their introduction. This oil-vinegar suspension can be used in salads, marinades, sandwiches and other food preparations.) *see reference**

Activity 3

I. Problem: Describe the appearance and uses of suspensions
II. Materials: ½ cup of raw sand and 1 glass of water
III. Procedure:
    1. Add the sand to the water then stir the mixture well.
    2. Let the mixture stand for a few minutes.
    3. Observe and record what happen to the sand.
    4. Describe the appearance of the mixture.
IV. Questions:
    1. When the solute (sand) is introduced to the solvent (water), what do they become? **(mixture)**
    2. Describe the appearance of the mixture done. **(cloudy, sand settled at the bottom)**
    3. What kind of mixture did you make? **(suspension)**
    4. In what preparation can this mixture be useful? **(as construction material)**
VI. Conclusions:
    (Guide questions)
    1. What is the name of the mixture that you make? **(sand and water mixture)**
    2. Based on the appearance and characteristics, what type is this mixture? **(suspension)**
    So therefore, what is a suspension and how can this be useful? **(A suspension is a heterogeneous cloudy mixture in which solute-like particles settle out of a solvent-**

like phase sometime after their introduction. This sand-water mixture can be used as construction materials, such as forming hollow blocks when mixed with cement.)

Activity 4

I. Problem: Describe the appearance and uses of suspensions
II. Materials: milk of magnesia and cotrimoxazole
III. Procedure:
    1. Prepare milk of magnesia and cotrimoxazole suspension.
    2. Describe the appearance of each substance.
    3. Find out how these can be useful to us.
IV. Questions:
    1. Describe the appearance of the examples of suspension. **(cloudy, some particles settled at the bottom)**
    2. What kind of mixture are milk of magnesia and cotrimoxazole? **(suspension)**
    3. In what way can these suspensions be useful? **(as medicine)**
V. Conclusions:

    (Guide question)

    Based on the appearance and characteristics, what type of mixture are these substances? **(suspension)**

    So therefore, what is a suspension and how can this be useful? **(A suspension is a heterogeneous cloudy mixture in which solute-like particles settle out of a solvent-like phase some time after their introduction. These suspensions can be used as *refer https://www.youtube.com/watch?v=eaXtmt-kB0A for milk of magnesia* *refer https://en.wikipedia.org/wiki/Trimethoprim/sulfamethoxazole for cotrimoxazole)**

C. Explanation:

1. Reporting of group outputs
2. Analysis and discussions of pupils' outputs.
3. Outline pupils' answers on the board.
4. The teacher asks questions to develop critical thinking.

- As you mix the solute particles in a solvent, what did you make?
- How did the solute particles behave when mixed with the solvent?
- Describe the appearance of the mixture you have done.
- What kind of mixture did you make?
- Describe the appearance of suspension.
- Show other examples of suspensions then describe.
- Give the uses of these suspensions: (for food, medicines, beautification, etc.)

D. Elaboration

1. Teaching part:

The teacher will discuss more about the appearance and the uses of suspension using the BIT.

BACKGROUND INFORMATION for TEACHERS

Suspension is a heterogeneous mixture, which has particles that do not completely dissolve and settle down at the bottom. Suspensions are cloudy mixtures.

Some substances do not dissolve completely in solvents. The particles that do not dissolve settle down at the bottom of the container. An example of mixture is sand and water used as construction materials. You had observed that particles settle down at the bottom of the glass. The particles do not spread evenly unlike the solution. This mixture is **called suspension.**

Flour mixed with water form a mixture and is used as thickening agent in food preparation. The particles of flour do not dissolve but float in the water. The mixture of flour and water is called a **suspension**.

A mixture of oil and vinegar form a suspension. The oil particles do not dissolve in vinegar. Instead, the vinegar slowly sinks to the bottom of the container. This mixture is used for vegetable salads, marinades and other food preparations.

Some liquid medicines, like milk of magnesia that can be used as laxative and cotrimoxazole used as antibiotic are also suspensions.

2. Generalization:

- What is a suspension?
- Describe the appearance of suspension.
- What are the uses of suspension?

4. Valuing:

Carlo had a fever. Her sister was instructed by Mother to give him a medicine. What should she observe and follow in order to avoid over dosage and poisoning?

4. Application:

Exercise A. Shopping Activity:

Group the class into six. Each group will examine all the presented substances.
Let them describe the appearance of the suspension. Tell the uses of each suspension.
Write under the column for each suspension of what have they observed.
Elaborate some more points to remember.

Exercise B. Pick out examples of suspension from the list of mixtures. Describe the appearance and its uses.

a. Sand and water	f. milk of magnesia
b. Fruit juice mixed with water	g. tomato catsup
c. Flour and water	h. coffee and hot water
d. Milk powder and hot water	i. mayonnaise
e. Oil and vinegar	j. paints

IV. ASSESSMENT

Describe the appearance and uses of suspension listed below as:
for <u>Food,</u> for <u>medicine,</u> for <u>beautification</u>

Examples of colloids	Describe its Appearance	Describe its uses
1. Milk of magnesia		
2. Paint		
3. Gaw-gaw (flour and water)		
4. Mayonnaise		
5. Cotrimoxazole suspension		
6. Banana catsup		
7. Lechon sauce(Mang Tomas)		
8. Sand and water		
9. Cement and water		
10. Tomato catsuo		

V. ASSIGNMENT

Make a research on:

1. Kinds of suspension
2. Tell if they are beneficial or harmful to man and to the environment.

SCIENCE 6
1st QUARTER
Lesson 9
Duration: 1 day

I. OBJECTIVE

Describe the appearance and uses of colloids. (S6MT-Ia-c- 1)

Value focus: Proper handling of materials to avoid accident.

II. SUBJECT MATTER

Topic: Appearance and Uses of Colloids

References:

Science, Health and Environment (SHE) 5 pp 277 - 279, Chemistry III by Amelia Mapa et al. pp 38-42, Science for Active Minds 6 pp 69-77, Cyber Science : Work text in Science and Technology 6 pp 21-27 https://m.youtube.com>watch, Properties of Colloids – You Tube

Process skills:

Observing, comparing, describing, identifying, inferring, measuring

Materials:

White sugar, gaw-gaw (cornstarch), 3 beakers, boiling water, pen light

III. INSTRUCTIONAL PROCEDURE

A. Engagement:
1. Drill: Reading of Science Terms in flashcards / in screen
   Colloids, Tyndall Effect, exhibit, homogeneous, heterogeneous, transparent, naked eye, scatters
2. Review:
   Checking of assignment.
   Describe the appearance of suspension and solution.
   Give the uses of suspensions.
3. Presentation of the new lesson:
   Say: Today we will perform an activity to describe the appearance of colloids. We will also identify the uses of colloids.

B. Exploration:
1. Group Activity
   The group will do the Battery exercises.
   After performing the activity, they will describe the appearance of the mixture. Then go to the other mixtures performed by the other groups to observe the appearance. Compare how each mixture differ from each other.
2. Recall the standards to follow when doing the activity.
3. Distribute the Activity Cards.

ACTIVITY WORK SHEET

I. Problem:

Describe the appearance and uses of colloids.

II. Materials:

White sugar, gaw-gaw(cornstarch), 3 beakers, boiling water, penlight, tap water

III. Procedure:

Activity 1 (Preparation of Solution of Gaw-gaw)

1. Measure 100 ml. of tap water in one beaker.
2. Add a teaspoon of sugar. Stir the water until all sugar particles dissolve.

Activity 2 (Preparation of colloid)

1. Stir a teaspoon of gaw-gaw in tap water .
2. Pour the mixture into another beaker containing 100 ml. of boiling water.
3. Allow the mixture to cool and set aside.

Ac tivity 3 (Preparation of Suspension)

1. Measure 100 ml. of tap water in the third beaker.
2. Add a teaspoon of uncooked gaw-gaw powder.

Activity 4 (Tyndall Effect Test)

1. To each beaker, direct a beam of light from a penlight in dark room.
   Note: You may use a big black cloth to cover yourself in lieu of a dark room.
2. Look at the ray of light focused at right angle with the mixture.
   The mixture that scatters light is said to exhibit Tyndall Effect.

IV. Questions (Observations)

1. Compare the colors of the mixtures.
2. Which of the three mixtures is/ are homogeneous? Heterogeneous?
3. Which is clear and transparent or no particles are observed?
4. Which has fine particles that do not settle? Are these particles visible to the naked eye?
5. Which mixture has big particles that tend to settle at the bottom of the container?
6. Which exhibits Tyndall Effect?

V. Conclusion:

Guide questions.

1. Which mixture exhibits rays that scattered when a beam of light is passed through it? What kind of Test is applied to the mixture?
2. So therefore how do we know that this mixture is a colloid? Why?

C. Explanation

1. Reporting of group outputs.
2. Analysis and discussions of pupils' outputs
3. Outline the pupils' answers on the board.

   The teacher asks questions to develop critical thinking.

   - Which mixture exhibits rays that scatter when a beam of light is passed through them?
   - What kind of test is applied to each mixture?
   - How do we know that a mixture is a colloid? Why?

D. Elaboration:

1. Teaching Part:

   The teacher will use BIT and other resources to discuss and explain the difference of colloid from the other mixtures: suspension and solution. The teacher will show examples of colloid and tell its importance.

BACKGROUNG INFORMATION FOR TEACHERS

A mixture with particles evenly scattered in a dispersed medium without settling down is a called **colloid.** Investigating a colloidal property of the mixtures: flour dissolved in water is a colloid while sugar dissolved in water is a solution. The flour particles can absorb, reflect and scatter light; therefore a beam of light passing through the set-up was visible. This scattering of light is called Tyndall Effect. Tyndall Effect is seen as a beam of light in a colloid because there is a scattering of light when light beams pass through it due to the dispersed particles which absorb, reflect and scatter the light.

Colloid is a special kind of mixture that contains very tiny particles that cannot be seen by the unaided eye. The tiny particles do not settle down. Instead, they move rapidly and collide with or bump each other. This motion of the tiny particles is called Brownian motion. In adding a powdered milk to a glass of warm water, you can form a cloudy mixture but the milk particles do not settle down. The milk that you drink everyday is called colloid.

Solutions, suspensions and colloids exhibit characteristics that can be perceived as similar, but they are actually not. For instance, colloids have particles that are slightly smaller than the particles of a suspension; colloidal particles, however, are larger than the particles of solutions. Colloidal particles are in-between the sizes of suspension and solution particles and cannot be seen by the naked eye; instead, they are visible through a microscope only.

The different examples of colloids are important to daily life. Natural colloids such as blood, clouds and fog are basic for living things. Man-made colloids are also useful. Numerous colloids such as milk, butter, gelatin, jam, jelly, and other creamy substances such as mayonnaise and whipped cream, are used as food or ingredients for preparing food. Some colloids such as magnesium hydroxide, creams, and ointments are used as medicines and cosmetics. Paints have both protective and decorative functions. Styrofoam, inks, and white glues are used in offices and printing press. Insecticides are used in farming.

Artificial aerosols are not environment-friendly. These products contain chlorofluorocarbons (CFCs) which act as propellants. Experts say the CFCs, destroy the ozone layer, the layer that protects the earth from the ultraviolet rays of the sun.

4. Generalization:
    - What is a colloid.
    - How do we know that a mixture is a colloid?
5. Valuing:
   (Proper handling of materials that may cause accident)
   How do you handle the materials especially boiling water in order not to cause burn?
6. Application:

(The teacher may use one exercise only for fixing the skills.)

Exercise 1

Write the uses opposite to each example of colloid.
Empty containers of the given products can be used better.

COLLOIDS	USES
Shampoo	
Lotion	
Dishwashing liquid	
Butter	
Cotton candy	

Exercise 2
Match the COLLOIDS to its uses.

COLLOIDS	USES
Hair gel	Condiment that enhances food flavor
Catsup	For application on the skin
Glue	To attach a picture on the paper
Ointment	For hair styling
Paste	Binds materials like cloth / paper

E. Evaluation:

Read the statement. Then encircle the **YES** if it is correct and **NO** if it is incorrect.

YES	NO*	1. Colloids are homogeneous mixtures.
YES	NO*	2. Light cannot pass through colloidal particles.
YES*	NO	3. The components of a colloid do not settle at the bottom.
YES	NO*	4. Colloid particles are bigger than suspension particles.
YES*	NO	5. Colloid particles are larger than solution particles.

IV. ASSESSMENT

Describe the appearance and uses of the colloids. Encircle the letter of the correct answer.

1. Which description best describes colloids?

    a. Composed of molecules bigger than a solution but smaller than a suspension. *
    b. Mixtures of two or more substances than can be easily separated
    c. Formed by mixing different kinds of solutions
    d. Have molecules that are big enough to settle at the bottom

2. Which of the following is the best description of colloids?

    a. Sticky, creamy substance *
    b. Clear, pure substance
    c. Dark, black substance
    d. Clear, flawless substance

3. The following colloids are used for food preparation **except** _____.

    a. Gelatin
    b. Milk
    c. Silica Gel *
    d. Whipped Cream

4. Which colloid has both protective and decorative function?

    a. Ink
    b. Insecticide Spray
    c. paint
    d. creams

5. You and your mother brought the following items from the supermarket: mayonnaise, butter, red sugar, milk, oil, salt, detergent powder, shampoo, canned goods, dishwashing liquid, toothpaste, vinegar, soy sauce, olive oil, and ketchup.

    Select 6 items that are colloids and describe its uses. Write your answers on the table below:

Colloid Items	Uses of Colloids

V. ASSIGNMENT:

Write-up on colloid preparation

Group yourselves into three.

Have a research on the preparation of a colloid of your choice. Make a write-up on the preparation of your colloid. Include the materials you used.

A. Title of Colloid Preparation
B. Materials
C. Write-up on the Preparation of the Colloid

Science 6
1st Quarter
Lesson 10
Duration- 1 day

I. OBJECTIVE

Classify the types of colloids as:

- Sols
- Emulsions
- Forms
- Aerosols

(SGMT-la-c-1)

Value Focus: Greenhouse Effect and Environmental Awareness

II. SUBJECT MATTER

Topic: Types of colloids

References:

Science, Health and Environment (SHE) 5 pp 277-279
By: Felix G. Escaldre, Elizabeth Siringan-Rasalan et. Al.
Chemistry Textbook : Science and Technology III
By Amelita Mapa et al pp 38-42
Science for Active Minds 6, pp 69-77

Materials:

Paint, ink, muddy water, blood, pearl, clear glass,
Milk, mayonnaise, facial cream, ointment, paint,
Insecticide, perfume spray, spray paint, pictures of cloud and fog,
Cake icing, whipped cream, Styrofoam, soap lather, froth of beer

Process Skills:

Observing, describing, comparing, classifying, inferring, identifying

I. INSTRUCTIONAL PROCEDURE

A. Engagement

1. Drill: Reading of Science Terms: in flashcards/in screen
   Emulsifying agents
   Perfume Spray
   Stabilize the emulsions
   Whipped cream
   Broth on a glass
   Artificial Aerosol
   Stable emulsions

Cod-liver oil
Soap lather
Styrofoam

1. Review:
   - Check up of assignment.
   - Presentation of output by group: Colloid Preparation
     A. Title of Colloid Preparation
     B. Materials
     C. Write up of the preparation

2. Presentation of the new lesson:

   Say: Today we will study the types of colloids and classify them.

A. Exploration:

1. Group activity:

   Group the class into four and do the Shopping Activity.
2. Recall the standards to follow when doing the activity.
3. Distribute the activity cards.

Activity 1 (Sol colloids)

I. Problem:

Classify the types of colloids.

II. Materials:

Paint, ink, muddy water, blood, pearl, clear glass

III. Procedure:

1. Prepare the materials assigned before the class.
2. Group the materials as:
   a. Solid dispersed in solid:
      Pearls, opal, colored glass
   b. Solids dispersed in liquid:
      Paint, muddy water, blood or pigmented ink.
3. Describe the appearance of colloids and give the importance.
4. Fill up the chart below.

Colloids	Appearance	Importance
A. B.		

Activity 2 (Emulsions)

I. Problem:

Classify the types of colloids.

II. Materials:

Milk, mayonnaise, facial cream, ointment, paint

III. Procedure:

1. Prepare the materials assigned before the class.
2. Describe the characteristics of this type of colloid.
3. Fill up the chart

colloids	Appearance	Importance

Activity 3 (Aerosols)

I. Problem:

Classify the types of colloids.

II. Materials:

Group C:

Insecticide, perfume spray, spray paint, pictures of cloud and fog

III. Procedure:

1. Prepare the materials assigned to your group.
2. Describe the appearance of these type of colloids.
3. How can these materials be useful to man?
4 Fill up the chart below.

l colloids	Appearance	Importance

Activity 4 (Foam)

I. Problem:

Classify the types of colloids

II. Materials:

Cake icing, whipped cream, Styrofoam, soap lather, froth of beer

III. Procedure:

1. Describe the appearance of the colloids.
2. Tell the importance of these colloid material
3. Fill up the chart below

Colloids	appearance	importance

Activity 5 (Gels)

I. Problem

Classify the types of colloids

II. Materials:

Jelly ace, gelatin (cooked), shoe polish, silica gel

III. Procedure

1. Describe the appearance of the colloids
2. Tell the importance of these colloids.
3. Fill up the chart below.

Colloids	appearance	importance

B. Explanation:

1. Reporting of group outputs
2. Analysis and discussions of pupils' outputs
3. Outline the pupils' answers on the board

The teacher ask questions to develop critical thinking.

- How are the colloids classified? (according to types)

- What are the types of colloid?
- Do colloids have the same appearance?
- Are there colloids environment friendly?

D. Elaboration

1. Teaching part:

The teacher makes further discussions using the BIT

BACKGROUND INFORMATION FOR TEACHERS

Types of colloids

A **sol** is a solid dispersed in either solid or a liquid. Examples of solid sols (solid dispersed in solid) are opal, pearls, and other colored glass like stained glass. Examples of solid dispersed in liquid are blood, paints, gum, muddy water, and some forms of pigment ink.

An **emulsion** is a liquid dispersed in either a liquid or solid. Examples of emulsions are milk, cod-liver oil, butter, mayonnaise, and most ointments and creams used in medicines and cosmetics. The components of an emulsion usually do not mix. An emulsifying agent is mixed to form a stable emulsion. Mayonnaise, for example, is a mixture of oil in lemon or vinegar with egg yolks as an emulsifying agent to stabilize the emulsion. Fresh milk is usually homogenized to reduce the size of the fat particles and prevent the separation of an oily upper layer of cream from the colloidal suspension of protein.

Aerosols are suspensions of liquid or solid particles in a gas. Clouds and fog are natural aerosols, which consist of water droplets dispersed in air. Dusty air and smoke are aerosols, too. Insecticides, perfume spray, spray paint are artificial aerosols dispersed in the air.

Foams are colloids which consist of gas dispersed in liquid (liquid foams) or solid (solid foams). Whipped cream, froth on a glass on a beer, and soap lather are liquid foams. Styrofoam, pumice, yeast bread, and cake icing are solid foams.

Gels are colloids which consist of liquid dispersed in solid. Your favorite gelatin dessert is a gel' another example is silica gel. Silica gel is placed in small packages in packets of medicines and vitamin pills to keep them dry. Shoe polish, jellies, and jam are gels.

2. Generalizations:

What are the types of colloids?

How are they important to man?

3. Valuing:

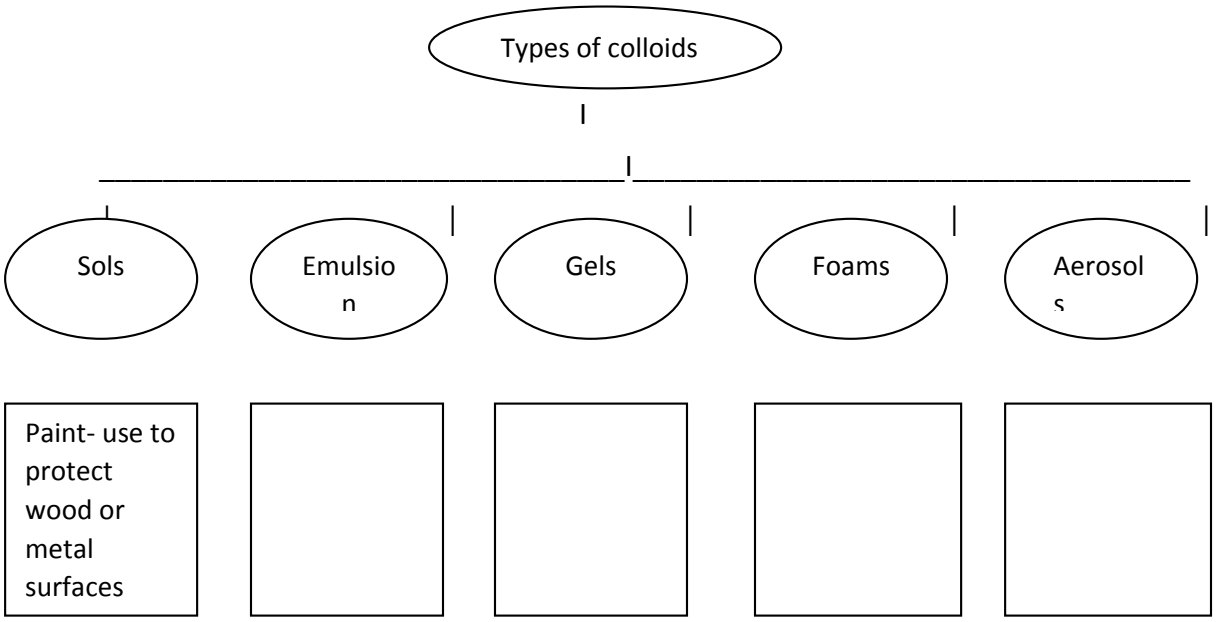
Artificial aerosols are not environment-friendly. These products contain chlorofluorocarbons (CFC) which destroy the ozone layer.

Are you using artificial aerosols frequently?

What should you do to help in protecting the ozone layer?

4. Application:

Write one example of colloid in each type and give the importance. Follow the given example.



A. Evaluation

Classify the colloid materials written inside the box according to their types.

Insecticides	Milk
Gelatin	Smoke
Mayonnaise	Jam
Pearl	Paint

Sol	Emulsion	Foams	Aerosols	Gels

IV. ASSESSMENT

Classify the following colloid materials according to their types. Write your answers in the correct column.

Mayonnaise	(Emulsion)
Milk	(Emulsion)
Soap lather	(Foams)
Paint	(Sol)
Toothpaste	(Emulsion)
Opal/pearls	(Sol)
Whipped cream	(Foams)
Blood	(Sol)
Perfume spray	(Aerosols)
Silica gel	(Gel)

Sol Colloids	Emulsion Colloids	Aerosol Colloids	Gel Colloids	Foam Colloids

V. ASSIGNMENT

A. 1. Name the types of colloids and give examples for each type.
   2. Tell the importance of each type.

B. Group yourselves into three.
   Make a research on the recipe of Gulaman.

SCIENCE 6

1 st Quarter

Lesson 11

Duration: 1 day

I. OBJECTIVE

Prepare beneficial and useful mixtures such as drinks, food and herbal medicines. **(S6MT-Ia-1)**

Value Focus : Practice proper hygiene when doing a food or drink preparation.

II. SUBJECT MATTER

Topic: Preparing Beneficial and Useful Mixtures such as Drinks, Food and Herbal Medicines

References: Cyber Science : Worktext in Science and Technology 6, page 6
http://www.chemistrylearning.com/examples-colloids/
http://www.foodandsoul.com/wp-content/uploads/2006/11/jellies.jpg

Materials:
10 guyabano leaves, 1 liter of clean water, kettle or casserole, kalamansi, buko pandan gelatin powder, buko grated, milk

Process Skills:
Describing, comparing, inferring, identifying, measuring

III. INSTRUCTIONAL PROCEDURE

A. Engagement

1. Drill: Reading of Science Terms in flashcards or in screen:
   Herbal drinks, health benefits, medicinal components.

2. Review:
   Identify the types of colloids
   a. Paint
   b. Glade Dry (air freshener)
   c. Cloud
   d. Facial Cream (e.g. Ponds, Olay, etc.)
   e. Froth on a glass of a beer

3. Presentation of the new lesson:
   Say: Today we will prepare a beneficial and useful mixture.

B. Exploration:

1. Grouping of pupils into two.
2. Recall the standards to follow when doing an activity.
3. Distributing of activity cards.

ACTIVITY WORKSHEET

I. Problem
To prepare a beneficial and useful mixture

II. Materials:
1 one sachet of buko pandan gelatin powder, grated buko, small can of condensed milk, sugar, 10 guyabano leaves, kettle or casserole, kalan (coal type)

III. Procedure
Activity 1 (Preparation of Gulaman)
1. Boil 1 liter of water in the casserole.
2. Pour ½ sachet of gelatin powder and stir.
3. Wait until the gelatin will be cooked.
4. Set aside and let it cool.
5. Prepare the other ingredients in the salad bowl.
6. Get the cooled down cooked gelatin and slice into cubes.
7. Mix gelatin cubes, a cup of sugar, milk, grated buko and its juice.
8. Add one liter of clean water and mix thoroughly using a laddle.
9. Add ice cubes to make it taste delicious.

Activity 2 (Preparation of Herbal Drink)
1. Prepare 10 leaves of guyabano. Wash them very well.
2. Pour at least one liter of clean water in a clean kettle or casserole.
3. Place the clean leaves of guyabano and boil for five minutes.
4. Remove the leaves and other impurities.
5. Add one to two teaspoon of brown sugar for every glass. You can also add calamansi juice or lemon juice to enhance the taste.
6. You can take you herbal drink either cold or hot according to your preference.

IV. Questions
1. What kind of mixture did you prepare?
2. How beneficial or useful is your preparation?
3. What should you observe in preparing such kind of mixture in order to avoid health problem?

V. Conclusion:
Write a conclusion by answering guide questions:
- What is the use of the mixture you prepared in your assigned activity?
- Is it beneficial or not?
- Why? Or Why not?
- So therefore, what mixture can we prepare that give us health benefits?

C. Explanation:

1. Reporting of group outputs
2. Analysis and discussion of pupils' outputs
3. Outline pupils' answers on the board.
   The teacher asks questions to develop critical thinking.
   - What is the use of the mixture you prepared in your assigned activity?
   - Is it beneficial or not? Why?
   - What mixture can we prepare that give us health benefits?

D. Elaboration

1. Teaching Part:
   The teacher will discuss on the preparation of mixture beneficial or useful to man using the BIT.

BACKGROUND INFORMATION FOR TEACHERS

Beneficial or useful mixtures can be prepared as food, drinks or herbal medicines. It can be prepared in a simple way using the ingredients found in the locality. Some example of these food mixtures that give health benefits from its nutrient content are vegetable salad, desserts, and pickles. Useful drinks like beverage, shake or juice give us also health benefits due to its nutrient content. It can also be prepared using simple ingredients found in the local market.

Herbal drinks are very popular today because of their health benefits. Leaves of herbal plants such as guyabano, Lemon grass, oregano, and malunggay known as moringga are usually boiled to make herbal drinks. Guyabano, for example, is known to have components which prevent the growth of cancer cells and can kill cancer cells. Its fruit, leaves, or barks have medicinal components

2. Generalization:
   - What is the use of the mixture you prepared in your activity?
   - Is it beneficial or not? Why?
   - In what way the mixture you prepared beneficial to man? (It can be as food, drinks or medicine)
4. Valuing:
   Aling Nena is a gulaman vendor in the school. The children like to eat her gulaman. How should she prepare her gulaman mixture in order to avoid stomach trouble?
5. Application:

Group the pupils into 4
Have each group prepare for a demonstration of a simple mixture of food or drink as assigned one day before the class session.

Group A – Lemonade drink
Group B –Orange Juice drink
Group C – Papaya pickles

Group D – Cucumber Salad

Note: Pupils will present the following from their demonstration then check the chart to assess their performance:

1. Title of the mixture preparation
2. Materials
3. Write-up

Preparation	Excellent	Good	Average	Poor
1. Materials Presented				
2. Presentation of the preparation				
3. Write-up of the preparation (a written description of the preparation)				

E. Evaluation

Rubrics Scoring can be used to evaluate the group's performance.
Each group will be assigned to perform the following preparations:

- Buko Juice
- Orange juice
- Parlan
- Calamansi Juice

Group's demonstration on their mixture preparation	Excellent	Good	Average	Poor
1. Materials Presented				
2. Presentation of the preparation				
3. Write-up of the preparation (a written description of the preparation and its importance)				

IV. ASSESSMENT

Prepare the following Homemade Natural Deodorant by group.
Then make a demonstration on how to prepare an herbal medicine.

Preparation of a Homemade Natural Deodorant

1. Prepare a pulverized tawas and a piece of calamansi.
2. Place the tawas powder in a glass container.
3. Add the calamansi juice and stir
4. Wait until the tawas powder dissolves in the calamansi juice.

The mixture can now be applied to your underarms after taking a bath as needed.

Rubrics Scoring

Preparation of Deodorant	Excellent	Good	Average	Poor
1. Performance of the demonstration				
2. Presentation of the demonstration				
3. Write-up of the preparation stating its importance				

V. ASSIGNMENT

Ask a resource person of some more examples of beneficial or useful mixtures such as drinks, food or herbal medicines.

Science 6

1st Quarter

(Lesson 12)

I. OBJECTIVE

Describe how to separate mixtures through picking.

(S6MT – 1d – f – 2)

Values Focus: Carefulness in holding of materials while performing the activity.
DCCM VIII – Local Food Products

II. SUBJECT MATTER

A. Skills: Describing how to separate mixtures through picking.
(observing, separating, communicating, describing)

B. Reference : K to 12 Grade 6 Curriculum Guide, Exploring the Realms of Science Integrated Science by Lucy Austria Magleo and Veronica Sigmundo Bernas page167-168

C. Materials: real objects, flash cards, activity cards, charts

III. INSTUCTIONAL PROCEDURES

A. Engagement:

I have here flashcards, read the words as I flash the cards.

- mixtures
- techniques
- separating mixtures
- through picking
- solid
- beans
- corn
- stones
- marbles
- palay grains

Let's have a short review first on mixtures. What are mixtures?

So, mixtures contain two or more substances combined together.

Look at these bottles on the table. Do they contain something? Bottle A what does it contain, bottle B and so on. (Bottle A contains beans and corn). How can we separate beans from corns? How about stones and marbles? How about grains and biscuits, how can we separate them?

This morning we are going to study about separating of mixtures through picking.

B. EXPLORATION:

- The teacher gathers the materials a day before.
- Distribute the activity cards.

Activity 1

I. Title: Identify the names of materials in a mixture.

II. Materials: pebbles chalk mongo seed candies
marbles stones soy beans marshmallow

III. Procedures:

1. List down the names of the materials for each mixture inside the bottle.
2. Separate the components or contents from each mixture.

IV. Question:

1. How did you separate the mixtures?

Activity 2

I. Title: Identify the names of materials in a mixture.

II. Materials: pebbles soy beans
mongo seeds rice
stones marbles
corn marshmallow

III. Procedures:

1. By using the materials provided give four sets of mixtures out of the said materials.
2. Fill in the table below.

Example:	Mixture 1	Mixture 2	Mixture 3	Mixture 4
Mixture of corn and rice				

IV. Question:

1. How can we separate these mixtures?

- Grouping: Divide the class into two (2) groups.
- Giving of Instructions:
  1. Each group will choose a leader and a reporter.
  2. Each group will be given an activity card.

3. The activity card serves as your guide on the activity that you are going to perform.
4. All the members in the group must work as a team.
5. After the activity write the results of your activity in the manila paper to be reported by the reporter.

- Distribute the activity cards.
- Activity proper
- Reporting of group outputs

  Okay, let's go back to the outputs of group one, what is it all about? (materials, mixtures). How about group 2 (what is it all about? (sets of mixtures). How can we separates these kinds of mixtures? (through picking)
- Analysis of the activity result

C. Explanation:

BIT – Background Information for Teachers

In everyday life, we use a number of mixtures and one need to separate useful components from the mixture. Thus, the separation of substances is performed by various methods like hand-picking, threshing, sieving and winnowing, etc. separation can include separation of stones from rice, separating bran from flour, etc. separation is done to remove impurities and to get a useful product.

Mixtures are combinations of two or more substances not chemically bonded where each substance retains its chemical entity and properties. One of the techniques of separating mixtures is through picking. For instances, a mixture of grains and corn can be separated through picking by using our bare hands.

Examples of mixtures that can be separated through picking:

- grains and mongo seeds
- nails and pins
- sliced fruits
- rice grains and pebbles

Value Infusion:

D. Elaboration:

Further discussion of the content.

Generalization:

Let the pupils to formulate generalization by asking “what are mixtures? Based on the activity that you had, what is one of the techniques of separating mixtures? Describe how do you separate mixture through picking?

Value Infusion:

E. Evaluation:

A. Describe the following whether mixture or not.

_____ 1. soy sauce and cooking oil
_____ 2. macaroni pasta and mayonnaise
_____ 3. water
_____ 4. soy beans and mango beans
_____ 5. soil

B. Draw a smiley face  beside the mixtures that can be separated through picking.

1. water and alcohol
2. sliced mixed fruits
3. mixed nuts
4. nails and iron strips
5. stones and pebbles

IV. ASSESSMENT

Describe how the following mixtures can be separated, through picking or not.

_____ 1. nails and stones
_____ 2. lemon juice
_____ 3. chocolates and marshmallows
_____ 4. pepper seeds and mongo seeds
_____ 5. corn and palay grains

V. ASSIGNMENT

Cut or draw at least three (3) pictures of mixtures that can be separated through picking.

Science 6

1st Quarter

(Lesson 13)

I. OBJECTIVE

Describe how to separate mixtures through sifting or sieving.

(S6MT – 1d – f – 2)

Values Focus: Dispose materials properly after using. **DCCM VIII – Local Food Products**

II. SUBJECT MATTER

A. Skills: Describing how to separate mixtures through sifting or sieving.
(observing, separating, describing, communicating)

B. Reference: K to 12 Grade 6 Curriculum Guide, Exploring the Realms of Science Integrated Science by Lucy Austria Magleo and Veronica Sigmundo Bernas and Google.
Link:
https://www.google.com.ph/imgres?imgurl=http%3A%2F%2Fgretchen9104.wpengine.com%2Fwp-content%2Fuploads%2F2014%2F03%2Fdo_I_sift_the_flour_before.jpg&imgrefurl=https%3A%2F%2Fwww.gretchensbakery.com%2Fdo-i-sift-the-flour-before-or-after-i-measure%2F&docid=R4TFeh4Dy85WMM&tbnid=QcuE9y-4jC5nqM%3A&vet=10ahUKEwjOt5i0gYvUAhXBsJQKHSxCAT0QMwg5KAAwAA..i&w=1536&h=1024&bih=494&biw=1024&q=sifting&ved=0ahUKEwjOt5i0gYvUAhXBsJQKHSxCAT0QMwg5KAAwAA&iact=mrc&uact=8

C. Materials: real objects, flash cards, activity cards, charts, pictures

III. INSTUCTIONAL PROCEDURES

A. Engagement

Read the following words in the flashcards correctly

- Sieving
- Sifting
- dry mixtures
- smaller particles
- larger particles

What was our lesson yesterday? (separating mixtures through picking)
Observe closely what I am going to do. What did I do with the flour?

Okay, our lesson for today is about separating of mixtures through sifting or sieving.

A. EXPLORATION:
- Materials to be prepared before the activity.
- Distribute the activity cards.

Activity 1

I. Title: Identify dry mixtures that can be separated through sifting and sieving.
II. Materials: real objects of dry mixtures such as flour and sugar, rice grains and hull, salt and pepper, strainer, bowl
III. Procedures:
    1. Sift the mixtures.
    2. Identify the mixtures separated.
IV. Questions:
    1. Based on your activity how can dry mixtures be separated.
    2. Describe how to separate dry mixtures.
    3. What device can be used in sifting or sieving dry mixtures.

- Say: You will be divided into two groups.
- Giving of Instructions.
- Choose a leader and a reporter.
- Activity proper.
- Reporting of the activity outputs
- Analysis and discussion of the activity results.
  Ask:
    a. What are the different mixtures?
    b. Where can these dry mixtures found?
    c. How can these mixtures be separated?
    d. What device is used to separate these mixtures?

B. Explanation:

Our lesson this morning deals with separating of dry mixtures through sifting or sieving. Dry mixtures can be separated through sifting or sieving. Sifting is defined as to pass through a sorting device like a screen to sort, separate the coarse from the fine particle, or to break up lumps, as o flour. Sieving is separating bigger dry mixtures such as sand and gravel. Sifting or sieving is another technique of separating mixtures.

sifting flour from lumps

sieving sand and gravel

Value Infusion:

C. Elaboration:

(Teacher gives more information about the lesson.)

BIT – Background Information for Teachers

To separate the components of a dry mixture sifting is done.

Sifting - is used to separate smaller solid particles from larger solid particles.

- For example, the mixture of different sized solid particles can be put into a container that has a screen material at the bottom with holes of certain size.
- When the mixture is shaken, the smaller particles go through the screen leaving the larger particles in the container.
- Cooks, for example, sift flour to get a smaller particle size for backing leaving larger particles of flour in the sifter above the screen.
- Sand and gravel companies, for example, separate rocks into different sized particles for road building and other construction projects using this method.

Let the pupils to formulate generalization by asking "What are dry mixtures? How can we separate dry mixtures? (by sifting or sieving) What do tool is used in sifting or sieving? (sifter)

D. Evaluation: Answer the following exercises.

A. Draw a  for a dry mixture and  if NOT.

_____ 1. lemonade
_____ 2. rice and sugar
_____ 3. vinegar and water
_____ 4. nails and pins
_____ 5. pepper and beans

B. Identify what is being describes in each number. Choose the appropriate term from the box. Write your answer on the space provided.

sifter
dry mixtures
sifting
vegetable salad

_____ 1. It's a good food for dieting.

_____ 2. Combinations of dry substance.

_____ 3. A device used in sifting.

_____ 4. It a technique used in separate smaller solid particles from larger solid particles.

III. ASSESSMENT

Describe how mixtures mentioned below are separated.

1. sugar and salt
2. flour and rice
3. sand and gravel
4. marbles and stones
5. powdered milk and sugar

IV. ASSIGNMENT

On a short bond paper, illustrate how sifting or sieving is done.

Science 6

1st Quarter

(Lesson 14)

I. OBJECTIVE:

Describe how to separate mixtures through winnowing.

(S6MT – 1d – f – 2)

Values Focus: Dispose or throw garbage properly. **DCCM VIII – Local Food Products**

II. SUBJECT MATTER:

D. Skills: Describing how to separate mixtures through winnowing.
(observing, separating, communicating, describing)

E. Reference : K to 12 Grade 6 Curriculum Guide, YouTube, Exploring the Realms of Science Integrated Science by Lucy Austria Magleo and Veronica Sigmundo Bernas

Link:

- https://www.google.com.ph/imgres?imgurl=http%3A%2F%2Fstatic.wixstatic.com%2Fmedia%2Fff136a_554ddc25767547a081d315af1febe3c2.jpg&imgrefurl=http%3A%2F%2Fwww.thechurchofyesand.org%2Fsingle-post%2F2016%2F01%2F03%2FWinnowing&docid=a66TTOD0pI-9mM&tbnid=U79fNstKN8jxCM%3A&vet=10ahUKEwjRs-q9govUAhWCipQKHdjCDDIQMwg4KAMwAw..i&w=800&h=628&bih=494&biw=1024&q=winnowing&ved=0ahUKEwjRs-q9govUAhWCipQKHdjCDDIQMwg4KAMwAw&iact=mrc&uact=8
- https://www.google.com.ph/imgres?imgurl=http%3A%2F%2Fl7.alamy.com%2Fzooms%2F4327cd5737b64199888b86a6389810ea%2Fwomen-winnowing-grain-weyto-village-bahar-dar-ethiopia-a2hgrc.jpg&imgrefurl=http%3A%2F%2Fwww.alamy.com%2Fstock-photo%2Fwinnowing-grain.html&docid=WAV3CawjosQg6M&tbnid=9hoPky7pHIrK6M%3A&vet=10ahUKEwjRs-q9govUAhWCipQKHdjCDDIQMwg2KAEwAQ..i&w=640&h=447&bih=494&biw=1024&q=winnowing&ved=0ahUKEwjRs-q9govUAhWCipQKHdjCDDIQMwg2KAEwAQ&iact=mrc&uact=8
- https://www.google.com.ph/imgres?imgurl=https%3A%2F%2Fupmaa-pennmuseum.netdna-

ssl.com%2Fcollections%2Fassets%2F47869_800.jpg&imgrefurl=https%3A%2F%2Fwww.penn.museum%2Fcollections%2Fobject%2F311376&docid=mcxLE08v3glC-M&tbnid=Ol1MlKHqH7vJmM%3A&vet=10ahUKEwi7xe3cgovUAhXFopQKHTPUAUEQMwg7KAYwBg..i&w=800&h=620&bih=494&biw=1024&q=winnower&ved=0ahUKEwi7xe3cgovUAhXFopQKHTPUAUEQMwg7KAYwBg&iact=mrc&uact=8

C. Materials: real objects, flash cards, activity cards, pictures

III. INSTUCTIONAL PROCEDURES

A. Engagement:

Read the following words correctly.

- winnow
- winnowing
- chaff
- hull
- mongo puds

What was our lesson yesterday? What do you mean by sifting or sieving? Who can give examples of dry mixtures that can be separated through sifting or sieving?
Here is a picture (picture of a person winnowing). Look at the picture. What is it all about? Have you seen people doing this at home or in your locality?
So, this morning we will be talking about separating mixtures through winnowing.

B. EXPLORATION:

- Preparation of materials in advance.
- Distribution of activity cards.

Activity 1

I. Title: Demonstrate the proper way of winnowing.

II. Materials:- palay , winnower

- picture of a person winnowing.

III. Procedures:

3. Observe the picture carefully.
4. Imitate the person in the drawing.
5. Actual demonstration of winnowing.

IV. Questions:

2. What did you do?
3. What happened to the palay and hull after winnowing?

Activity 2

I. Title: Describe how mixtures are separated through winnowing.

II. Materials:

- rice ad hull - palay and pebbles - mongo seed and mongo pods

III. Procedure:

3. Using a winnower try to separate the following mixtures.
    a. rice and hull
    b. palay and pebbles
    c. grains and chaff

IV. Question:

1. How did you separate the following mixtures? (rice and hull, palay and pebbles, grains and chaff)

- Grouping: The teacher divides the class into two.
- Giving of Instructions:
    6. Each group will choose a leader and a reporter.
    7. Each group will be given an activity card.
    8. The activity card serves as your guide on the activity that you are going to perform.

9. All the members in the group must work as a team.
10. After the activity write the results of your activity in the manila paper to be reported later.

- Activity Proper
- Reporting of group outputs.
- Analysis and discussion of the group outputs.

F. Explanation:

Winnowing is another way to separate mixtures. It is the process of freeing (grain) from the lighter particles of chaff, dirt, etc., especially by throwing it into the air and allowing the wind or a forced current of air to blow away impurities. Winnower is a tool used in this process of separating mixtures called winnowing.

winnower

WAYS OF WINNOWING (rice and hull/chaff)

Value Infusion:

G. Elaboration:

BIT – Background Information for Teachers
Winnowing is the method in which heavier components of mixture are separated from the lighter substances with the help of the wind. This method is used for separating grains from husk after the process of threshing.

Teacher gives additional information about the lesson.

Based on the activity that you had, what's the other technique/way of separating mixture? What is winnowing? How can mixtures be separated in winnowing? Describe how the technique winnowing is done in separating mixture.

H. Evaluation:

A. Supply the blanks with the appropriate letter(s) to make the word complete.

1. W __ N __ __ __ __ N G
2. R I C E G __ __ __ N S
3. __ I N __ __ W E R
4. H __ L L
5. __ H __ F F

B. In your own words, describe briefly how winnowing is done in separating mixtures.

VI. ASSESSMENT

Fill in the blanks to make the statement in describing winnowing as a way of separating mixtures correct.

Winnowing is one _____ the technique in _____ _____ by using a tool called _____.

VII. ASSIGNMENT

Practice separating mixture at home through winnowing.

Science 6

1st Quarter

(Lesson 15)

I. OBJECTIVE

Describe how to separate solid – liquid mixtures through filtering.

(S6MT – 1d – f – 2)

Values Focus: Be extra careful in using of apparatuses. **DCCM VIII – Local Food Products**

II. SUBJECT MATTER

A. Skills: Describing how to separate mixtures through winnowing.
(observing, separating, describing, communicating)

B. Reference : K to 12 Grade 6 Curriculum Guide, YouTube, Exploring the Realms of Science Integrated Science by Lucy Austria Magleo and Veronica Sigmundo Bernas, google

Link:

- https://www.google.com.ph/imgres?imgurl=http%3A%2F%2Fcamblab.info%2Fwp%2Fwp-content%2Fuploads%2F2015%2F02%2Fgravity-filtration.jpg&imgrefurl=http%3A%2F%2Fcamblab.info%2Fwp%2Findex.php%2Fwhat-is-the-difference-between-gravity-and-vacuum-filtration%2F&docid=-fTGjQSTp5edfM&tbnid=Au1LkTrJDsZ8cM%3A&vet=10ahUKEwjprqnRiovUAhVFjpQKHW35DsAQMwg8KAcwBw..i&w=513&h=514&bih=494&biw=1024&q=filtration&ved=0ahUKEwjprqnRiovUAhVFjpQKHW35DsAQMwg8KAcwBw&iact=mrc&uact=8
- https://www.google.com.ph/imgres?imgurl=https%3A%2F%2Fimages-na.ssl-images-amazon.com%2Fimages%2FI%2F31AGD41kKrL.jpg&imgrefurl=https%3A%2F%2Fwww.amazon.com%2FSEOH-GLASS-FUNNEL-Neutral-glass%2Fdp%2FB00191IYNO&docid=98NoX3k9mlx9_M&tbnid=5ESOOLz6r854SM%3A&vet=10ahUKEwj20p_Ci4vUAhWEuo8KHUzvCsgQMwg2KAEwAQ..i&w=500&h=500&bih=494&biw=1024&q=funnel&ved=0ahUKEwj20p_Ci4vUAhWEuo8KHUzvCsgQMwg2KAEwAQ&iact=mrc&uact=8
- https://www.google.com.ph/imgres?imgurl=http%3A%2F%2Fwww.unitedsci.com%2Fsites%2Fwww.unitedsci.com%2Ffiles%2Fstyles%2Fproduct_lightbox%2Fpublic%2Fproduct-images%2FFPR007-series-Filter-Paper.jpg&imgrefurl=http%3A%2F%2Fwww.unitedsci.com%2Fproduct-

catalog%2Ffilter-paper-circular-grade-1&docid=7mnjrWI0OjBUwM&tbnid=OltOkgJQ3dSqTM%3A&vet=10ahUKEwi10evKi4vUAhWCrI8KHUwuBAMQMwg3KAIwAg..i&w=700&h=411&bih=494&biw=1024&q=filter%20paper&ved=0ahUKEwi10evKi4vUAhWCrI8KHUwuBAMQMwg3KAIwAg&iact=mrc&uact=8

- https://www.google.com.ph/imgres?imgurl=https%3A%2F%2Fimages-na.ssl-images-amazon.com%2Fimages%2FI%2F21IQ3atZu1L._SY445_.jpg&imgrefurl=https%3A%2F%2Fwww.amazon.com%2FAmerican-Educational-7-G15-Support-Resistant%2Fdp%2FB00657P0MA&docid=k4EuOKyXkxyDMM&tbnid=pNadNyZ8cEhu1M%3A&vet=10ahUKEwjB-P7ii4vUAhXJpo8KHedeBWsQMwg9KAgwCA..i&w=231&h=445&bih=494&biw=1024&q=iron%20stand&ved=0ahUKEwjB-P7ii4vUAhXJpo8KHedeBWsQMwg9KAgwCA&iact=mrc&uact=8
- https://www.google.com.ph/imgres?imgurl=https%3A%2F%2Fupload.wikimedia.org%2Fwikipedia%2Fen%2Fd%2Fd5%2FIron_Ring_used_in_a_laboratory.jpg&imgrefurl=https%3A%2F%2Fen.wikipedia.org%2Fwiki%2FIron_ring_(laboratory)&docid=m3zQ71S6sxytNM&tbnid=D3IOOwj0r0yn8M%3A&vet=10ahUKEwjlhsjti4vUAhXLto8KHaNMACkQMwg4KAMwAw..i&w=499&h=246&bih=494&biw=1024&q=iron%20ring&ved=0ahUKEwjlhsjti4vUAhXLto8KHaNMACkQMwg4KAMwAw&iact=mrc&uact=8
- https://www.google.com.ph/imgres?imgurl=http%3A%2F%2Fwww.labdepotinc.com%2Fadmin%2Fuploads%2Fpyrex-beaker_1.jpg&imgrefurl=http%3A%2F%2Fwww.labdepotinc.com%2Fp-60638-pyrex-heavy-duty-griffin-beaker.php&docid=c-Q_SZtk6UA_iM&tbnid=x7hLulRQBM3dnM%3A&vet=10ahUKEwjs7P33i4vUAhVGNo8KHVLzBMkQMwg5KAQwBA..i&w=550&h=550&bih=494&biw=1024&q=beaker&ved=0ahUKEwjs7P33i4vUAhVGNo8KHVLzBMkQMwg5KAQwBA&iact=mrc&uact=8

C. Materials: real objects, flash cards, activity cards, pictures

III. INSTUCTIONAL PROCEDURES

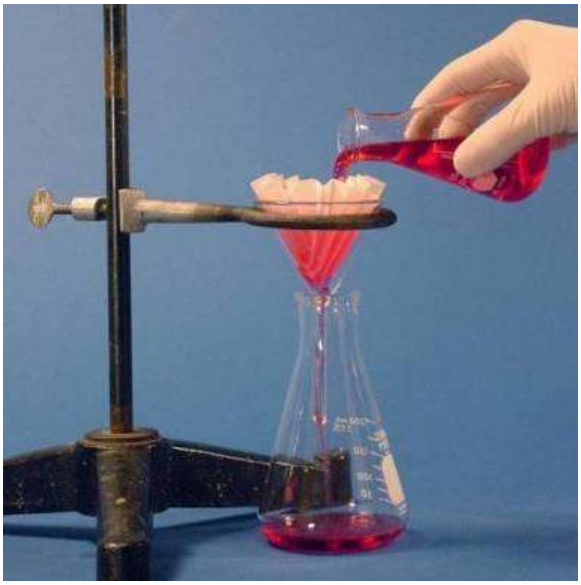
A. Engagement:

- Review:

  (short review on the separating of mixtures picking, sifting or sieving, and winnowing)

- Motivation:

Here is a picture, look at it closely.



What can you say about the picture?

So, this morning we are going to study about separating mixtures through filtration.

B. Exploration:

• The teacher gathers the material

Distribution of activity card

Activity 1

I. Title: Separating mixtures through filtering.
II. Material: muddy water, filter paper,
III. Procedures:
    1. Check the apparatus to be used.
    2. Filter the mixture using the filter paper.
IV. Questions:
    1. What happened to the muddy water after filtering?
    2. Are there remains of solid on the filter paper? What about the water where did it go?

Activity 2

I. Title: Separating mixture through filtering.

II. Materials:

- tea
- filter paper

III. Procedures:

1. Filter the tea using the apparatus.
2. Observe what happened to the mixture after filtering it.

IV. Questions:

1. What happened to the tea after filtration?
2. Are there remains of solid on the paper? What about the water, where did it go?

- Grouping: The teacher divides the class into two.
- Giving of Instructions:
  1. Each group will choose a leader and a reporter.
  2. Each group will be given an activity card.
  3. The activity card serves as your guide on the activity that you are going to perform.
  4. All the members in the group must work as a team.
  5. After the activity write the results of your activity in the manila paper to be reported later.
- Activity Proper
- Reporting of group outputs
- Analysis and abstraction of the activity results

C. Explanation:

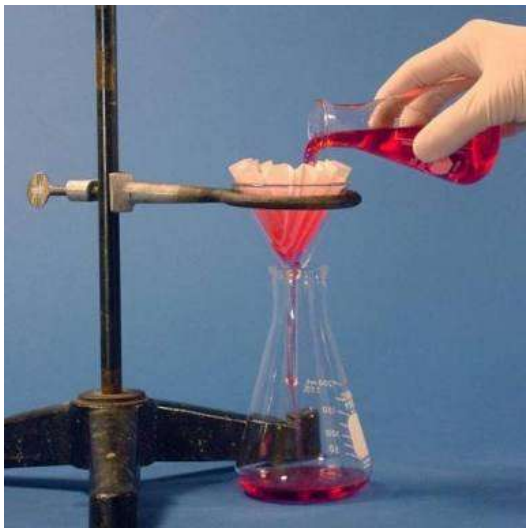
So, our lesson this morning deals about separating of mixtures through filtering or filtration. **Filtration** is the process of separating solid substances from a liquid through the use of a filter paper or any cloths that can be used as a filtering medium. These solid residues are trapped by the filter paper or cloth, which allow the liquid substances to pass through in the process.

The teacher gives the meaning of difficult words.

1. filter – an apparatus containing a filter medium
2. filter medium – example filter paper or cloth
3. residue – a usual small amount of something that remain after a process has been completed or a thing has been removed
4. filtrate – something that remain after a process has been completed or a thing has been removed

Apparatuses to be used in filtering:

1. funnel
2. cloth / filter paper
3. iron stand and iron ring
4. beaker / Erlenmeyer flask / any container



Value Infusion:

D. Elaboration:

Teacher will give additional information about filtration.

Generalization:

Therefore, what do you mean by filtration? How do you describe filtration as one of the technique in separating mixture?

E. Evaluation:

A. Identify the following materials used in filtering mixtures.

1 

2 

3 

4 

5 

IV. ASSESSMENT

In your own words decide how is filtration done in separating mixtures.

v. ASSIGNMENT

Make a simple illustration showing filtration of mixtures.

Science 6

1st Quarter

(Lesson 16)

I. OBJECTIVE

Describe the process of separating mixtures through funnel.

(S6MT – 1d – f – 2)

Values Focus: Proper handling of apparatuses in performing the activity.

DCCM VIII – Local Food Product

II. SUBJECT MATTER

A. Skills: Describing the process of separating mixtures through the use a funnel. (observing, describing, communicating)

B. Reference : K to 12 Grade 6 Curriculum Guide, YouTube, Exploring the Realms of Science Integrated Science by Lucy Austria Magleo and Veronica Sigmundo Bernas, Science and Health (third edition) by Vengco Religioso

- Link: https://www.google.com.ph/imgres?imgurl=https%3A%2F%2Fupload.wikimedia.org%2Fwikipedia%2Fcommons%2Fthumb%2Fa%2Fa4%2FSeparatory_funnel_with_oil_and_colored_water.jpg%2F170px-Separatory_funnel_with_oil_and_colored_water.jpg&imgrefurl=https%3A%2F%2Fen.wikipedia.org%2Fwiki%2FSeparatory_funnel&docid=2DDvSmSxD4tdQM&tbnid=iESdqZqRqYAn_M%3A&vet=10ahUKEwjkmM27jIvUAhUJGJQKHbKHC8QQMwg2KAEwAQ..i&w=170&h=329&bih=494&biw=1024&q=separating%20funnel&ved=0ahUKEwjkmM27jIvUAhUJGJQKHbKHC8QQMwg2KAEwAQ&iact=mrc&uact=8
- https://www.google.com.ph/imgres?imgurl=https%3A%2F%2Fstatic1.squarespace.com%2Fstatic%2F55bcf858e4b0c50a1d86e83a%2F55bd1141e4b04e3f1467e1f2%2F55d7842fe4b0e4d2e8108ce4%2F1440187439922%2F2000%2Bml.jpg%3Fformat%3D500w&imgrefurl=http%3A%2F%2Fwww.countrycannery.com%2Fshop%2Ferlenmeyer-flask&docid=lxWs7Y7B2gpuMM&tbnid=ZRg7h_1Wy9ZpHM%3A&vet=10ahUKEwiflbaVjIvUAhVFOJQKHQcwDg4QMwg8KAcwBw..i&w=403&h=525&bih=494&biw=1024&q=erlenmeyer%20flask&ved=0ahUKEwiflbaVjIvUAhVFOJQKHQcwDg4QMwg8KAcwBw&iact=mrc&uact=8

C. Materials: real objects, flash cards, activity cards, pictures, charts, separating funnel

III. INSTUCTIONAL PROCEDURES

A. Engagement:

- Drill:

Read the following words correctly.
- funnel
- separating funnel
- immiscible liquids
- density
- spout

- Review:

What was our lesson yesterday? (Filtration) What is filtration?

- Motivation:

Do you have any experience in separating two liquids that do not dissolve very well in each other? (no ma'am) A mixture of oil and water for example, can be separated by this technique.

So, this is our lesson this morning, the process of separating mixtures through funnel.

B. Exploration:

- The teacher prepares the set-up of the apparatuses for the experiment.
- Distribution of activity cards.

Activity 1 (For the whole class)

I. Title: Separating mixtures through funnel.
II. Material: mixtures of oil and water, oil and soy sauce
separating funnel
container
III. Procedures:
1. Using the separating funnel, separate the mixtures of oil and water, and oil and soy sauce.
2. Observe carefully on what happens to the mixture.
IV. Questions:
1. What did you do with the mixture?
2. What apparatuses did you use in separating the liquid mixture?
3. Did the liquids dissolve very well on each other?

- Giving of Instructions:
  (The teacher gives instructions before performing the experiment.)

- Activity Proper
- Reporting of group outputs
- Analysis and abstraction of the activity results
  Teacher: Let's go back to the result of your experiment, what are your observations? What did you notice to the mixtures? Did the liquids separate very well in each other? (Further analysis of the output by the teacher.

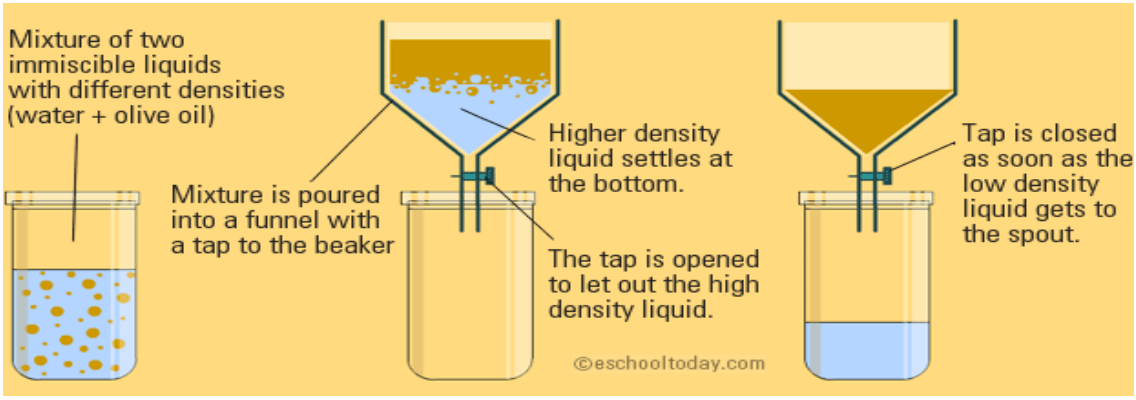
C. Explanation: (teaching part)

Unlocking of difficulties.

1. immiscible liquids– liquids that do not dissolve very well in each other such as oil and water
2. separating funnel – a separatory funnel, also known as separation funnel, separating funnel, or colloquially sep funnel, is a piece of laboratory glassware used in liquid-liquid extractions to separate (partition) the components of a mixture into two immiscible solvent phases of different densities.

The Separating Funnel

In this technique, two liquids that do not dissolve very well in each other (immiscible liquids) can be separated with the concept of unequal density. A mixture of oil and water, for example, can be separated by this technique.
It works like this:



The two liquids in the mixture have different densities, making the heavier liquid settle at the base of the container. In this setup, a funnel with a tap at the spout is placed inside a beaker. The mixture is poured into the funnel and allowed to settle. Soon, the water, which is

heavier, settles at the base, with the oil (lower density) on top of it. The tap is opened to allow the water to pass, and closed as soon as the oil reached the spout.

C. Elaboration:

Teacher will give additional information about separating mixtures through funnel.

- Generalization:
  What do we do with immiscible liquids in order to be separated from each other?
  How do you separate liquids through the use of the separating funnel?
- Value Integration

D. Evaluation:

Match column A with column B. Write the letter of the correct answer on the space provided.

A	B
_____ 1. separating funnel	a. example of immiscible liquids
_____ 2. immiscible liquids	b. one technique in separating mixtures
_____ 3. oil and water	c. liquids that do not dissolve very well in each other
_____ 4. 	d. erlenmeyer flask
_____ 5. 	e. separating funnel

IV. ASSESSMENT

Check the statements that describe the process of separating mixture through funnel.

_____ 1. Immiscible liquids can be separated through the use of the separating funnel.
_____ 2. Liquids that do not dissolve very well in each other can be separated through funnel.
_____ 3. liquids
_____ 4. Separating funnel is used in separating immiscible liquids.
_____ 5. mixture

v. ASSIGNMENT

Give at least three (3) examples of immiscible liquids that can be separated through funnel.

Science 6

1st Quarter (Lesson 17)

I. OBJECTIVE

Separates mixtures through magnet. **(S6MT-Id-f-2)**

Value Focus: Being extra careful

II. SUBJECT MATTER

A. Skill: Separating mixtures through magnet.
(Observing, describing, identifying, analyzing, explaining, communicating)

B. References: K to 12 Grade 6 Curriculum Guide,
https.//www.slideshare.net/mobile/flamerock/wats-of-separating-mixtures-26534628

C. Materials: Flash cards, activity cards, charts, manila papers, cartolina strips

III. ISTRUCTIONAL PROCEDURE

A. Engagement:

1. Drill/Review: Let's have a "Guessing Game".
Let the pupils identify the type of mixture stated in each strip of a cartolina.

a. I separate pebbles from rice, what I am? _____
b. I separate the grains from the stalks of rice after harvesting, what I am? _____
c. I used to separate a dry mixture which contains substances of different sizes by passing it through a sieve, what I am? _____
_____
d. I separate the lighten components from the heavier ones because of wind or air blow, what I am? _____
e. I separate solids from from fluids, what I am? _____

2. Motivation:

Ask: Are you familiar with magnet?

Have you played with it at home?

What have you done with the magnet?

What is your finding after doing such thing?

Did you enjoy doing so?

3. Presentation of the Lesson

Separating mixtures through MAGNET.

B. Exploration:

1. Group the class into two. Each group will perform differentiated activity.
2. Distribute the activity cards.
3. Recall the standards in doing the activity.

Activity 1.

I. Title: Name the materials that are metallic or non-metallic that can be found inside the classroom.

II. Materials: Things inside the classroom

III. Procedure:

1. Look around inside the room.
2. Identify the things that are made of metal (include your personal things).
3. List down these materials in the table below.

METALLIC MATERIALS	NON-METALLIC MATERIALS

IV. Questions:

1. Name the things that you have seen inside the classroom.
2. Classify them as to metallic or non-metallic.

Activity 2.

I. Title: Which material is attracted to magnet, an iron filings or a salt?

II. Materials: salt, iron filings, plate, magnet

III. Procedure:

1. Prepare the materials needed.
2. Combine the two substances, the salt and the iron filings.
3. Separate one substance to the other substance by using magnet to attract them.
4. What do you call the process of separating substance in a mixture using magnet?

IV. Questions:

1. Which substance is attracted to magnet?
2. What do you call this substance?
3. What is the importance of separating substance?

Activity 3.

I. Title: Which substance/s is attracted to magnet, staple wires, soil dust, or nails?

II. Materials: magnet, staple wires, soil dust, nails, magnet

III. Procedures:

1. Prepare the materials needed.
2. Put them together in a plate.
3. Use the magnet and hold it near the mixture.
4. Observe what happen.

IV. Questions:

1. What happen to the staple wires and nails as the magnet is near into it?
2. What happen to the soil dusts as the magnet is near into it?
3. What do you call those materials like staple wires and nails That they were attracted to magnet?
4. Can you give other substance/s that can be considered as magnetic?

C. Explanation

1. Allow the pupils to share their understanding on what is magnetism.
2. Let them give some more examples of mixtures that can be separated through magnet.
3. Let them identify those materials that can be attracted by magnet.

D. Elaboration

1. Have the pupils strengthen their understanding about the following concepts.

BACKGROUND INFORMATION FOR TEACHERS

Magnetism is an invisible force that can attract (or repel) certain materials, such as iron and steel. This force is called ***magnetic field*** and is created by magnets. **What is magnet?** Magnets are objects made of magnetic materials that produce a magnetic field. Magnets pull other objects made of magnetic materials towards them. They will either attracts or repel other magnets.

Magnetism is a process of separating mixture which magnetically susceptible material is attracted from a mixture using a magnetic force. It is a form of separating mixtures which involves using a magnet to attract another magnetic object away from the substance it is in. Some examples of separating magnetic substances from no magnetic substances are: separating iron nails from glass chippings and separating iron paper clips from saw dusts. Magnetic separators are used in factories. Materials are put on a conveyor belt that is spun by magnetic wheels. As the objects are moved upside down the non-magnetic objects fall off and the magnetic ones stay on. This separation technique can also be useful in mining as it is attracted to a magnet. Moreover magnetic separator is also used in milling. It removes metal species in wheat, in order to ensure safety at work. To remove metal content from wheat to protect other machines safety. And to remove metal powder mixed in flour during milling process and to ensure product purity, magnetic separation is needed before finished product packaging.

2. Generalization:

- How would you describe the process of separating mixtures through magnet?
- Is it useful to our daily life?

3. Valuing:

In everything we do, we should always be extra careful especially in the food that we are going to partake. Thus, it is very much important that in the processing period it should always be clean and safe for eating.

E. Evaluation

A. Choose which of the following are magnetic. Put (√) in the blank if magnetic and (X) if not.

_____1. Zipper
_____2. Thumbtacks
_____3. Nails
_____4. Stainless knife
_____5. pencil
_____6. Iron paper clip
_____7. Gold ring
_____8. paper
_____9. comb
_____10. Plastic glass

B. Describe the process of separating mixture through magnet using the given illustration below. (sugar with iron filings)

IV. Assessment

Andrea Rose wants to remove the staple wires on the rice that she will be cooking. Using her knowledge on the process of separating mixtures she is using magnet to repel the staple wire from the rice.

Questions:

1. Do you think Andrea Rose will be successful in her plan? _____
2. How would you describe the process of separating mixture through magnet? _____
3. An object that has the ability to attract the other substance is called _____.
4. In the given situation, what is considered as the magnetic object? _____
5. Since rice does not repel with the magnet, what kind of substance is it? _____

V. Assignment

What is the implication of separating mixtures through magnet?

Science 6

1st Quarter (Lesson 18)

I. Objective:

Describe the process of separating mixtures through evaporation. (S6MT-Id-f-2)

II. SUBJECT MATTER:

A. Skill: Separating mixtures through evaporation.
(Observing, describing, identifying, analyzing, explaining, communicating)

B. References: -K to 12 Grade 6 Curriculum Guide,
- https.//www.slideshare.net/mobile/flamerock/wats-of-separating-mixtures-26534628
- study.com/academy/lesson/what-is-evaporation-definition-examples-quiz.html
-www.eschooltoday.com/science/elements-mixtures-compounds/what-is-evaporation-method-of-separation.html

C. Materials: Flash cards, activity cards, charts, manila papers, cartolina strips, Pan, water, table salt, stove or any cooking device, clean jar

III. ISTRUCTIONAL PROCEDURE:

A. Engagement:

1. Review of previous lesson.
2. Motivation:
   At the end of everyday, we wipe off the blackboard with wet sponge to make it clean and ready to use for the next day. After a few minutes, the water disappeared. Where do you think the water goes? Why?

   Information getting:
   Take the ideas of the pupils as to what is happening to water. Any other ideas? Introduce the term ***evaporation*** if it doesn't come up.
3. Presentation of the lesson:

   Evaporation is the process of which water changes from a liquid to gas or vapor.

2. To recall the previous lesson, ask: What was our lesson yesterday? How would you describe the process of separating mixtures through magnet?

Give at least 1 example of a mixture that can be separated by magnet.

B. Exploration:

a. Ask the pupils to prepare the materials for the experiment.
b. Group the class into three.
c. Distribute the activity cards to each group and let them perform the said activity.
d. Remind the class of the do's and don'ts in conducting the experiment.

Activity 1

(For all groups)

I. Problem: How to make salt crystals?

II. Materials: Pan, water, table salt, stove or any cooking device, clean jar

III. Procedures:

1. Heat a pan of water.

2. Put a salt in it and stir in as much salt as you can.

3. Take the pan off the heat. Pour in about ¼ - ½ cup (60-120ml) Of your salt and stir until the water is clear. If you don't see any salt grains in the water, stir in another spoonful. Keep stirring more salt until you see salt grains that won't dissolve when you stir.

4. Carefully pour the water into a clean jar.

5. Get a pencil or a stick. Make sure that they should be long enough to lie across the top of a jar. Tie a string around a pencil/stick. Cut the string to the correct size to dangle in the water.

6. Move the jar to safe place. Keep the jar under the heat of the sun and/or keep a fan blowing near it on the lowest setting. Wait for crystals to form.

IV. Questions:

1. What are the two substances make the mixture indicated in the experiment?
2. How are salt crystals formed?
3. What process of separating mixture is being described in the experiment?
4. Is the process useful to us?
5. What are other mixtures that can be separated through evaporation?

C. Explanation:

1. Ask the pupils to report their findings in their experiment.
2. Let them answer the questions stated above. Have them chose their leader to report their answers.

D. Elaboration:

1. Lead the pupils to formulate generalization by asking:

"How would you describe the process of separating mixture through evaporation using the activity on making salt"?

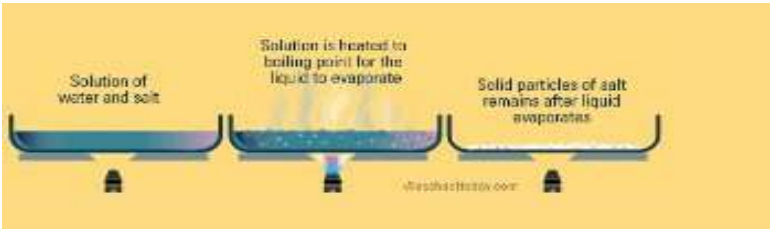
2. For more information, guide the pupils to strengthen their understanding about the following concepts:

Background Information for Teachers

Evaporation occurs everyday, both in natural and manmade environments. Evaporation occurs most often in the oceans around the world .One by product of evaporation can be used to seas from the season your food. Salt is extracted from the seawater by allowing the water to evaporate over long periods of time. The salt that gives salt water its saline taste is left behind. Salt ponds evaporate slowly at normal temperatures. The salt left over from the evaporated ponds is then used to make table salt.

Evaporation is the process by which water and other liquids changes from a liquid state to a vapour or gas state. Evaporation is great for separating a mixture (solution) of a soluble solid and a solvent. The process involves heating the solution until the solvent evaporates (turns into gas) leaving behind the solid residue.

Here is an example involving a mixture of salt and water.



To get the salt back from the salt water, the solution is heated to boiling point. As it boils, the water escapes as vapour (gas). After sometime, all the water evaporates, leaving a layer of salt at the bottom of the beaker.

2. Generalization:

Ask: How is evaporation help in separating mixtures?

E. Evaluation:

I. Choose the letter of the correct answer.

1. Which is the best way to get salt from a salty water?

a. evaporation b. filtration c. distillation d.magnetism

2. Where does the liquid go during evaporation process?

a. below the ground b. up c inside the salt d. none

II. Explain briefly the importance of evaporation as the process of separating mixtures. (3pts.)

IV. Assessment

Direction:

Answer the following questions.

1. What do you call the process by which water changes from a liquid to gas or vapor?_____
2. Making salt is an example of separating mixture through _____.
3-4. What are the two solutions in the mixture of making salt? _____& _____
5. How would you describe the process of separating mixture through evaporation? _____

V. Assignment

What is the implication of the process of separating mixtures through evaporation in our everyday life?

Science 6

1st Quarter (Lesson 19)

I. Objective

Describe the process of separating mixtures through sedimentation.

(S6MT-Id-f-2)

Value: Save time and Effort

II. Subject Matter

A. Skill: Separating mixtures through Sedimentation.
(Observing, describing, identifying, analyzing, explaining, communicating)

B. References: K to 12 Grade 6 Curriculum Guide,
-https.//www.slideshare.net/mobile/flamerock/wats-of-separating-mixtures-26534628
-https://crosswordhobbyist.com/95747
-https://separating-mixtures.wikispaces.com/sedimentation

C. Materials: Flash cards, activity cards, charts, manila papers, cartolina strips, chalk, glass of water

III. Instructional Procedure:

A. Engagement:

1. Review previous lesson.

2. Call on some pupils to solve the puzzle.

Across

1 When substance is slightly larger then the other this will be used

3 I can pour of the liquid to get the my solid

5 When you cant see what was mixed together

6 I will use this when one substance is heavier than another

8 Both substances can be seen in your mixture

10 When one of the substances is magnetic i will use this

Down

2 Used when your mixture has disolved

4 A combination of two or more substances

7 I will not mix

9 Used to separate a solid/solid mixture where one will float

3. Present new lesson:

Say: Our lesson for today is all about,

"Process of separating mixture though Sedimentation".

Tell the class to do the activity.

1. Group the class into two groups.
2. Recall standards and safety when doing the activity.
3. Distribute activity cards.
4. Have them choose their leader, recorder and reporter.
5. Supervise every group.

B. Exploration:

Tell the class to do the activity.

Activity 1

I. Title: How does sedimentation occur in mixing powdered chalk in a glass of water?

II. Materials: chalk, glass of water

III. Procedure:

1. Prepare the materials needed.
2. Get some pieces of chalk then make it to a powdery form.
3. Put the powdered chalk into the glass of water then stir it.
4. When you have stirred it for about 10 seconds leave the glass and don't touch it for about 15 minutes.
5. Observe what happen.

IV. Questions:

1. Identify the color of the glass of water while you stir it.
2. What happen to the mixture after leaving it in 15 minutes?
3. Can you separate the water to the dissolved chalk powder?
4. What do you think is the process of separating that kind of mixture?

Note: If the pupils cannot guess, be ready of the concept of sedimentation.
The process is called **sedimentation.**

Activity 2

1. Ask: Who has a washing machine at home?

2. How can it help to our everyday living?

3. Show a video clip to the class on a running washing machine.

4. Give the do's and don'ts while watching a video.

Video clip of a running washing machine

5. Questions:

a. What can a washing machine do?
b. Cite the positive and the negative effect of using washing machine in laundering our clothes

Positive	Negative

c. What happen to the water if we turn on drained button? What about the clothes?
d. Can you mention the mixture that is inside the washing machine?
e. What is the process of separating the said mixture being applied in a running washing machine?

V. Valuing:

We do lots of things at home. It could be easier to do if we gonna use technology to help us save our time and effort just like using washing machine in laundering than by just using our bare hands.

C. Explanation:

1. Let the pupils publish their answers to the board.
2. The reporting should be done by group.
3. Let them give some input on what is sedimentation as the process of separating mixture .
4. Let them recall the two mixtures used in the activity.

D. Elaboration

Background Information For teachers

Sedimentation is a form of separating substances. This process involves letting an insoluble substance (a substance that will not dissolve in a solvent) settle at the bottle of a solvent. An example of this is if you mix chalk and water, the chalk will settle at the bottom of the glass after being mixed in because it does not dissolve in water.

There are two processes of sedimentation. They are **decanting and centrifuging.**
DECANTING- this process is somewhat the easiest of the two. It involves letting the mixture settle for a while. The heavier, insoluble substances will settle at the bottom of the liquid. A clear liquid will be left at the top. Once it is taken out You have decanted the liquid. The impure substances are left behind.

CENTRIFUGING- is a way of speeding up the process of sedimentation. A centrifuge, found in a laboratory, consists of many test tubes spinning at high speeds which inevitably forces the insoluble substance to the bottom quicker. A washing machine is a good example of this process. It spins quickly and water flies out through the holes in the sides and the clothes stay in the washing machine.

5. Guide the pupils to form generalization by answering the following question:

a. How do you separate mixtures through sedimentation?

b. Is it applicable to our daily life? How?

5. Evaluation:

Answer the following:

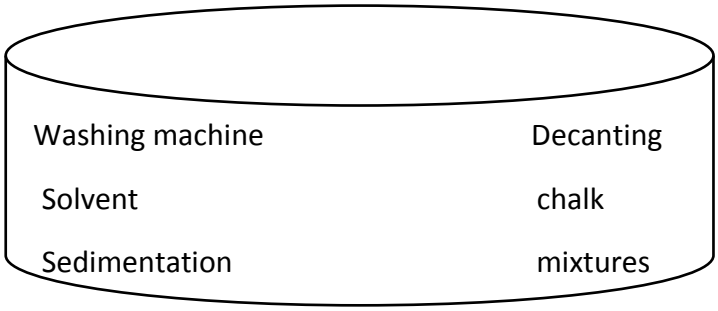
1. What is sedimentation?
2. What are the two processes of sedimentation?
3. What benefit can we get through sedimentation process?

4-5. What are the 2 mixtures stated in the activity above?

IV. Assessment

Choose the answer in the word bank below.

1. It is a separating technique that separates insoluble substances to a solvent? _____
2. A combination of two or more substances is called _____.
3. A machine that helps us save our time and effort during laundering. _____
4. It is a kind of sedimentation process which involves letting the heavier insoluble substance to settle at the bottom of the liquid. _____
5. A substance that will not dissolve in a solvent is called _____.



V. Assignment

Give at least one importance of sedimentation as a process of separating mixtures.

Science 6

1st Quarter (Lesson 20)

I. Objective

Explain the importance of separating mixtures to our everyday life.

(S6MT-Id-f-2)

Give importance to the things around us

II. Subject Matter:

A. Skill: Importance of separating mixtures to our everyday life.

(Observing, describing, identifying, analyzing, explaining, communicating)

B. References: K to 12 Grade 6 Curriculum Guide,

-https.//www.slideshare.net/mobile/flamerock/wats-of-separating-mixtures-26534628

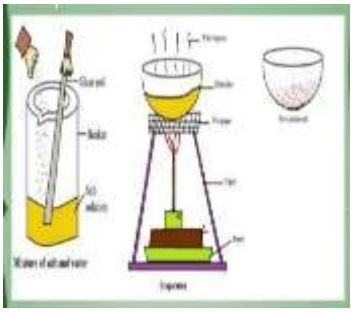
-https://www.quora.com/why-is-separating-mixtures-important

C. Materials: Flash cards, activity cards, charts, manila papers, cartolina strips

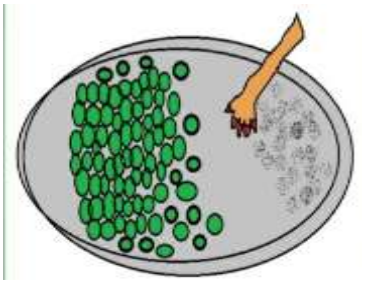
III. Instructional Procedures

A. Engagement

1. Guide the pupils to recall the different process of separating mixtures through showing some flashcards to them. Let them identify each.





2. Give the class an overview on the new lesson by presenting it in a cartolina strip.

Topic: Importance of separating mixtures to our everyday life.

B. Exploration:

1. Group the class into five.
2. Let each group choose one method of separating mixtures.
3. Let them choose their leader that will serve as their reporter and a secretary that will not down their collaborative ideas.
4. Discuss to them first the standards for a group activity.
5. As they have chosen their method, let them brainstorm on its importance to our everyday life.

Activity 1

I. Title: Separate mixture using the appropriate method.

II. Materials: pictures, pen, bond paper

III. Procedure:

1. Choose one picture.
2. Identify the mixture shown in the picture.
3. Discuss to the group the appropriate method to separate it.

IV. Questions:

1. Name the mixture shown in the picture.
2. What are the substances used in the mixture as shown in the picture?
3. Identify the appropriate method to separate the given mixture.
4. Give the importance of separating mixture.

C. Explanation:

1. Let each group publish their ideas on a sheet of manila paper.
2. Start the reporting of their outputs.
3. Let the other group interact after the reporting. They can ask questions or give some comment if necessary.

4. Analysis and discussion:

For better understanding, make some inputs regarding their answers by analysing their outputs. Furthermore, enumerate some more importance of separating mixtures.

- Value Infusion: God has given us all the things that will be used in our daily living. It is just right to value them most and be thankful of them.

D. Elaboration:

Background Information For teachers

Many of the substances we use everyday were actually once part of a mixture. Somewhere separated that substance from the mixture so we could use it. It turns out that many compounds and elements aren't found in nature in their pure form, but are found as parts of mixtures. Separating substances from mixtures is an important part of chemistry and modern industry.

All the back to the ancient history, industrious humans have separated mixtures in order to obtain the specific substances that they need. One example of this is extracting metal from ore in order to make tools and weapons.

One common method of separation is filtration. Filters are used everywhere. We use them in our houses to filter dust and mites out of the air we breathe. We use them to filter impurities from our water. We even have filters in our bodies such as our kidneys which act as filters to get bad stuff out of our blood. The filtration process is generally used to separate a suspension mixture where small solid particles are suspended in liquid or air. In the case of filtering water, the water is forced through a paper that is made up of a very fine mesh of fibers. The water has been run through the filter is called filtrate. The particles that are removed from the water by the filter are called the residue.

Another common separation process is called distillation. Through this process the salt water will become pure and is safe for drinking. Applicable for those who are working in maritime.

In some cases, through centrifuging the separation of blood into plasma and red cells, separating cream from milk, and separating uranium isotopes for nuclear power plants.

E. Evaluation:

Ask: Select one method of separating mixtures and give at least one importance of it. (5pts)

IV. Assessment:

Cite at least one importance of the methods of separating mixtures to our daily lives.

Rubrics:

5-if the explanation is accurate and grammatically correct.
4-the idea/thought is right but has faulty grammar.
3-it is exactly explained but through phrase only.
2i-it has thought but expressed only in 2 words.
1-is explained using 1 word only.
0-has no explanation at all.

V. Assignment:

Cut out some pictures showing the methods of separating mixtures. Paste it to a short bond paper.

Science 6

1st Quarter (Lesson 21)

Duration: 3 days

I. Objective

Perform then appropriate technique to separate a given mixture.

(S6MT-Id-f-2)

Make decision wisely

II. Subject Matter:

A. Skill: Appropriate techniques to separate mixture.

(Observing, describing, identifying, analyzing, explaining, communicating)

B. References: K to 12 Grade 6 Curriculum Guide,

-https.//www.slideshare.net/mobile/flamerock/ways-of-separating-mixtures-26534628

III. Instructional Procedure:

A. Engagement:

1. Motivation:

Ask: a. Who among you here will be celebrating birthday this month?

b. What do you want to prepare on your birthday?

c. Have you observed you mother preparing “biko” for an occasion?

d. Can you mention the ingredients in doing so?

e. Give a stress on extracting coconut milk.

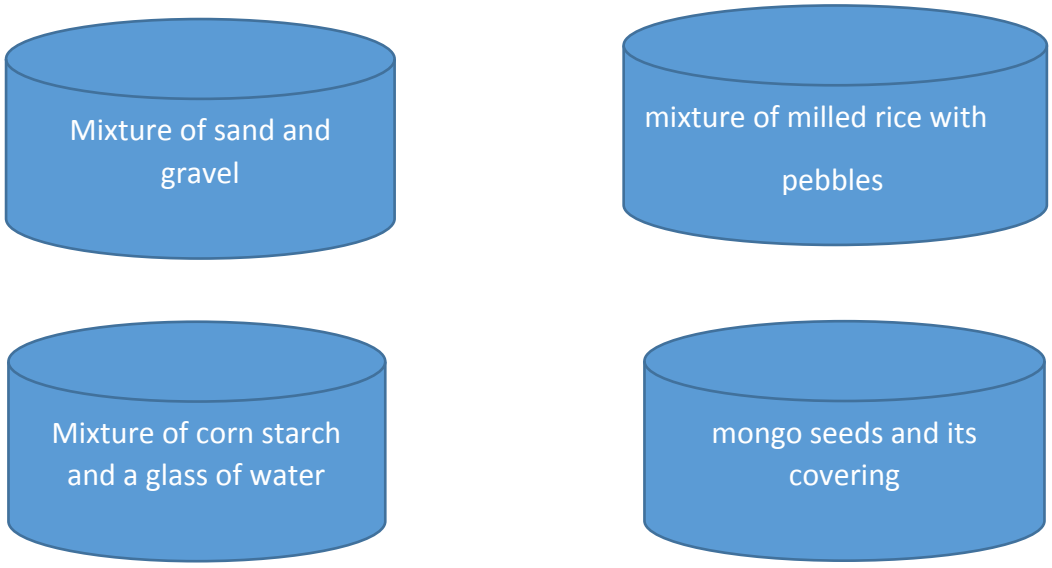
Say: In separating the coconut milk from its meat we should use an appropriate separating technique to do it.

2. Present the new lesson to the pupils. Write the topic on a strip of a cartolina.

Appropriate techniques to separate mixture

B. Exploration:

1. Group the pupils into 4 groups.
2. Distribute cards that indicate a certain mixture.



3. Let each group answer the following questions:

a. Name the substances present in the mixture.

b. What appropriate method/ technique do you use in order to separate the given mixture?

c. Is the process useful to our daily life? In what way?

3

C. Expanation:

1. Let each group publish their answers on the board using manila paper.
2. Have them choose their reporter to report the output.
3. Guide the pupils by analysing their outputs and give additional inputs to them for clarification.

Say:

a. For group 1, the appropriate method to separate the given mixture is through **sifting/sieving**. SIEVING is used to separate a dry mixture which contains substances of different sizes by passing it through a sieve.

b. For group 2, the appropriate technique to separate the given mixture is through **sedimentation**.

SEDIMENTATION is the process by which the insoluble, heavy solid particles settle down their own in a solution. In order to separate the two, the liquid has to be gently poured into another. There are two processes of sedimentation. They are decanting and centrifuging. The given mixture is under decanting method.

Decanting is letting the mixture settle for a while. The heavier insoluble substances will settle at the bottom of the liquid. A clear liquid will be left at the top. While centrifuging is a way of speeding up the process of sedimentation. Example for this is washing machine.

c. For group 3, the method appropriate to it is through picking.

PICKING is only useful when the particles are large enough to be seen clearly.

d. For the last group, in order to remove the mongo seeds from its cover it is best to use winnowing technique.

D. Elaboration:

For a thorough understanding of the topic, the following concepts will help you:

Background Information for Teachers

There are different ways of separating mixtures.

They are as follows:

-Hand picking

-Threshing

- Winnowing

- Sieving

- Magnetism

- Sublimation

- Evaporation

- Crystalization

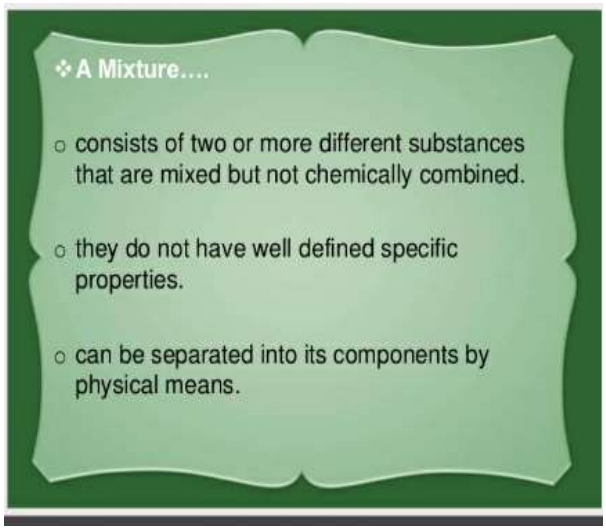
- Sedimentation

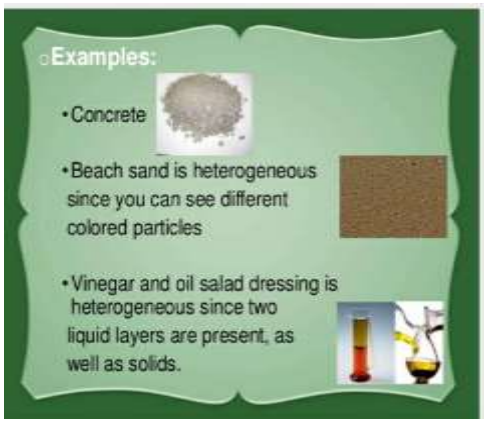
- Loading

- Filtration

- Distillation

- Paper Chromatography

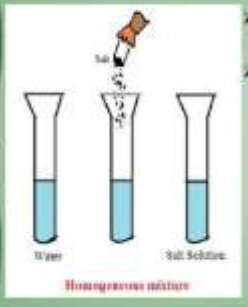




❖2 Types of Mixtures

➢The prefixes: "hetero" indicate difference.

➢A heterogeneous mixture is that which does not have the same composition throughout, that is, its components are not uniformly distributed and can be distinguished from each other.



➢The prefixes: "homo" indicate sameness.

➢A homogeneous mixture is that which has the same composition throughout, that is, its components are uniformly distributed and cannot be distinguished from each other.

❖Examples:

- Corn oil
- White vinegar
- A sugar solution
- A salt solution

➢ The components of a solid-solid mixture can be separated by hand picking.

➢ This is only useful when the particles are large enough to be seen clearly.

For example
- separating pebbles from rice or dal,
- separating grass from mint leaves, and
- separating parts of a salad.

❖Hand Picking

Hand Picking

➢ Threshing is the method that generally used by the farmers to separate the grains from the stalks after harvesting.

➢ The dried stalks are beaten or threshed to separate the grains.

➢ However, in large farms threshing is done by using threshing machines.

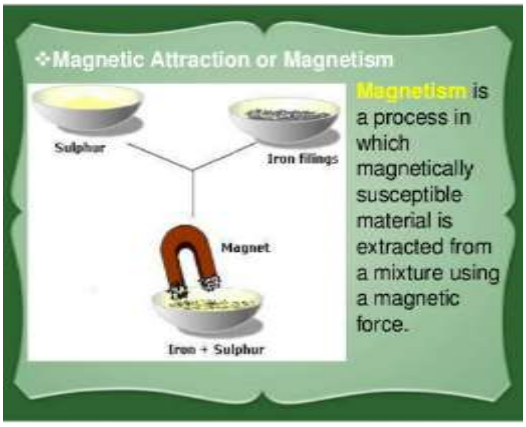
➢ In Winnowing the mixture is allowed to fall from a height.

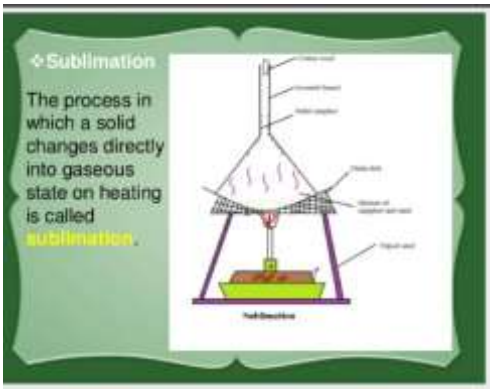
➢ The lighten components get separated from the heavier ones because of wind or air blow.

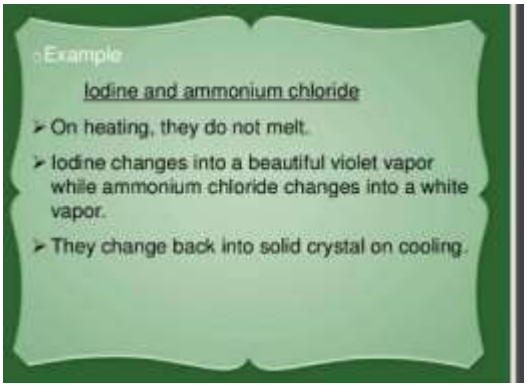
➢ This method is used to separate lighter husk from heavier Grains like wheat.

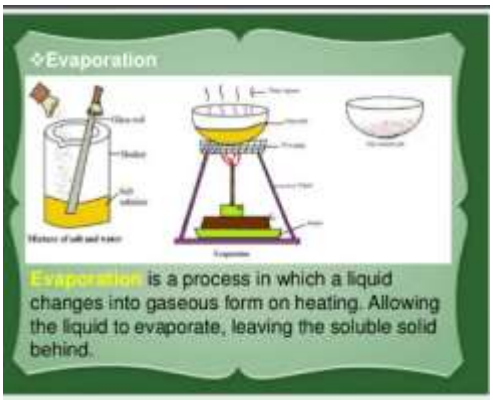
❖Sifting or Sieving

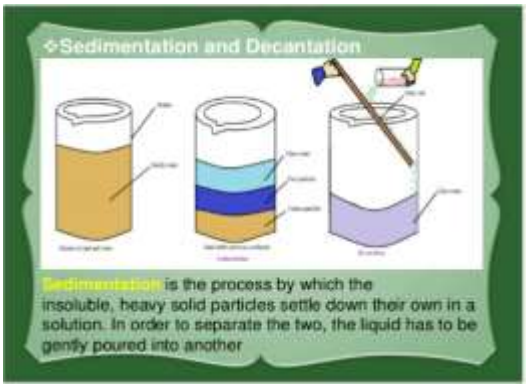
Sieving is used to separate a dry mixture which contains substances of different sizes by passing it through a sieve.

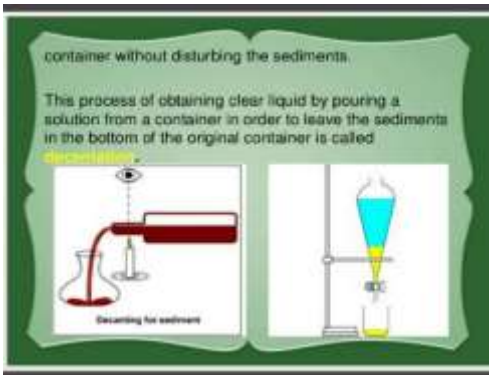


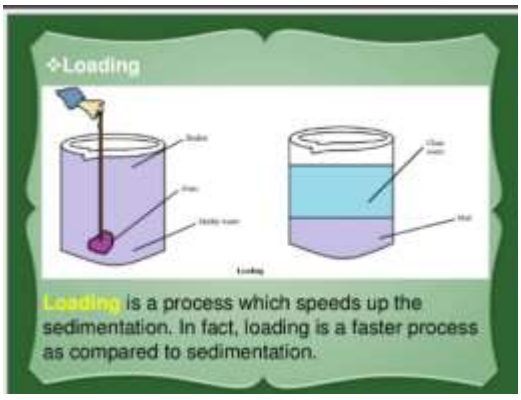


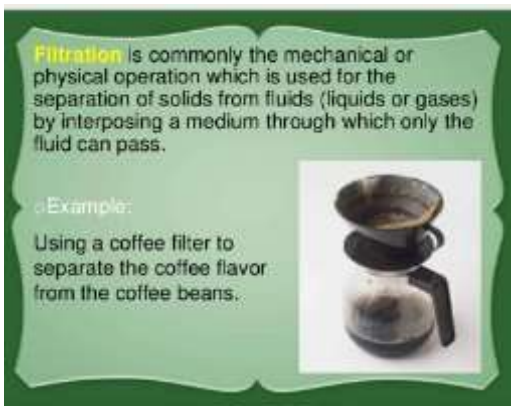


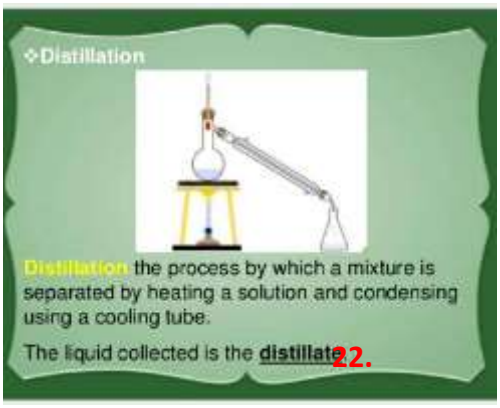


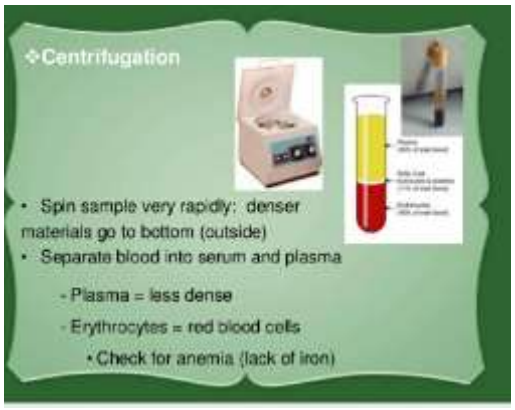












Ask: (Generalization)

- What are the different methods / techniques in separating mixtures?
- Can you cite one example of mixture and identify the appropriate method to separate the mixture.

E. Evaluation:

Perform the appropriate technique in separating the given mixture below:

(Show an actual mixture of thumbtacks or any magnetic material combined with a powdered soap)

Valuing:

As we do our daily tasks we need to make decisions. But before doing so, it is best to think it wisely.

IV. Assessment:

Given the mixture below, perform the appropriate method/technique in order to separate the mixture.

(Show an actual mixture of mixed vegetable)

Ask: How will you separate each kind?

Rubrics:

5-if 100% separated the mixture properly using picking

4-If ¾ of the mixture is separated properly using picking

3-If ½ of the mixture is separated properly using picking

2-If ¼ of the mixture is separated properly using picking

1-If have not separated the mixture at all using picking

V. Assignment:

Enumerate the different methods/techniques of separating mixtures.

Science 6

1st Quarter

Lesson 22

I. OBJECTIVE/S

Enumerate and describe the benefits of separating mixture through picking and sieving/sifting. **(S6MT-Ig-j-3)**

II. **SUBJECT MATTER**

A. Skill : Enumerating and describing the benefits of separating mixture through picking and sieving/sifting.

B. Reference : K to 12 Grade 6 Curriculum Guide,
http://byjus.com/chemistry/handpicking, *www.anderson5.net*

C. Materials: monggo seeds, corn seeds, okra seeds, small rocks/pebbles, bowl, saucers, sand, gravel and strainer

III. Instructional Procedure

1. Engagement

A. Motivation

Let the pupils go outside the classroom. Let them collect some materials found outside (specially sand and gravel). Inside the classroom, set aside the materials collected.

Teacher presents the lesson for the day in a small strip to be pasted on the board:

Enumerate and describe the benefits of separating mixture through picking and sieving/sifting

2. Exploration (Material should be prepared ahead of the actual day before it will be used)

A. Divide the class into two groups.

B. Let the norms to follow during group activity.

C. Have each group put out the materials pre assigned to them.

D. Distribute activity cards.

E. Group Activity

F. Teacher supervises the activity per group

Activity 1

Materials:

monggo seeds
corn seeds
okra seeds
small rocks/peebles

Procedure:

Mix all the materials. Afterwards, separate the ingredients through picking and put them on a saucer.

Answer the question:

a. What did you do with the materials at first?
b. After mixing all the materials, what did you do next?
c. What method did you use in separating the mixture in your activity?
d. What do you feel upon separating the ingredients from your mixture?
e. What are the benefits in separating the ingredients in your activity through picking?

Activity 2

SAND AND GRAVEL

Materials:

Sand
Gravel
Strainer

Procedure:

Mix sand and gravel. Use a strainer to separate the mixture.

a. What are the materials being combined?
b. What did you do after combining the sand and gravel?
c. What method did you use in separating the sand and gravel?
d. What do you feel upon separating the materials from your mixture?
e. What are the benefits of separating the sand and gravel through sifting?

3. Explanation:

Have each group report their output of their activity.
Analysis, Discussion and Abstraction of the group output by the teacher.

4. Elaboration

Thorough discussion of the concepts by the teacher.

Background Information for Teachers

HANDPICKING: In our daily lives we come across so many situations in which we have to separate some substances from a mixture in order to get a suitable substance for use. Some of the substances are easily separable just by taking out the impurities with hand. This method of separation is known as handpicking. But some of them cannot be removed by hand and we need some other methods of separation for such mixtures.

For example: In our house, our mother separates stones and insects from rice simply by hand. But in case of tea and tea leaves, the method of handpicking is not sufficient for the separation and a filter is required. Thus we can say that there are different methods to separate different mixtures depending upon the constituents of the mixture and the final product required. Some of these methods are carried out in dry conditions while some of them are carried in wet conditions.

The method in which substances in a mixture can be separated by just picking them out with the help of hand from the mixture is known as handpicking method. It is one of the various methods which are carried out in dry conditions. The substances which are separated with the help of this method can be useful product or the impurities which need to be removed or both the substances which are separated can be useful products. This method is useful only when the substance which needs to be separated is in small quantity.

The substances in the handpicking method can be separated on the basis of size, color, shape, weight etc. Handpicking examples are: If in a bowl, there are 7 round shaped boxes and 3 rectangular boxes then the boxes can be easily separated on the basis of shape.

Most methods have their advantages and limitations. The advantages of handpicking and its disadvantages have been mentioned below:

Advantages:

- This method doesn't need any special machinery for the separation of substances.
- It takes less time when used for a small quantity.

Disadvantages:

- It is not feasible for large quantity of substances.
- It is only possible when substances are visibly different in size.

Sifting

• Sifting is used to separate smaller solid particles from larger solid particles.

• For example, the mixture of different sized solid particles can be put into a container that has a screen material at the bottom with holes of a certain size.

• When the mixture is shaken, the smaller particles go through the screen leaving the larger

Particles in the container.

• Cooks, for example, sift flour to get a small particle size for baking leaving larger particles of flour in the sifter above the screen.

• Sand and gravel companies, for example, separate rocks into different sized particles for road building and other construction projects using this method.

(Teacher assist the pupils in giving the generalization)

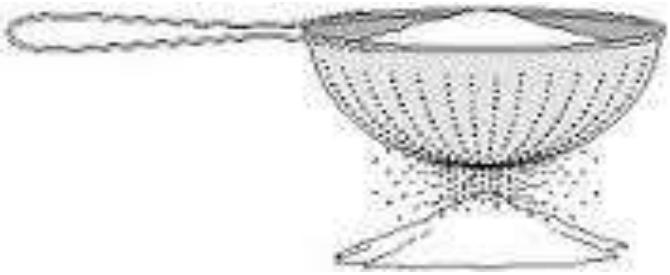
Generalization

What are the two methods used in separating the mixtures?

What are the benefits of separating mixtures through picking and sifting?

5. Evaluation

Teacher will show pictures. Pupils will identify the method of separating mixtures being used in the pictures. Enumerate its benefits.



IV. Assessment

Enumerate the benefits of separating mixtures through picking and sifting.

V. Assignment

In your notebook, enumerate and describe the benefits of separating mixtures through sifting and picking

Science 6

1st Quarter

Lesson 23

I. Objective/s

Enumerate and describe the benefits of separating mixture through winnowing and filtering **(S6MT-Ig-j-3)**

II. Subject Matter

A. Skills: Enumerating and describing the benefits of separating mixture through winnowing and filtering

B. Reference: K to 12 Grade 6 Curriculum Guide, http://byjus.com/chemistry/winnowing/, http://www.ce.memphis.edu/1101/notes/filtration/filtration-1.html

C. Materials: winnower, rice, home-made vinegar, funnel or thin cloth

III. Instructional Procedure

A. Engagement

1. Motivation

Show pictures of winnowing and filtering. Ask the pupils to describe what is in the picture

The teacher presents the lesson for the day to be written on strip of paper. To be pasted on the blackboard.

B. Exploration (The materials should be prepared ahead of time).The teacher will demonstrate the activity first.

A. Divide the class into four groups.

B. Let the norms to follow during group activity.

C. Have each group put out the materials pre assigned to them.

D. Distribute activity cards.

E. Group Activity

F. Teacher supervises the activity per group

Activity 1

Winnowing

Materials:

Winnower

Rice

Procedure:

Put the rice on the winnower. Do the winnowing so that the rice and the chaff will be separated. Do it several times until the rice is clear already with chaff.

Answer the questions:

1. What happen to the chaff and rice as you do the winnowing?
2. What method is being presented in the activity?
3. What do you feel upon doing the activity?
4. What do you think is the benefit of winnowing in separating mixture?

Activity 2

Filtration

Materials:

Home-made vinegar

funnel or thin cloth

Procedure:

Pour the vinegar into the funnel or thin cloth.

Answer the questions:

1. What happen to the vinegar as you pour it into the funnel or thin cloth?
2. What method is being presented in the activity?
3. What do you feel upon doing the activity?
4. What do you think is the benefit of filtration in separating mixtures?

3. Explanation:

Presentation of group output.

Analysis, Discussion and Abstraction of group output.

Teacher link/connect concept of the activity to the new lesson.

4. Elaboration

Thorough discussion by the teacher.

Background Information for Teachers

Introduction to Winnowing

In everyday life, we use a number of mixtures and one needs to separate useful components from the mixture. Thus, the separation of substances is performed by various methods like hand-picking, threshing, sieving and winnowing, etc. Separation can include separation of stones from rice, separating bran from flour, etc. Separation is done to remove impurities and to get a useful product.

In this article, we will discuss how particles are separated using the method of winnowing. Winnowing is the method in which heavier components of the mixture are separated from the lighter substances with the help of wind. This method is used for separating grains from husk after the process of threshing.

Threshing is the process of separating grain from chaff. In this process, a mixture of wheat and husk is dropped from a height. After that, husk is carried by the wind and forms a heap at some distance away. The husk being lighter is carried away by the wind and forms a different heap. The heavier particle (wheat grains) forms a separate heap as it falls vertically downward. To separate dirt from pulses, we add water to pulses. Dirt will get dissolved in water and husk will float on top because it is lighter and pulse grains will settle down.

Advantage of Winnowing

This method doesn't require any machines for its functioning. It is completely based on human activity and hence it takes less time to process and definitely very cheap.

Disadvantage of Winnowing

Winnowing is defined as a method in which heavier components of the mixture are separated from the lighter substances with the help of wind but this process does not work for materials heavier than grains like stones.

FILTRATION

Filtration is used to separate non settle able solids from water and wastewater by passing it through a porous medium. The most common system is filtration through a layered bed of granular media, usually a coarse anthracite coal underlain by a finer sand.

Filters may be classified according to the types of media used as follows:

- **Single-media filters**: These have one type of media, usually sand or crushed anthracite coal.
- **Dual-media filters**: These have two types of media, usually crushed anthracite coal and sand.
- **Multi-media filters**: These have three types of media, usually crushed anthracite coal, sand, and garnet.

In water treatment all three types are used; however, the dual- and multimedia filters are becoming increasingly popular. In advanced tertiary wastewater treatment, nearly all the filters are dual- or multimedia types.

Many particles in water are too small to remove by sedimentation alone. Filtration removes microorganisms and suspended matter from water not receiving sedimentation treatment, or it eliminates precipitated particles and flocs remaining after sedimentation. Filtration was actually developed prior to the discovery of the germ theory by Louis Pasteur in France. The first sand filter beds were constructed in the early 1800s in Great Britain.

Particle removal is accomplished only when the particles make physical contact with the surface of the filter medium. This may be the result of several mechanisms, as shown in Figure 1. Larger particles may be removed by straining. That is, the particle is larger than the pore, so it is trapped. Particles may also be removed by sedimentation as they progress through the filter. Others may be intercepted by and adhere to the surface of the medium due to inertia. Filtration efficiency is greatly increased by destabilization or coagulation of the particles prior to filtration. This reduction in the particle charge increases particle agglomeration and reduces the forces necessary to trap particles within the filter.

1.1 Gravity Granular-Media Filtration

Gravity filtration through beds of granular media is the most common method removing colloidal impurities in water processing and tertiary treatment of wastewater.

The mechanisms involved in removing suspended solids in a granular-media filter are complex, consisting of interception, straining, flocculation, and sedimentation as shown schematically in Figure 1. Initially, surface straining and interstitial removal results in accumulation of deposits in the upper portion of the filter media. Because of the reduction in pore area, the velocity of water through the remaining voids increases, shearing off pieces of capture floc and carrying impurities deeper into the filter bed. The effective zone of removal passes deeper and deeper into the filter. Turbulence and the resulting increased particle contact within the pores promotes flocculation, resulting in trapping of the larger floc particles. Eventually, clean bed depth is no longer available and breakthrough occurs, carrying solids out in the underflow and causing termination of the filter run.

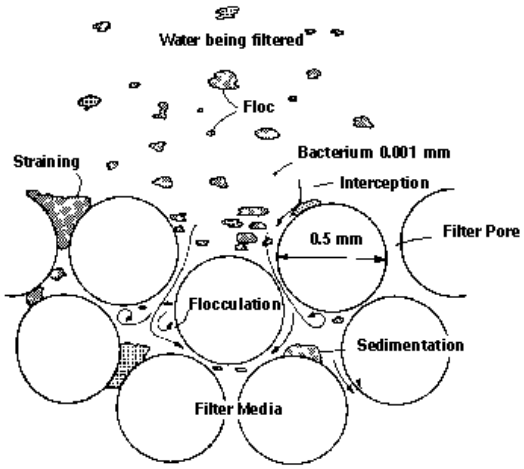


Figure 1. Schematic diagram illustrating straining, flocculation, and sedimentation actions in a granular-media filter.

Microscopic particulate matter in raw water that has not been chemically treated will pass through the relatively larger pores of a filter bed. On the other hand, suspended solids fed to a filter with excess coagulant carryover from chemical treatment produces clogging of the bed pores at the surface. Optimum filtration occurs when impurities in the water and coagulant concentration cause "in-depth" filtration. The impurities neither pass through the bed nor are all strained out on the surface, but a significant amount of flocculated solids is removed throughout the entire depth of the filter.

Generalization

Help the pupils make a generalization.

1. What is winnowing?
2. What is the benefit of winnowing in separating mixtures?
3. What is filtration?
4. What is the benefit of filtration in separating mixtures?

4. Evaluation

Show pictures of winnowing and filtration. Let them identify the method used in separating mixtures and enumerate the benefits of each method.

a. What method is shown in the picture?

b. Give the benefits of winnowing in separating mixture?

a. What method is shown in the picture?
b. Give the benefits of filtration in separating mixture?

IV. Assessment

Describe the Winnowing method in separating mixture and enumerate the benefit of winnowing.

Describe the Filtration method in separating mixture and enumerate the benefit of filtration.

V. Assignment

In a short bond paper, paste a picture or draw a picture of winnowing and filtration method in separating mixture and enumerate its benefits below its picture.

Science 6

1st Quarter

Lesson 24

I. OBJECTIVE/S

Enumerate and describe the benefits of separating mixture using magnets.
(S6MT-Ig-j-3)

II. SUBJECT MATTER

Skill: Enumerating and describing the benefits of separating mixture using magnets
Reference: K to 12 Grade 6 Curriculum guide,
https://van.physics.illinois.edu/qa/listing.php?id=393,
http://www.tutorvista.com/physics/10-uses-of-magnets,
Materials: magnet, iron filings, sand, sugar, salt, paper filings from sharpened pencils

III. Instructional Procedure

1. Engagement

Have the pupils name the different household materials on top of the table such as paper clips, plastic toys, a spoon, a pencil, eraser, nails and etc. Then call some volunteers to use a magnet.

The teacher presents the lesson for the day.

2. Exploration

A. Divide the class into two groups.
B. Let the norms to follow during group activity.
C. Have each group put out the materials pre assigned to them.
D. Distribute activity cards.
E. Group Activity
F. Teacher supervises the activity per group

Activity 1

Iron and Sand

Material:

paper filings from sharpened pencil
Sand
magnets
plastic bag

Procedure:

Combine Iron filings, paper filings and sand. Put the magnet in a small plastic bag then try to put it above the combination of iron filings, paper filings and sand. Then set aside the iron being attracted by magnet. Repeat it until no more sand is present.

Answer the question:

a. What happen to the iron filings upon putting the magnet above on the combined sand, iron filings and iron filings?

b. What method is used in the activity in separating the iron filings, paper filings and sand?
c. What are the benefits in separating mixture through magnet?

Activity 2

Materials: lead filings, sugar, sand
Procedure:

Combine lead filings, sugar, and sand. Put the lead filings, sugar and sand on top of a paper while the magnet as at the back of the paper.

Answer the question:

a. What happen to the lead filings upon putting the magnet above on the combined sugar, sand and lead filings?
b. What method is used in the activity in separating the lead filings, sugar and sand?
c. What are the benefits in separating mixture through magnet?

3. Explanation

Presentation of group output.
Analysis, Discussion and Abstraction of group output.
Teacher link/connect concept of the activity to the new lesson.

4. Elaboration

Background Information for Teachers

A magnet is anything that carries a static magnetic field around with it. There are lots of kinds of magnets. The ones you find most commonly are permanent magnets made out of some special metals, especially iron, or are mixtures of these metals and other stuff (like rubber or ceramics). Other kinds of magnets need electricity to flow through coiled wires to create a magnetic field. Some magnets are combinations of these -- they have wire wrapped around an iron core.

Even individual particles like spinning electrons have magnetic fields around them, so we could call electrons "magnets" too. Permanent magnets, in fact, are those materials in which the electrons mostly spin in the same direction. Most electrons in most materials are paired with other electrons spinning in the opposite direction, but some materials like iron have many unpaired electrons. These can give rise to net magnetism when they interact with each other so that they have lower energy when spinning in the same direction. Some materials have unpaired electrons which interact with others so they spin on average in opposite directions -- these make lousy magnets (we call them "antiferromagnets").

You can think of two requirements to making a standard permanent magnet. First, the electron spins have to have the right interactions to make them line up together. That means that the energy has to be lowered when they line up. Even then, they won't line up unless they are cold

enough, just like water molecules won't line up to make ice unless they are cold enough. Now, once many domains of lined-up spins are formed, something has to make the domains themselves line up. Otherwise, the piece of magnetic material is like a collection of little magnets pointing different directions, so their fields cancel. Applying a big field from another magnet can line up the domain magnetic directions. In the sort of materials used for permanent magnets, those domain directions get mostly stuck, rather than relaxing back to point opposite directions.

The magnets which need electricity to flow are called electromagnets. A magnetic field can change when the current in the wires changes. I specified "static" above to exclude light as a "magnet", though. Light waves consist of oscillating electric and magnetic fields traveling at the speed of light, and I didn't want to include that in defining what a magnet is.

Common Uses of Magnets

Magnets have their lot of applications in the daily life. The major 10 uses of the magnets are as follows:

1. They are used to construct the electrical motors and the generators which convert the electrical energy into mechanical energy and vice versa.
2. They are also used in the speakers which can convert the electrical energy into sound energy.
3. They are used in the electrical bells.
4. They are used in the Maglev trains. In the Maglev trains, the super conducting magnets are used on the tracks on which the train floats. These types of the trains are working on the repulsion force of the magnets.
5. They are also used to sort out the magnetic and non magnetic substances from the scrap.
6. They are used in TV screens, computer screens, telephones and in tape recorders.
7. They are used by the candy or cold drink vendors to separate the metallic cap from the lots.
8. They are used in cranes.
9. They are used in the refrigerators to keep the door close.
10. The most important use of the magnet is the magnetic compass which is used to find the geographical directions.

The use of the magnets in the medical sciences is very affective. We can use magnet therapy for the pain management without any use of the medicines. The magnets can stimulate the nerves in the human body and increase the blood circulation, which carries oxygen to the tissues. The magnet are used to heal the pains and the wounds of the athletes. Doctors uses the magnets to cure arthritis, gout, spondilitis and other problems related to the nervous system. Magnetic mattress are used for relaxing the body. In MRI we use the magnets. Magnets are used to cure the depression, headaches and migraines

Thorough discussion by the teacher.

Lead the pupils in making generalization.

Prepare a strips of paper with a question on it to be answered by the pupils.

Examples of question:

a. What is magnet?

b. What method is used in separating iron and sand?

c. Give benefits in separating mixture through magnets.

5. Evaluation

Magnetism Activity

Make a mixture of iron filings and salt on a piece of paper or petri-dish. Bring a magnet close to the mixture. Shake the container gently to move the contents around and repeat until all of the iron filings are on the magnet and the salt is in the dish.

a. What happened?

b. What method is used in separating mixtures of iron filings and salt?

c. What are the benefits of separating mixtures through magnet?

IV. Assessment

What is magnet? What is its benefit in separating mixture?

Criteria	5 Complete answer for 2 questions	4 Complete answer for 2 questions but 4 benefits only	3 Complete answer for 2 questions but 3 benefits only	2 Complete answer for 2 questions but 2 benefits only	1 Complete answer for 2 questions but 1 benefit only
Question 1 & 2					

V. Assignment

Look for a picture that shows magnetism activity in separating mixtures. Below the picture, enumerate the benefit in separating mixtures through magnet.

Science 6

1st Quarter

Lesson 25

I. OBJECTIVE/S

Enumerate and describe the benefits of separating mixture through evaporation **(S6MT-Ig-j-3)**

II. SUBJECT MATTER

Skills: Enumerating and describing the benefits of separating mixture through evaporation

Reference: K to 12 Grade 6 Curriculum guide, enchantedlearning.com, http://www.bbc.co.uk/bitesize/ks3/science/chemical_material_behaviour/compounds_mixtures/revision/9/

Materials: water, salt, stove (or any available used for cooking), pot or tin can

III. Instructional Procedure

1. Engagement:

Look at the picture. What is being shown in the picture?

The teacher presents the lesson of the day.

2. Exploration (Before starting the activity make sure to emphasize the safety measures to the pupils)

Activity 1

Materials:

water (20 ml)
salt (1/4 tsp)
stove or any available used for cooking
pot or tin can

Procedure:

Combine water and salt in a pot. Stir properly until the bits of salt are gone. Put the salt solution into fire until boil. Observe what happens.

Answer to question:

a. What happens to the salt solution after boiling?

b. What method is used in separating the mixture?

c. What is the benefit in separating mixtures through evaporation?

3. Explanation

a. Posting/ reporting result by group.

b. Analysis and discussion of the activity results and pupils' answer

c. Outline pupils' answer on the board

4. Elaboration

Thorough discussion of the concepts by the teacher.

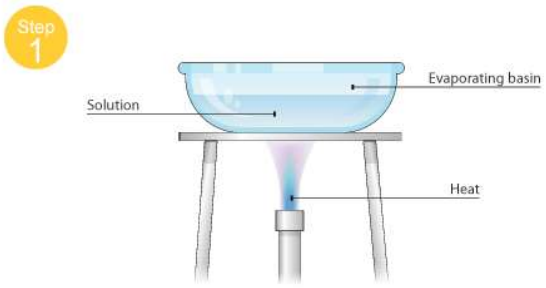
Background Information for Teachers

Evaporation

This is good for separating a **soluble solid** from a liquid (a soluble substance does dissolve, to form a solution).

For example copper sulphate crystals can be separated from copper sulphate solution using evaporation. Remember that it is the water that evaporates away, not the solution.

Separating a soluble solid



Generalization

Help the pupils generalize through answering questions.

1. What is evaporation?
2. What is the benefit in separating mixtures through evaporation?

5. Evaluation

What process is used in the picture in separating mixture?
Enumerate the benefit of the process in separating mixture?

IV. Assessment

Enumerate the benefit in separating mixture through evaporation.
Describe the benefit of evaporation in separating mixture.

V. Assignment

Find another activity in separating mixtures through evaporation.
Enumerate and describe its benefits in using it in separating mixture.

Science 6

1st Quarter (Lesson 26)

I. Objectives

Enumerate and describe the benefits of separating mixture through sedimentation.

(S6MT-lg.j.3)

Value Focus: Learn to be patient in difficult situations.

II. Subject Matter

A. Skill: Enumerating and Describing the Benefits of Separating Mixture Through Sedimentation
B. Reference: K to 12 Gr.6 CG, You Tube, Google

https://www.youtube.com/watch?v=_8VqWKZIPrM

https://www.youtube.com/watch?v=ZCL6FKQZyoM

https://www.youtube.com/watch?v=TEGvWNFrvqc

C. Materials: water, powdered chalk, clear cylindrical containers/beakers, mud/soil/sand, stirring rod, video clips of the following : How fossil fuels were formed as one benefit of sedimentation process, decantation of gold and the separation of blood parts liquid part and the solid part in order to diagnose the disease of the ill person.

III. Instructional Procedure

A. Engagement:
   1. Review

      Put a check on the blank if the situation shows benefit from separation of mixture and x if it does not.

      _____1. Shallow dam in the ground where salt water evaporates to leave a layer of dry salt

      _____2. Apply cement and sand to the cemented wall after the sand is being sifted

      _____3. Rice becomes clean after winnowing it

      _____4. Fermented vinegar is filtrated to the bottle for consumption

   2. Motivation

      Ask: Have you ever wondered how pebbles and sand were formed?

      Try to imagine if our river bed and sea floor have no pebbles and san.

      {Teacher present the lesson on the benefits of separating mixture through sedimentation}

B. Exploration:

Activity Proper

1. Divide the class into two groups.

2. Set standards to follow in doing the activity.
3. Distribute activity cards to the pupils
4. Supervise the pupils while doing the activity.
5. Supervise the activity they are doing.

Activity 1

Group 1

I. Objective: How water with powdered chalk becomes clear after a few minutes?

II. Materials: beaker/a clear glass, water, powdered chalk, stirring rod

III. Procedure:

1.Put the beaker/a clear glass with water.

2.Pour the powdered chalk in the glass with water.

3.Stir the mixture with the stirring rod.

4.Then, observed the mixture for a minute.

IV. Questions:

1.Why does the water become not clear?

Activity 2

Group 2

I. Objective: How water with sand/mud becomes clear after a few minutes?

II. Materials: beaker/a clear glass, water, sand/mud, stirring rod

III. Procedure:

1.Put the beaker/a clear glass with water.

2.Pour the sand/mud in the glass with water.

3.Stir the mixture with the stirring rod.

4.Then, observed the mixture for a minute.

IV. Questions:

1.Why does the water become not clear?

C. Explanation:

1.Let the group presenter/rapporteur report their work to the class.

2.Analysis and discussion on the activity result and pupil's answer.

3.Teacher will take note of the pupils responses to the questions given.

Outline pupil's answer on the board.

4. Help pupils formulate ideas/concept by asking:

What happened to the sand after a minute? How about the water?

D. Elaboration:

1. Teacher presents a video clips on the following: Source: You Tube

How sedimentation process contributes to the formation of fossil fuels? and the decantation of gold from pebbles, sand and water.

2. Teacher asks questions after watching the video clips.

3. Teacher elaborates the topics and provide another example of the benefit of separating mixture through sedimentation like the purification of water, washing machine (see attached below) and the separation of the solid part of the blood from the liquid part in order to diagnose the disease of the ill person (Provide video clip)

4. Further discussion and giving of examples e.g. purification of water

Background Information for the Teachers

The basic principle of the settling cyclone for separating suspended solids from waste water and process liquids is the tangential flow of the waste water and the effect of the centrifugal force on the solid particles. Sludge and settle able substances accumulate in the conical bottom.

https://www.google.com.ph/search?q=sedimentation+pdf&oq=se&aqs=chrome.1.69i59l3j69i60l3.3908jSedimentation

Sedimentation is a form of separating substances. This process involves letting an insoluble substance (a substance that will not dissolve in a solvent) settle at the bottle of a solvent. An example of this is if you mix chalk and water, the chalk will settle at the bottom of the glass after being mixed in because it does not dissolve in water.

There are two processes of sedimentation. They are Decanting and Centrifuging.

Decanting - This process is somewhat the easiest of the two. It involves letting the mixture settle for a while. The heavier, insoluble substances will settle at the bottom of the liquid. A clear liquid will be left at the top. Once it is taken out you have decanted the liquid. The impure substances are left behind.

Centrifuging - Centrifuging is a way of speeding up the process of sedimentation. A centrifuge, found in a laboratory, consists of many test tubes spinning at high speeds which inevitably forces the insoluble substance to the bottom quicker. A washing machine is a good example of this process. It spins quickly and water flies out through the holes in the sides and the clothes stay in the washing machine.

3. Ask more questions that lead the pupils to the mastery of the lesson.
4. Generalize the lesson by asking the following questions:

   What are the different benefits we can get from separating of mixture through sedimentation?
5. Inject the value of patience like the people doing the decantation of gold as their source of Income.

E. Evaluation:

Teacher says: You will say BRAVO if the situation shows benefit of the separation of mixture through sedimentation and HURRAY if it does not.

1. a sludge deposited on the river bed
2. the water is purified after sometime
3. breeding place of aquatic animals are covered with eroded soil
4. sediments clog drainage and rivers
5. bits of gold are collected after sedimentation and decantation process

IV. Assessment

Enumerate at least 4 benefits we can get from the separation of mixture through sedimentation.

V. Assignment

Select one benefit of the separation of mixture through sedimentation then describe it.

Science 6

1st Quarter (Lesson 27)

I. Objective

Suggest ways to maximize the use of separated materials out of the identified products in the community. (S6MT-lg-j-3)

Value Focus: Conservation /wise use of products in the community.

II. Subject Matter

A. Skill: Suggesting Ways to Maximize the Use of Separated Materials ou of the Identified Products In the Community

B. Reference: K to 12 CG Grade 6, You Tube Rice Hulls-Video Learning-WizScience.com, Google Search

https://www.youtube.com/watch?v=VerTekILA5c
https://www.youtube.com/watch?v=pTTHOKsNj-8
https://www.youtube.com/watch?v=SgA3pJe9CpU
https://www.youtube.com/watch?v=AeQrhgIwJNM

C. Materials: Pictures, rice hulls/husks, empty seashells, pebbles, sand

Note: The materials depend on the available product in the community.

III. Instructional Procedure

A. Engagement:

1. Review

Ask: What are the different methods/ways to separate mixture?

What are the benefits we can get from the separation of mixture through sedimentation?

2. Motivation:

Show pictures of rice grains, sand, pebbles and seashells.

Asks:

Do we have these product in our community? What will you do first before it is eaten?

How about the rice after grinding, what material that separates from the seed?

Then after grinding what will you do to the rice before it is cook in order to remove its chaff?

3. Introduce the lesson:

Say: Today we will learn some ways to maximize the used of separated materials/mixture.

B. Exploration:

1. Divide the class into three groups.

2. Recall standards in conducting the activity

3. Distribute activity cards for pupils to work on.

4. Supervise the pupils while doing/conducting the activity.

Activity 1

Group 1

I. Problem: How can be a rice hulls/husks becomes useful?

II. Materials: Rice hulls/husks

III. Procedure:

1. Observe the rice hulls/husks.
2. Then among your group think of ways that suggest how this material becomes useful again.

IV. Questions:

1. From what material the rice hulls come from?
2. In a traditional way, what method is used to separate the rice hulls from the rice seed?

Activity 2

(Group 2)

I. Problem: How can be an empty seashells becomes useful again?

II. Materials: empty seashells

III. Procedure:

1. Observe the empty seashells.
2. Then among your group think of ways that suggest how these materials become useful again.

IV. Questions:

1. Where do these empty seashells come from?
2. What method is used to gather these materials?

Activity 3

(Group 3)

I. Problem: How can be these small pebbles becomes useful?

II. Materials: small pebbles

III. Procedure:

1.Observe the small pebbles.

2.Then among your group think of ways that suggest how these materials become useful again.

IV. Questions:

1. Where do these small pebbles come from?

C. Explanation:

1. The presenter of the group will report their activity/work to the whole class.
2. Analysis and discussion of the activity result and the pupils answer to the given questions.
3. Teacher will take note of the pupils responses to the given questions. Outline pupils answer on the board.

D. Elaboration/Extension:

1. Discussion on the different suggested ways in order to maximize the use of separated materials in the community.
2. Present a video clip on the use of rice hull/husk. (Rice Hulls Video Learning-WizScience.com
3. Ask:

What have you seen in the video?

How can be a rice hulls useful based on the video presentation?

4. Further discussion on the ways to maximize the used of separated materials out of the Identified products in the community. Give more examples
5. Generalization:

What are the different suggested ways in order to maximize the used of separated materials out of the products in the community?

6. Inject the value of conservation through recycling.

As a child how can you contribute the maximize used of these materials mentioned?

Is recycling a good practice? Why?

Background for the teachers

Products in the community from separated materials	Suggested ways in order to maximize the use of these materials.
a. unwanted/empty sea shells	---------- It can be made as a vase, ash tray, curtain, flower
b. rice hulls/husks	---------- It can be used as fuel in cooking and fertilizer to our plants
c. extracted coconut meat	--------- It can be used as food to our raised pigs, ducks and chickens
d. pebbles	---------- It can be used to fill up muddy area in our yard
e. rice chaff	---------- It can be used as food to our raised pigs, chickens and ducks
f. cassava flour	---------- it can be made into bread
g. sand	---------- It is used in constructing buildings and houses

E. Evaluation:

Draw a happy face if the suggestion made in order to maximize the use of separated materials is a good suggestion and sad face if it is not a good suggestion.

1. Throw sea shells in the compost p
2. it after eating.
3. Leave rice hulls/husks in an open area and take that material for granted
4. Cook macaroons out of dried desiccated coconut
5. Throw rice chaff in the drainage
6. Put rice hulls/husks in your plants

IV. Assessment

Group activity.

Make a poster that suggest ways on the maximize use of separated materials of the products in the community.

Pts.	**Cr Iterla**
10	90% - 100 % of the following criteria were observed originality, creativity, effort in doing their project and cooperation with the members of the group.
8	80% - 89% of the following criteria were observed originality, creativity, effort in doing their project and cooperation within the members of the group.
6	70% -- 79% of the following criteria were observed originality, creativity, effort in doing their project and cooperation within the members of the group.

4	60% -69% of the following criteria were observed originality, creativity, effort in doing their project and cooperation within the members of the group.
2	50% - 59% of the following criteria were observed originality, creativity, effort in doing their project and cooperation within the members of the group.

V. Assignment

Write a suggestion that can be made to the following products.

1. rice/corn chaff
2. iron fillings
3. dried coconut meat

Science 6

1st Quarter(Lesson 28)

I. Objective

Relate the benefits of separating mixture to real life situations. **(S6MT-lg-j-3)**

Value Focus: Appreciation of the things around us.

II. Subject Matter

A. Skills: Relating the Benefits of Separating Mixture to Real Life Situations
B. Reference: K to 12 CG Grade 6 Cyber Science 6 by Myrna Q. Adduru and Necitas G. Valencia
Page 36
C. Materials: Picture of the different methods of separating mixtures

III. Instructional Procedure

A. Engagement:
1. Drill:Let the pupils read the following words:

winnowing	situations	experience
relate	appreciation	contented

2. Review:
Ask: What are the different ways in order to maximize the use of separated materials out of the identified product in the community? Example rice hulls/husks, etc.
3. Motivation:
Say/Ask: Could you imagine class if the materials around us can no longer be separated? What do you think will happen to us?
4. Say:Today we are going to relate the benefits of separating mixtures/ materials to our life.

B. Exploration:
1. Divide the class into three groups
2. Set standards in grouping activity.
3. Supervise pupils while conducting the activity.
4. Distribute activity cards for pupils to perform.

Activity 1

(Group 1)

I. Problem: How winnowing and picking give benefits to our lives?

II. Materials: pictures

III.Procedures:1.Have a brainstorming with your group about how can you relate the benefits of winnowing and picking in your life .

IV. Questions:

1. Can you relate the benefits we can get from separation of mixture?
2. What are the benefits of winnowing to our lives? picking?
3. Are this process important? Why?

Activity 2

(Group 2)

I. Problem: How sedimentation and filtration give benefits to our lives.

II. Materials: pictures

III. Procedures:

1. Have a brainstorming with your group about how can you relate the benefits of sedimentation and filtration to your life.

IV. Questions:

1. Can you relate the benefits we can get from separation of mixture?
2. What are the benefits of sedimentation to our lives? filtration?
3. Are this process important? Why?

Activity 3

(Group 3)

I. Problem: How sieving and evaporation give benefits to our lives.

II. Materials: pictures

III. Procedure:

1. Have a brainstorming with your group about how can you relate the benefits of sieving and evaporation.

IV. Questions:

1. Can you relate the benefits we can get from separation of

C. Explanation:

1. Let the presenter of each group report their work to the class.
2. Teacher will take note of the pupils responses /answer to the different situations given to them.
3. Analysis and discussion of pupils answer.
4. Teacher helps formulate ideas/ or concept by asking How can separation of mixture through evaporation beneficial to our lives? How about sieving?

D. Elaboration /Extension:

Guide for the Teachers

*Separating mixtures are done to make substances more useful in our daily lives.

For example

* The coconut milk which is separated from the remains of grated coconut through filtration can be used in cooking ginataan, maja, biko, rice cake and suman.

*In sieving, the sand which is used in finishing the concrete wall is separated from the pebbles

*Salt which is the result of evaporation is used as preservatives and additives to the food we eat daily.

*The rice chaff which is separated through winnowing make the rice clean. The mongo seeds which is separated from its cover through winnowing becomes clean also.

*Distillation is widely used in laboratories. It is used regularly in chemical and pharmaceutical research and test for quality of products. This process also employed in the manufacture of different kinds of alcoholic beverages.

*Water purification uses distillation to remove impurities present in water from natural sources.

*Oil refineries use distillation to separate petrol and diesel from crude oil.

(Teacher research more situations)

1. Teacher asks more questions

What do you think will happen to the things around us if separating mixture does not occur?

Are you comfortable eating cooked rice full of chaff? How about biko, suman and rice cake, is it delicious to eat these foods if there is no coconut milk on it?

2. Generalize the lesson by asking these questions.

Are there benefits we can get out of these separation of mixture?

How can you relate these things to our day to day lives?

3. Inject the value of appreciation.

E. Evaluation:

From the situations in the box. Select the situations that relates the separating of mixture in real life situation. Write them on your paper.

1.The salted fish (Ginamos) was preserved by salt and are used as viand to some people.
2. Children are watching their favorite television show.
3. The gardener water the plants regularly.
4. The family safely drink purified drinking water from their water dispenser.
5. Motorized vehicles that carry passengers to their place of destination.

IV. Assessment

In a five-sentence paragraph, relate the benefits of separating mixtures to real life situation. Write it in a one –half crosswise.

V. Assignment

Try to observe at home then draw a real situation that shows the benefit of separating mixture.

Then write something about it.

Draw it in a long bond paper/at the back of an old calendar.

Science 6

1st Quarter (Lesson 29)

I. Objective

Design beneficial and possible products out of the waste of separated materials.

(S6MT-lg-j-3)

Value Focus: Creativeness and conservation

II. Subject Matter

A. Skill: Designing Beneficial and Possible Products Out of the Waste of Separated Materials

B. Reference: CG Gr.6

C. Materials: ,rice hull/husk, unwanted/empty shells, pebbles, sand

III. Instructional Procedure

A. Engagement:

1. Review:

Teacher collects the drawing on how they relate the benefits of separating mixture in their daily life.

2. Motivation:

Put the waste of the separated materials on the demonstration table. Then ask:

What do you see on the table? Expected answer: They are waste of separated mixture/materials.

Do you think these materials can still be useful? How?

Present the lesson on designing beneficial and possible products out of the waste of separated material.

Inject the value of creativeness.

B. Exploration:

1. Group the pupils into two.
2. Assign each group a waste of separated materials.
3. Let them recall the standards of doing group activity.
4. Let the pupils in each group select a leader and a presenter.
5. Provide each group Manila Paper/old calendar, marking pen and crayons.

Group 1

Materials: Small Pebbles

Procedure:

1.Through sieving, gather the necessary materials needed in your project.

Note: The teacher already assigned responsible pupils to bring the materials ahead of time.

2.Then, think any design that can be produce out of the said materials.

3.Illustrate/design in the Manila Paper/ at the back of an old calendar the agreed product to be made in your group.

4.Answer the questions that follow.

*What is the design/product that was agreed in your group?

*How did you come up on that design/product?

*What do you think is/are the benefit/benefits you can get out of your design/product?

Group 2

Materials: Empty Seashells

Procedure:

1.Through picking, gather the necessary materials needed in your project.

Note: The teacher already assigned responsible pupils to bring the materials ahead of time.

2.Then, think any design/product that can be produce/made out of the said Materials.

3.Illustrate/design in the Manila Paper/at the back of an old calendar the agreed product to be made in your group.

4.Answer the questions that follow:

*What is the design/product that was agreed in your group?

*How did you come up on that design/product?

*What do you think is/are the benefit/benefits you can get out of your design/product?

C. Explanation;

1. Presentation of group output.
2. Analysis and abstraction of group output

D. Elaboration: Teaching Part

1. The teacher shows to the pupils pictures/real of products that was made from the waste of separated materials like for example picture frame made of empty seashells.
2. Teacher explains the benefits/importance of recycling the waste of separated mixture/materials.

Guide for the teachers:

Recycling is the practice of reusing items that would either be discarded as waste.

This is the process of collecting and reprocess of materials that would be typically considered as waste.

This is done to reduce the use of raw materials that would have been used.

The waste produced from separating mixtures/materials can also be recycled. For example:

Rice hull/husk can be used as fuel for cooking.

Empty seashells can be made into flowers, curtain, frame and others.

3. Teacher shows varied products
4. Ask questions to generalize.

Where you able to make a design out of the waste from separated materials you have?

Why is it important that we have to recycle these waste?

What are the benefits we can get out of the recycled materials?

Inject the value of conservation.

E. Evaluation: Show a beneficial design and a possible product out of the following separated materials:

1. Rice hull
2. Small pebbles
3. Empty seashells

IV. Assessment

Direction:

In your own choice make/illustrate a design out of the waste from separated materials you choose.

Put this in a one whole sheet of intermediate paper.

Pts.	**C r I t e r I a**
10	90% - 100 % of the following criteria were observed originality, creativity, effort in doing their project and cooperation with the members of the group.
8	80% - 89% of the following criteria were observed originality, creativity, effort in doing their project and cooperation within the members of the group.
6	70% -- 79% of the following criteria were observed originality, creativity, effort in doing their project and cooperation within the members of the group.
4	60% -69% of the following criteria were observed originality, creativity, effort in doing their project and cooperation within the members of the group.
2	50% - 59% of the following criteria were observed originality, creativity, effort in doing their project and cooperation within the members of the group.

V. Assignment

Prepare the necessary materials needed in your group for the creation of the designed product submitted today.

Science 6

1st Quarter (Lesson 30)

I. Objective

Create a product produce from separating a mixture either through picking, sieving/sifting, winnowing, filtering, magnets, evaporation and sedimentation.

Value focus: Thriftiness, cooperation and wise use of time.

II. Subject Matter

A. Skill: Creating a Product Produce from Separating a Mixture Either Through Picking, Filtering, Magnets, Evaporation and Sedimentation

B. Reference: K to 12 Grade 6 CG

C. Materials: glue gun (optional),glue stick, glue, small pebbles, empty sea shells, cardboard/used cartoon

III. Instructional Procedure

A. Engagement:

1. Review

Check the materials assigned to each group.

2. Motivation:

Ask:

Do you want to be creative/artistic?

Are you ready to create the product you have designed yesterday?

Present the activity about creating a product produce from separating mixture.

Inject the value of cooperation.

B. Exploration:

1. Let the pupils proceed to the same group where they belong yesterday.
2. Set the standards in group activity.
3. Remind pupils about the wise use of time and materials.

Group 1

Materials: Small Pebbles

Sample design:

Group 2

Materials: Empty seashells

Sample design:

Note: The product created by the pupils depends on the design they formulated/made. Do not limit the pupils imagination to design and create a product.

4. Supervise pupils group activity.
5. Teacher makes sure of the safety of the pupils in doing the activity.

Activity No.1

I. Problem: How can small pebbles collected through sieving can be made into mosaic.

II. Materials: glue gun(optional),glue stick, small pebbles, cardboard(with design already based on yesterday's activity)

III. Procedure:

1.Put the cardboard with a design on the flat area.

2.Separate the pebbles according to its shade.

3.Then, paste them according to your desired design.

IV. Questions:

1.What design you have created?

2.How did you gather your materials?

3.Why is it that you were able to create your design?

4.Do you think the design you created can give beneficial to you? or in your community? How?

Activity No.2

I. Problem: How can empty seashells collected through picking can be made into a picture frame.

II. Materials: glue gun(optional),glue stick, empty shells ,cardboard/cartoon

III. Procedure:

1. Cut the cardboard either rectangular/square according to what is agreed by the group.
2. Make a hole at the center of the cardboard where your picture is being put.
3. Create a design on the remaining part of the cardboard using your collected empty shells.
4. Make a stand using a cardboard/cartoon and put it at the back of the frame so that it can hold to stand.

IV. Questions:

1. What design you have created?
2. How did you gather your materials?
3. Why is it that you were able to create your design?
4. Do you think the design you created can give beneficial to you? or in your community? How?

C. Explanation:

1. The presenter publish their work and report it to the class.
2. Analysis and discussion by asking varied questions regarding their created design.

D. Elaboration:

Remember these:

*Waste products from separated materials/mixtures like cassava flour, rice chaff, rice hull, small pebbles, empty seashells and others can be made into a new product.

Ask questions to generalize.

What can be done to the waste products of separated mixtures and materials? Why is it important that we should not throw these things away? Inject the value thriftiness and conservation.

E. Evaluation

Write the possible products that can be made out of the waste from a separated mixture/materials.

1. rice hull
2. rice chaff
3. iron fillings

IV. Assessment

Check pupils work through Rubric scoring.

Pts.	**C r I t e r I a**
10	90% - 100 % of the following critera were observed originality,creativity,effort in doing their project and cooperation with the members of the group.
8	80% - 89% of the following criteria were observed originality,creativity,effort in doing their project and cooperation within the members of the group.
6	70% -- 79% of the following criteria were observed originality,creativity,effort in doing their project and cooperation within the members of the group.
4	60% -69% of the following criteria were observed originality,creativity,effort in doing their project and cooperation within the members of the group.
2	50% - 59% of the following criteria were observed originality,creativity,effort in doing their project and cooperation within the members of the group.

V. Assignment

Think of any activity that will illustrate the creative way of the project you made.

Science 6

1st Quarter (Lesson 31)

I. Objective

Illustrate in a creative way the result of their community based project proposal like: Multimedia Presentation, Scrapbook, Journals/Flyers.

(S6MT-lg-j-3)

Value Focus: Creativity, resourcefulness and humility

II. Subject Matter

A. Skill: Illustrating in a Creative Way the Result of their Community Based Project Proposal Like: Multimedia Presentation, Scrapbook, Journals/Flyers

B. Reference: K-12 CG Grade 6

https://www.youtube.com/watch?v=U5Phpf1FuBc
https://www.youtube.com/w
https://www.youtube.com/watch?v=U5Phpf1FuBcatch?v=g4lCWC-z6zg
https://www.google.com.ph/search?q=sample+of+a+journal+design&source=lnms&tbm=isch&sa=X&ved=0ahUKEwigtdWRpofUAhWBnhQKHdUNCaAQ_AUICigB&biw=1034&bih=615#imgrc=pIbFQQnNgBvpEM:

https://www.google.com.ph/search?q=journal&oq=journal&aqs=chrome..69i57.4677j0j8&sourceid=chrome&ie=UTF-8#q=sample+of+flyers

C. Materials: Different art materials like water color, colored paper, crayons, waste products from separated materials like pebbles and empty seashells ,picture of the products they made, picture when they doing the activity

III .Instructional Procedure

A. Engagement:

Asks:

How did you feel on the design you made out of the waste products from separated mixture/materials?

What are the benefits you can get out of your creation?

What are the values being developed within yourself?

If you are going to propose these to the community, do you think they will like it?

B. Exploration:

1. Let the pupils proceed to the group where they belong.
2. Remind again the standards in group activity.

3. Assign each group how they can illustrate in a creative way of the community project proposal.

Activity 1(Group 1)

(Scrapbook)

I. Problem: How can you illustrate in a creative way the result of your project/product made through scrapbook?

II. Materials: colored paper, water color, waste products of separated materials, picture of their product, picture when they are doing the activity, drawing book, marking pen

III. Procedure:

1. Prepare the needed materials for making a scrapbook.
2. Paste the pictures in the drawing book and decorate it with different art materials, waste products from separated mixture/substance.
3. Write artistic captions to the pictures.

IV .Questions: 1.What did you do to create an attractive scrapbook?

2. Do you think the scrapbook you made will inspire others to recycle waste products from separated mixtures/materials like small pebbles? Why?

Activity 1(Group 2)

(Journal/Flyers)

I. Problem: How can you illustrate in a creative way the result of your project/product made through journals/flyers?

II. Materials: colored paper, bond paper, crayons, picture of their product, picture when they are doing the activity, model of a flyers/journals, marking pen

III. Procedure:

1. Prepare the needed materials for making a flyers/journals.
2 Paste the picture of their product, picture of their actual making in the bond paper and decorate it with different art material.
3. Using the marking pen write informative information, sayings, slogans. Write it attractively.

IV. Questions:

1. What did you do to create an attractive flyers/journals?
2. Do you think the journals/flyers you made will inspire others to recycle waste products from separated mixture/materials like empty shells? Why?

C. Explanation;

1. The presenter report to the class how did they make their scrapbook.

He /She will emphasize the different materials and how they are used In the product.

D. Elaboration:

1. Teacher explains the importance of flyers, journals and scrapbook in promoting a products.

Guide for the teachers:

Flyers a small piece of paper with information on it about a product or event.

Journal is a magazine that deals with the particular subject.

It is a detailed account that records all the data of the project presented.

Scrapbook is a book with empty pages where you can stick newspaper articles, pictures, etc. that you have collected and want to keep.

2. Ask these questions to generalize;

What are the different products that you have illustrated creatively?

Do you think the products you have illustrated can convince your fellow students/people in the community to recycle the waste products from separated materials/mixtures? Why?

Are there any ways to convince people /your fellow students to recycle the waste products from separated materials?

Inculcate the following values resourcefulness, creativity and humility.

E. Evaluation: Check the illustrated products the group have created. If there are to be enhanced or developed let them do it. (Teacher only give at least 10 mins to continue)

IV. Assessment

Check pupils work using Rubric Scoring.

Pts.	C r I t e r I a
10	90% - 100% of the following criteria were observed originality, creativity, effort of the group and cooperation within the members of the group.
8	80%-89% of the following criteria were observed originality, creativity, effort of the group and cooperation within the members of the group
6	70%-79% of the following criteria were observed originality, creativity, effort of the group and cooperation within the members of the group.
4	60%-69% of the following criteria were observed originality, creativity, effort of the group and cooperation within the members of the group.
2	50%-59% of the following criteria were observed originality, creativity, effort of the group and cooperation within the members of the group.

V. Assignment

Write at least another 5 ways to convinced people/fellow students not to throw their waste of their separated mixture/materials.