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DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for Science

Quarter 3
Lesson
3

Lesson Exemplar for Science Grade 4
Learning Resource Unit on Describing Force
Quarter 3: Lesson 3 (Week 3)
S.Y. 2024-2025

Development Team

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LESSON EXEMPLAR

SCIENCE/QUARTER 3/ GRADE 4

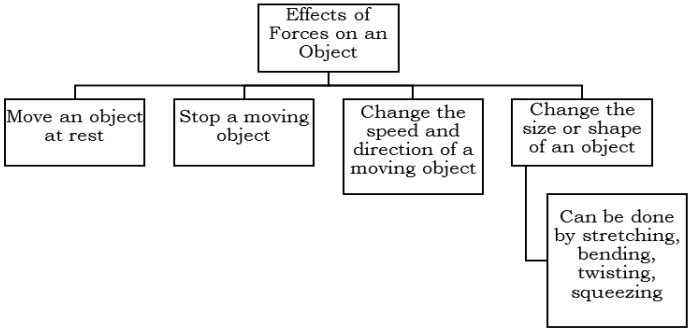
I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	*The learners learn that:* 1. Science processes help in observing and predicting how things move. 2. Pushes and pulls can change the position and shape of objects. 3. Gathering scientific information helps explain the behavior of objects and materials. 4. Magnets affect some objects and materials without touching them. 5. Energy is present whenever there is movement, sound, light, or heat.
B. Performance Standards	*By the end of the quarter, learners* use simple equipment and processes to measure and record data related to movement and describe and predict the way things around them move using more scientifically technical language and concepts, such as speed and force. They demonstrate an understanding that science processes are used to gain a deeper understanding about forces that cannot be seen directly, including the properties of magnets.
C. Learning Competencies and Objectives	***Learning Competency 2: The learners determine how forces can change the shape of objects, such as when they are pushed, pulled, stretched, bent, twisted, or squeezed;*** *The learners will be able to:* 1. *Lesson Objective 1: predict the amount of force needed to move an object and change an object's shape* 2. *Lesson Objective 2: describe what happens to an object when it is pushed, pulled, stretched, bent, twisted, and squeezed.* ***Learning Competency 5: The learners participate in guided activities to demonstrate that pushes and pulls can be used to change the speed and direction of an object including making it go faster, turn it to a different direction, slow it down, and stop it.*** ***Learning Competency 6: The learners demonstrate through guided activities that pushes and pulls can be used to change the speed and direction of an object.*** *The learners will be able to:* 1. *Lesson Objective 1:* describe the effects of pushes and pulls applied to objects at rest or in motion 2. *Lesson Objective 2:* describe the effects of varying the force applied to objects 3.

C. Content	What Can Forces Do? ● Forces can change an object's speed, its direction, and even its shape. a. Forces can move an object b. Forces can change the motion of an object c. Forces can change the shape of an object
D. Integration	Safety – When pushing or pulling, one must be aware of the direction of force and movement of the object. Responsibility (Grade 3 GMRC & VE): Students understand their responsibilities at home and school.

II. LEARNING RESOURCES

- *Booth, G., McDuell, B., & Sears, J. (1999). World of Science: Students'. OUP Oxford.*
- Department of Education. (2023). *MATATAG Curriculum in Science*. DepEd Complex, Meralco Avenue, Pasig City, Philippines.
- Embile, R., & Gongora, K. (2023). *Science and the New World 4*. Jo-es Publishing House, Inc.
- *force.* (n.d.). Britannica Kids. https://kids.britannica.com/learners/article/force/323538#:~:text=A%20force%20is%20an%20action
- *Lenin's Science Experiments. (2018, February 8). How Force can change Position, motion, shape, size and direction of objects | Effects of Force [Video]. YouTube.* https://www.youtube.com/watch?v=L9KY43hDSzI

<table>
<tr><th colspan="2">III. TEACHING AND LEARNING PROCEDURE</th><th>NOTES TO TEACHERS</th></tr>
<tr><td>A. Activating Prior Knowledge</td><td>
DAY 1
1. Short Review
A. Pinoy Henyo (10-15 minutes)
• Ask one representative from each group as players for the Pinoy Henyo Game. Let them stand one at a time to guess the term from the previous lessons that is posted on the board or on his or his forehead. The other group members will help the representative by answering Yes or No questions about the term.
<table>
<tr><td>Group 1</td><td>Magnet</td></tr>
<tr><td>Group 2</td><td>Force</td></tr>
<tr><td>Group 3</td><td>Push</td></tr>
<tr><td>Group 4</td><td>Metal</td></tr>
<tr><td>Group 5</td><td>Pull</td></tr>
</table>
</td><td>Review the previous lessons by conducting a Pinoy Henyo activity. If there are more groups, you may add more terms. If there is more time, you may add the following terms in other rounds with different group representatives. Before starting this game, tell the groups to refrain from making unnecessary noise and any forms of cheating.
Terms for review:
1. Force – is a push or pull resulting from the interaction of two objects
2. Push – exerting force away from the source
3. Pull – exerting force towards the source
4. Magnet - attracts materials made of iron, nickel, and cobalt
5. Metal – solid material</td></tr>
<tr><td>B. Establishing Lesson Purpose</td><td>
1. Lesson Purpose
a. Activity 1: Self-Assessment (5 minutes)
Instructions: Read the listed learning targets below. Instruct the students to assess themselves to see if they have developed these skills already and rate themselves according to the guide below. They write their ratings in the column Before Learning the Lesson. After learning the lesson, we will go back to this.
</td><td>Guide the learners in answering the Self-Assessment activity. As a class, review each learning target on the list and ask them to rate themselves individually. After they answer each item, ask how many rated themselves</td></tr>
</table>

	☆ I still need help to do this. ☆☆ I can do this by myself. ☆☆☆ I can do this by myself and in different ways. **Learning Targets** / **Before Learning the Lesson** / **After Learning the Lesson** *1. I can predict the amount of force needed to move an object and change an object's shape.* *2. I can describe what happens to an object when it is pushed, pulled, stretched, bent, twisted, and squeezed.* *3. I can describe the effects of pushes and pulls applied to objects at rest or in motion.* *4. I can describe the effects of varying the force applied to objects.*	with one, two, or three stars. Let them raise their hands or stand to be identified. This gives an idea of how many need to learn more about the lesson and how many have already developed the skills. You may ask them to copy the table with the learning targets in their notebook since this will be revisited at the end of the lesson.
C. Developing and Deepening Understanding	**1. Explicitation** **a. Class Interaction (25 minutes)** Ask the learners, "*What can forces do?*" Engage the students in a discussion to elicit their ideas. Present the following concept map to summarize the initial discussion on what forces can do.  	After defining and describing force and learning about the force exerted by a magnet, lead the students into subtopic 3 by starting a class discussion about what forces can do. Use the concept map to summarize their answers. When a force is applied to an object, many things can happen. 1. Force can move an object at rest. *Ex. Kicking a ball on the ground* 2. Force can stop a moving object.

DAY 2

b. Activity 2: Forces Cause Change (40-45 minutes)

Introduce the idea that different objects may require different amounts of force to move or change shape.

Instructions: Assign students to work in pairs or triads. Ask them to apply a force to the objects listed in the tables below. Before conducting the activity, ask them to predict how much force (small, medium, or big force) is needed to move the rigid objects and to change the shape of the soft objects.

A. Can I Move it?

Rigid Objects	Predictions	Observations
1. Chair		
2. Door		
3. Shelf		

B. Can I Change it?

Soft Objects	Predictions	Observations
1. Paper		
2. Clay		
3. Rubber band		

Process questions:

1. Which object required a bigger force to move? Why?
2. How did you distinguish your force as small, medium, or large?

Synthesis: Ask the groups to share their answers to the process questions with the class.

Extended Practice: Challenge learners to design their experiments to test the effects of forces on specific objects.

Ex. Catching a ball passed to you by a friend

3. Force can change the speed and direction of a moving object.
   Ex. Receiving a volleyball
4. Force can change the size of an object.
   Ex. Stretching a rubber band or a spring
5. Force can change the shape of an object.
   Ex. Squeezing a play dough or a calamansi

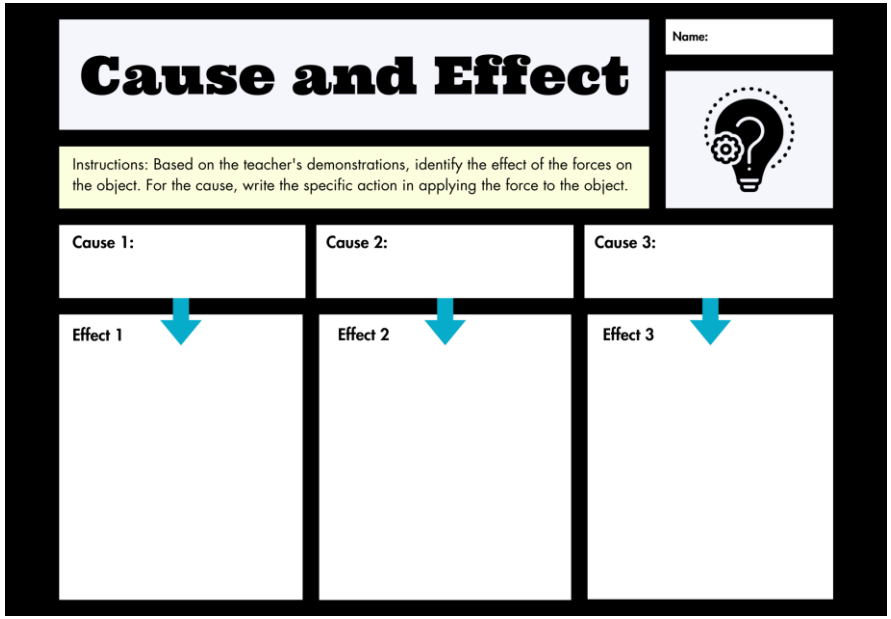
Encourage the students to give other examples of what forces can do.

Before proceeding to the following activities, tell them that the scientific skills of observing and predicting will be used in this activity. Tell the students to observe carefully what happens to the object in the activity. Guide them to observe if there are changes in the object's size, shape, or state of motion.

The state of motion of an object tells us if it is moving or at rest. When it is at rest, it is not moving or changing position

	Differentiation: For learners who need additional support, provide guided worksheets with prompts to help them think through the prediction and observation process. For learners who grasp the concepts quickly, encourage them to explore advanced scenarios, such as the impact of combining different forces on an object.	from its original position. It's also called a stationary object. Guide the students in making their predictions on how much force (small, medium, or big force) is needed to move the rigid objects and to change the shape of the soft objects. Tell them to conduct several trials varying the amount of force applied. Again, emphasize safety at all times. **Activity 2 predictions:** A. 1. I can move the chair with a medium force. 2. I can move the door with a medium push. 3. I can push the shelf with a big force. B. 1. I can change the shape of the paper by crumpling it (small force). 2. I can change the shape of the clay by rolling, bending, and twisting it with medium force. 3. I can change the rubber band's shape by stretching it with a medium force.

	DAY 3 **2. Worked Example** Forces can cause change. A push or a pull exerted on an object can cause it to start moving if it is at rest, stop moving, change its direction, and even shape. **a. Activity 3: Forces Demonstration (15 minutes)** Instructions: Demonstrate to the class how force can cause changes in an object. Students are asked to complete the Cause-and-Effect organizer to identify what happens to the object in the demonstration and the action that caused the effect. Before conducting each demonstration, ask the students to predict what will happen to the object in each demonstration if a force is applied. Demo 1: Putting something to block a moving toy car on the table. Demo 2: Pressing clay with both hands on the table. Demo 3: Pushing a ball forward and backward with both hands on a table.	Answers to the process questions: 1. The shelf required a bigger force to move because it's heavy. 2. I distinguished the small, medium, and big forces by doing many trials in varying my force. Applying the big force is tiring, depending on whether the object is heavy. The demonstrations are based on this video: How Force can change Position, motion, shape, size, and direction of objects | Effects of Force.  Link: https://bit.ly/3G77602



3. Lesson Activity

The learners conduct the Activity: Forces in Action in groups.

a. Activity 4: Forces in Action (30-35 minutes)

A. Move or Stop Me

Instructions: Using a ball, show how force can move an object at rest and change how an object moves.

Activity	What Happened to the Object
1. Put a ball on the table. Make sure it does not move. Apply a small force to roll the ball on the table.	

In Activity 3, students will explore the concept of forces by making predictions about how objects around them move and then observe and understand the role of forces in the demonstrations.

Encourage students to relate the forces they observed during the activity to real-life situations. Have them identify instances in their environment where forces are at play and discuss how understanding these forces can be useful in everyday life.

Assign the students their groups ahead of time. The day before the activity, you may assign each group to bring a ruler, a small ball, and a modelling clay (if they have one).

If nobody in the group can bring the needed materials, consider changing the ball to a toy car or anything that easily rolls and a flour dough instead of clay.

2. Push a ball slightly on the table or floor. Put something to block it 60 centimeters from where it started.	
3. Push a ball slightly on the table or floor. Using your other hand, push it in the opposite direction when it reaches 50 centimeters.	
4. Constantly push a ball while it's moving on the table or floor.	

B. Mold Me

Instructions: Using clay, show how force can change the shape of an object.

Activity	What changes in the object (Put a check √ mark)	
	Size	Shape
1. Roll the clay on the table more than five times		
2. Bend the clay		
3. Stretch the clay without breaking it		
4. Twist the clay		
5. Squeeze the clay		

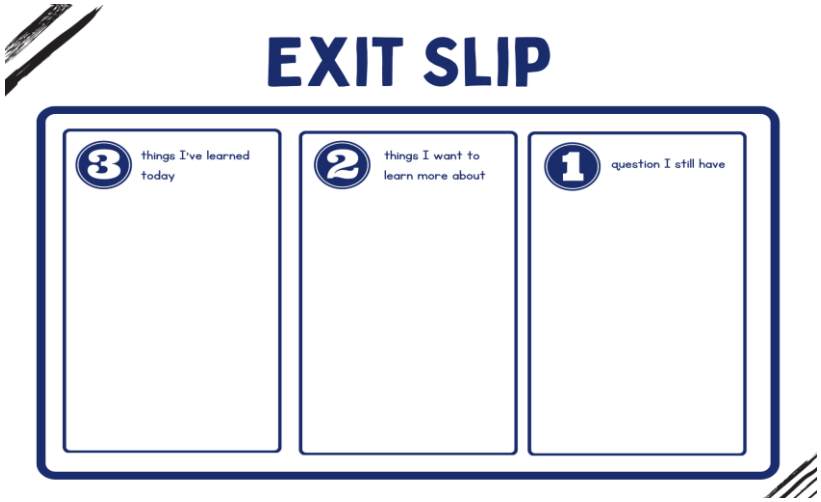
Guide the students in measuring the distance given in numbers 2 and 3 in Activity 4A. Here are some possible responses to Activity 4A.

1. The ball at rest started to move.
2. The ball bounced back after hitting the block, or the ball may stop.
3. The moving ball moves in the opposite direction.
4. The ball moves faster compared to the ball in number 1.

Here are some possible responses to Activity 4B.

1. size and shape
2. shape
3. size and shape
4. shape
5. shape

<table>
<tr>
<td></td>
<td>Process questions:
1. Give two real-life examples of situations when we need to change the shape of an object.
2. Why do we need to understand how our pushing and pulling forces affect things around us?</td>
<td>Possible answers to the process questions:
1. Real-life examples of situations when we need to change the shape of an object include making bread & making clay pots.
2. We need to understand how our pushing and pulling forces affect things around us because we might damage or break an object if we apply too much force.</td>
</tr>
<tr>
<td>D. Making Generalizations</td>
<td>DAY 4
1. Learners' Takeaways (5 minutes)
<table>
<tr><th>Learning Targets</th><th>Before Learning the Lesson</th><th>After Learning the Lesson</th></tr>
<tr><td>1. I can predict the amount of force needed to move an object and change an object's shape.</td><td></td><td></td></tr>
<tr><td>2. I can describe what happens to an object when it is pushed, pulled, stretched, bent, twisted, and squeezed.</td><td></td><td></td></tr>
<tr><td>3. I can describe the effects of pushes and pulls applied to objects at rest or in motion.</td><td></td><td></td></tr>
<tr><td>4. I can describe the effects of varying the force applied to objects.</td><td></td><td></td></tr>
</table></td>
<td></td>
</tr>
</table>

	2. Reflection on Learning (5 minutes) **a. 3-2-1 Exit Ticket** Learners are asked to reflect on their learning using the 3-2-1 Exit Ticket. After completing the exit slip, they are asked to share their answers with a seatmate. When everyone is done sharing, a few volunteers are called to share their discussion with their seatmates.  	The students, at this point, will reflect on their learning by answering the 3-2-1 Exit Ticket. This will allow them to map out what they have learned, what they want to learn more about, and the questions that they still have from the lesson.

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION		NOTES TO TEACHERS
A. Evaluating Learning	**1. Formative Assessment** **I. True or False.** Carefully read the statements below. Write True if the statement is true; otherwise, write False on the blank space before each number. _____ 1. A force is a push or pull applied to an object. _____ 2. Blocking a rolling ball will make it move faster. _____ 3. Pressing clay can cause its shape to change. _____ 4. Stretching an object makes it long permanently. _____ 5. When an object is pulled, it always moves towards the direction of the pull. **III. Matching Type.** Study the pictures below. Match the given picture in Column A to the change it illustrates due to the push/pull applied. Draw a line from the picture to the change illustrated in the picture. **Column A** **Column B** 1.  a. Change in shape 2.  b. Moves an object that was not moving	**Answer Key** *I. True or False* 1. True 2. False 3. True 4. False 5. False *II. Matching Type* 1. b 2. a 3. c 4. d

	3.  4. 	c. Stops an object that was moving d. Changes the direction of a moving object		
B. Teacher's Remarks	*Note observations on any of the following areas:*	**Effective Practices**	**Problems Encountered**	
	Strategies explored			
	Materials used			
	Learner engagement/ interaction			
	Others			

C. Teacher's Reflection	*Reflection guide or prompt can be on:* ▪ *<u>Principles behind the teaching</u>* *What principles and beliefs informed my lesson?* *Why did I teach the lesson the way I did?* ▪ *<u>Students</u>* *What roles did my students play in my lesson?* *What did my students learn? How did they learn?* ▪ *<u>Ways forward</u>* *What could I have done differently?* *What can I explore in the next lesson?*	