8

DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for Science

Quarter 3
Lesson
4

Lesson Exemplar for Science
Quarter 3: Lesson 4 of 8 (Week 4)
SY 2025-2026

Development Team

Writer:
- Alelie N. Prospero (Calamba City School for the Arts)

Reviewed and Revised:
- Roberto L. Rodriguez Jr. (Technological University of the Philippines-Cavite)

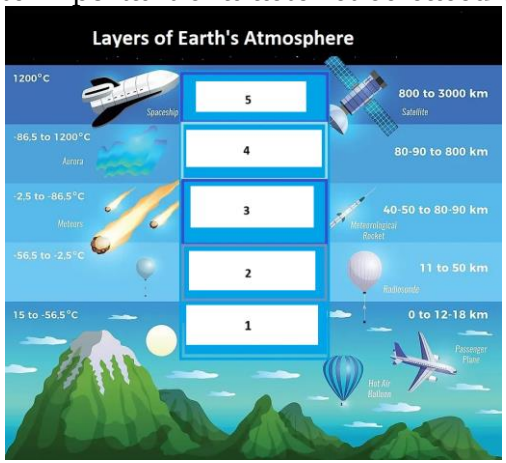
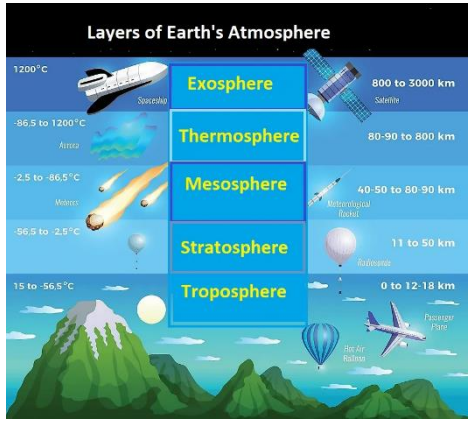
Management Team
Philippine Normal University
Research Institute for Teacher Quality
SiMERR National Research Centre

SCIENCE (EARTH AND SPACE) /QUARTER 3 / GRADE 8

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	*The learners learn that:* a. bodies of water and landforms affect typhoons.
B. Performance Standards	By the end of the Quarter, learners draw on their understanding of the relationships between landforms and oceans to explain the formation and impacts of typhoons.
C. Learning Competencies and Objectives	***Learning Competency*** *The learners…* **1.** gather information from secondary sources to explain: a. how typhoons develop, and b. why the Philippines is prone to typhoons; ***Learning Objectives*** *At the end of the lesson, learners must be able to:* 1. locate the Philippine Area of Responsibility on the map; 2. explain why the intertropical convergence zone (ITCZ) is a factor for storm formation; 3. determine the conditions needed to form a typhoon; 4. differentiate the types of tropical cyclones; 5. identify the parts of a typhoon; and 6. describe the situation in each storm signal warning.
D. Content	Conditions for Storm
E. Integration	Disaster Preparedness Resilience- an ability to recover from or adjust easily to misfortune or change.

II. LEARNING RESOURCES
ABS-CBN News. (2018, August 30). *TV Patrol: Weather Report | August 3,0. 2018* [Video]. YouTube. https://www.youtube.com/watch?v=cTDctWexyz0

Crossword Puzzle Maker | World Famous from The Teacher's Corner. (n.d.). https://worksheets.theteacherscorner.net/make-your-own/crossword/
Mr. Weather's World. (2019, September 25). *Intertropical Convergence Zone | "The Doldrums" by Sailors!* [Video]. YouTube. https://www.youtube.com/watch?v=XzWteUpTpu8
PAGASA. (n.d.-a). https://www.pagasa.dost.gov.ph/learning-tools/philippine-area-of-responsibility
PAGASA. (n.d.-b). https://www.pagasa.dost.gov.ph/learning-tools/tropical-cyclone-wind-signal
Philippines: Mindanao - Intertropical Convergence Zone (ITCZ) (as of 06 July 2015) - Philippines. (2015, July 10). ReliefWeb. https://reliefweb.int/report/philippines/philippines-mindanao-intertropical-convergence-zone-itcz-06-july-2015
Ryan Kirkpatrick. (2014, February 26). *Convection experiment* [Video]. YouTube. https://www.youtube.com/watch?v=B8H06ZA2xmo
Yadav, S. (2024, April 13). *Composition and structure of atmosphere: isolation*. Geographic Book. https://geographicbook.com/composition-and-structure-of-atmosphere-insolation/

III. TEACHING AND LEARNING PROCEDURE		**NOTES TO TEACHERS**
a. Activating Prior Knowledge	**DAY 1** **1. Short Review (Picture the Atmosphere)** ● Present a picture of the layers of the atmosphere. Ask the learners to identify a layer and recall its important characteristics based on the illustration.  	**ANSWER KEY:**  Layers of Earth's atmosphere. *Image Source: geographicbook.com*

	• Ask the following questions: 1. Where do storms form in the atmosphere? (Troposphere) • Play a short video clip of a weather forecast. Link: https://www.youtube.com/watch?v=cTDctWexyz0 • Ask the students to take note of the terms they will hear from the video clip. • The following questions can be asked to gauge the students in relating the air pressure, temperature, and latitude with typhoons. 1. What is the role of air pressure and temperature in the formation of typhoons? 2. How does the latitude of a place relate to its temperature? air pressure? **2. Feedback (Optional)**	From the video clip, the words low-pressure area, typhoon, and thunderstorm must be emphasized and given attention to as this will be the springboard of the lesson. It is important to ask the right questions to draw ideas from the learners and determine whether they have a strong grasp of the pre-requisite competencies for effective instruction.
b. Establishing Lesson Purpose	**1. Lesson Purpose** Call volunteers from the class to read the following lesson objectives: 1. locate the Philippine Area of Responsibility on the map; 2. explain why the intertropical convergence zone (ITCZ) is a factor for storm formation; 3. determine the conditions needed to form a typhoon; 4. differentiate the types of tropical cyclones; 5. identify the parts of a typhoon; and describe the situation in each storm signal warning.	This lesson aims to allow the learners to better understand how typhoons form and how to utilize data from secondary sources to explain their knowledge about typhoons through varied instructions and activities. You may ask the students to state their experiences and questions in mind relevant to typhoons. Mention if this is covered in the discussion for the week or in the succeeding weeks. This gives your insight into their pre-conceived thoughts on the lessons.

2. Unlocking Content Vocabulary

To familiarize students with the terms they will often encounter in class, let them search for familiar terms in the puzzle below:

Figure 2. Crossword Puzzle for Lesson Vocabulary

U M T P T Y P H O O N Y X R R
G M S F E E Q S Q V J Y T Z Z
A A T K Q T M C U N N D C S L
R I O A W J F P A W Q C X T F
K P R E S S U R E E A L T R E
P E M V K K B E G R T O O Z U
A T C W U J S S S F A W W I C
S K L M K C P S C E Z T S V Z
F M Q M G R O U T S V G U S W
A S T E K H R R M Q N P T R X
D O D V F L O E M B E N G G E
M W W O P X C Y K Y O A T U T
Z L J C Q U H H Y H O E G N P
B D O F V J A Q O N J I V Z S
V U B A P O W J G M M W L R V

Source: *worksheets.theteacherscorner.net*

Discussion points:

In addition to those found in the puzzle, other terms can be introduced.

- **Adiabatic Temperature Change-** A cooling or heating of the air caused by the contraction or expansion of air molecules, as opposed to the loss or gain of heat.
- **Air pressure-** The amount of force exerted on a unit surface area.
- **Altitude-** Height expressed as the distance above a reference point, which is normally sea level or ground level.
- **Humidity-** The degree to which the air is charged with water vapor. This may be expressed as absolute humidity, relative humidity, and specific humidity.
- **Intertropical Convergence Zone (ITCZ)-** An area close to the equator where the trade winds of the Northern and Southern Hemispheres meet.
- **Low Pressure Area-** An area with meteorological characteristics such as cloud cover, precipitation, temperature, and wind that is characterized by lower air pressure than the surrounding area.

For future reference, you may use this link to create your own puzzles: https://puzzlemaker.discoveryeducation.com/word-search

	• **PAGASA-** The Philippine Atmospheric, Geophysical, and Astronomical Services Administration is responsible for the provision of weather forecasts and tropical cyclone warnings, flood bulletins and advisories, and hydrological, climatological, and farm weather forecasts. • **Storms**- These are atmospheric disturbances that are typified by lightning, thunder, heavy precipitation, and powerful winds. Tornadoes, blizzards, and tropical cyclones are examples of storm forms. • **Super Typhoon-** A tropical cyclone with winds that exceed 185 kph. • **Tropical Depression-** A tropical cyclone with winds that do not exceed 63 kph. Most common in the region of the equatorial or intertropical convergence and less frequently in the trade winds. • **Tropical Cyclone-** The general term for a cyclone that originates over the tropical oceans. • **Tropical Storm-** A tropical cyclone with winds of 64 to 118 kph. • **Typhoon-** A tropical cyclone with winds that exceed 118 kph. The name is applied to a severe tropical cyclone in the western Pacific.	
c. Developing and Deepening Understanding	**SUB-TOPIC 1: Inter-tropical Convergence Zone (ITCZ) and Storm** **1. Explicitation** **Activity 1.** This activity will let the learners determine the Philippine Area of Responsibility. 1. Let the students work in pairs to locate the following coordinates in the given map with gridlines. Table 1. Coordinates of the Philippine Area of Responsibility **COORDINATES** **LATITUDES** | **LONGITUDES** 5°N | 115°E 15°N | 115°E 21°N | 120°E 25°N | 120°E 25°N | 135°E 5°N | 135°E	See Learning Activity - *Activity #1: Find Me* Table Source: pagasa.dost.gov.ph

	2. The learners will connect the plotted coordinates using a pencil and ruler in the figure on the worksheet. *Guide Questions* a. What can you say about the geographical location of the Philippines? b. What environmental phenomena can be associated with the location of the Philippines? c. What are the effects of these phenomena on the Filipinos? d. What do you think are the conditions why we experience these phenomena? **Discussion Points:** • The Philippines is surrounded by bodies of water. Due to this location, it has experienced numerous typhoons each year. • In the west of the Pacific Ocean, its location puts it directly in the path of these storms. • While it is true that not all typhoons are destructive, several typhoons have caused significant damage to Filipinos. **DAY 2** **1. Worked Example** 1. Present and discuss the infographic below. 2. Using the same blank map in Activity #1, let the students estimate the location of the ITCZ using the drawing materials. 3. The learners will locate and shade the region in the map where ITCZ is located as presented in the infographic. **2. Lesson Activity** **Activity 2.** • Present to the learners the video on the Intertropical Convergence Zone. Link: https://www.youtube.com/watch?v=XzWteUpTpu8 **Discussion Points:** • An area close to the equator where the trade winds of the Northern and Southern Hemispheres meet is known as the Inter-Tropical Convergence Zone or ITCZ.	Highlight that what they plotted is the Philippine Area of Responsibility (PAR). You can ask learners to how they understood the ITCZ in the video and in the news. See Learning Activity - *Activity #2: Find Me Again*

	• ITCZ air becomes more humid and buoyant due to the combination of warm tropical waters and intense sun heat. By joining forces, the trade winds help elevate the buoyant air, which sets off a never-ending chain of thunderstorms as the air rises, expands, and cools, releasing stored moisture. • Unlike the typical cold and warm seasons found in higher latitudes, the seasonal movement of the ITCZ results in prominent variations in rainfall in many tropical countries, giving rise to distinct wet and dry seasons unique to tropical regions. Weather disruptions of a severe nature may arise from extended movements within the ITCZ. **DAY 3** **SUB-TOPIC 2: Low-Pressure Area and Storm** **2. Worked Example** **Activity 3.** This activity will demonstrate the effect of different temperatures on the movement of the air. 1. The learners will be divided into small groups. 2. Follow instructions in LAS. 3. Let the learners discuss their observations within the group. 4. Answer the guide's questions and present them to the class. *Discussion Points:* • Convection is a mode of heat transfer that occurs in fluids. It allows hot fluids to be less dense and rise making the cool air sink. This is called the convection current. This explains the circulation of colored water in the container. • In terms of LPA, it is an area with meteorological characteristics such as cloud cover, precipitation, temperature, and wind that is characterized by lower air pressure than the surrounding area. The air rises, cools, and forms clouds as it converges into the LPA, which causes rain or storms to form. The LPA has the potential to intensify into many weather systems, such as storms or tropical cyclones. • Storms are atmospheric disturbances that are typified by lightning, thunder, heavy precipitation, and powerful winds. Tornadoes, blizzards, and tropical cyclones are examples of storm forms	See Learning Activity - *Activity #3: Convection Current*

3. Lesson Activity (What will you do?)

Give the following situation to the learners and ask them what they will do if they are the ones in that situation.

Situation: You are supposed to book a flight for a vacation. In order for you to decide, you watch the weather forecast for tomorrow and see the following data:

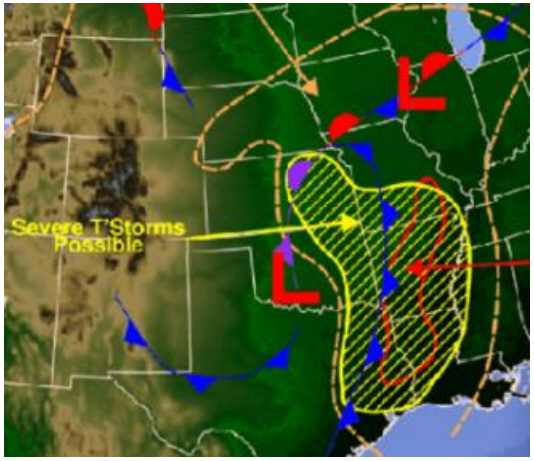


Figure 4. A sample weather forecast.
Source: https://scijinks.gov/weather-map/

- Ask the class, "Will you book a flight or not?" Let them justify their answers.
- After processing the answers of the learners, the teacher will present a video clip explaining high- and low-pressure systems.
  Link: https://www.youtube.com/watch?v=5YfxvISIQas
- After watching such, the teacher will ask the learners if they still book a flight or not.

Day 4
SUB-TOPIC 3: Condition to Form a Typhoon

2. Worked Example

Activity 4.

1. Present the video clip on how a tropical cyclone forms and develops. Link: https://www.youtube.com/watch?v=UKL9NIxLIIE

See Learning Activity - *Activity #4: Name the Parts*

2. Let the learners label the parts of the figure below through their worksheets.

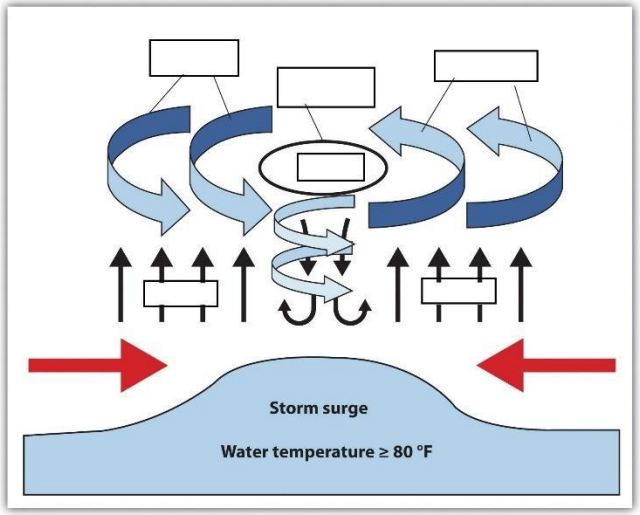
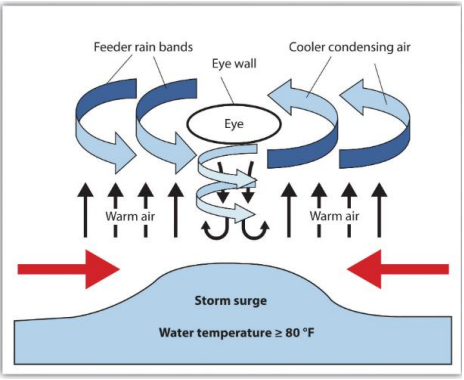


Figure 5. Formation of a Tropical Cyclone
Image Source: courses.lumenlearning.com

Discussion Points:

- In both the Northern and Southern Hemispheres, tropical areas between 5- and 20 degrees latitude are where typhoons normally occur. Typhoon formation and intensification require warm sea surface temperatures of at least 26.5°C (80°F). Typhoons form over warm ocean waters with sufficient moisture content to feed the storm. Typhoon development is aided by the ITCZ, which provides the trade winds and an area of low pressure needed for storm formation to converge.

Key:



- The strength of the cyclone is classified using a warning system that follows:

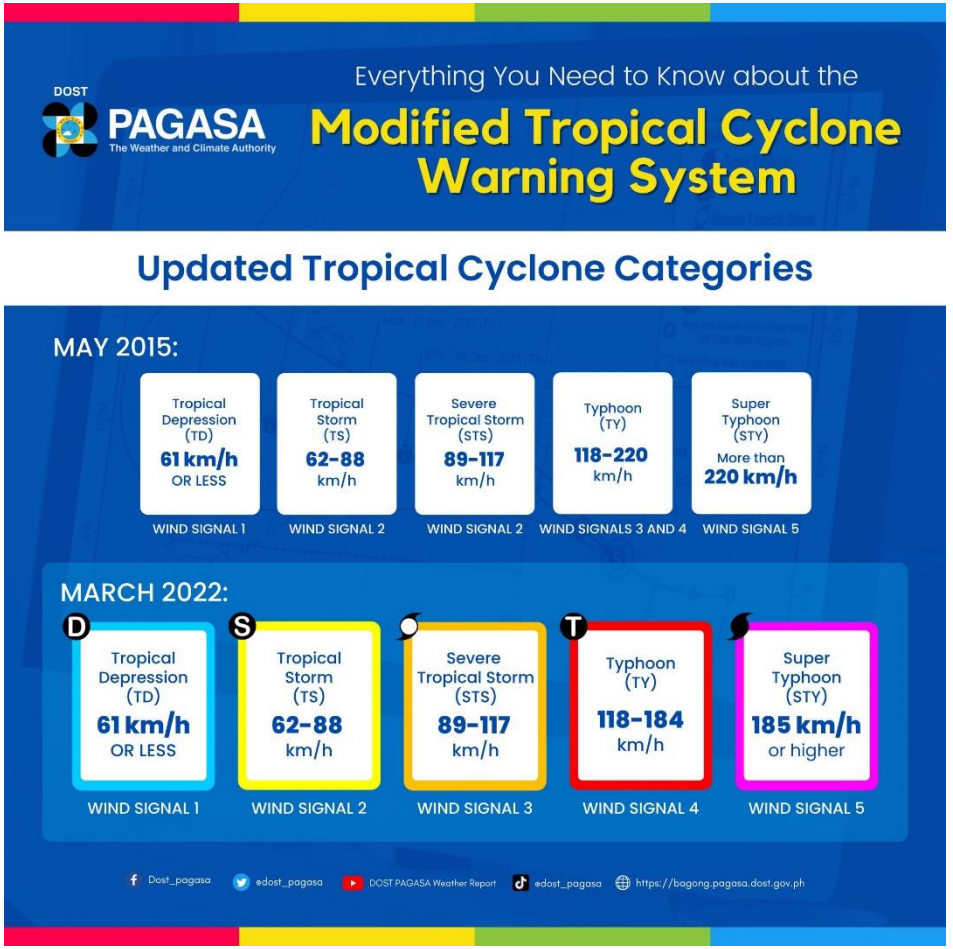


Figure 6. Modified tropical cyclone warning system
Source: pagasa.dost.gov.ph

3. Lesson Activity

Activity 5: Show what you've got!

This activity will utilize differentiated activity where the learners prepare for a mini show of the different scenarios in each tropical storm signal. The class will

	be divided into at least three (3) groups. The teacher can choose below what tasks will be given for each group. 1. The group will prepare a short skit about what happens during a storm signal number 3. 2. The group will act as newscasters reporting the forecast during storm signal number 2. 3. The group will act as creative artists on how you would warn the citizens about the forming tropical cyclone.	Use the rubric below to assess the presentation of each group. Creativity – 10 pt Accuracy – 10 pt Preparedness – 5 pt **Total: 25 pt**
D. Making Generalizations	**1. Learners' Takeaways** On one whole sheet of pad paper, students must summarize their learning in a mind map using the following words: Typhoon Storm Tropical Cyclone Convection Temperature Pressure Intertropical Convergence Zone Philippine Area of Responsibility Students may add words that can improve their mind maps. **2. Reflection on Learning** At the back of their pad paper, the students answer the question: "Why would knowing the formation of a storm matter to various professions?"	***Grading Rubric:*** Accuracy – 10 pt Use of Words – 10 pt Total: 20 pt ***Grading Rubric:*** Accuracy – 10 pt Coherence of thought – 5 pt Total: 15 pt

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION		**NOTES TO TEACHERS**
A. Evaluating Learning	**1. Formative Assessment** Choose the letter of your answer. 1. In which of the following layers of the atmosphere does weather occur? a. troposphere	***ANSWER KEY*** *1. A* *2. C* *3. A*

<table>
<tr><td></td><td colspan="3">b. stratosphere
c. mesosphere
d. exosphere
2. Which of the following is the generic term for an intense circulating weather system over tropical seas and oceans?
a. Low-pressure area
b. Hurricane
c. Tropical cyclone
d. Tropical depression
3. How is the weather in the eye of a typhoon described?
a. calm
b. violent and windy
c. intense
d. sunny
4. How does the landform affect typhoons?
a. It makes the typhoon more violent.
b. It disrupts the rotation of the typhoon.
c. It helps in the formation of typhoons.
d. It does not affect the typhoon at all.
5. What causes tropical cyclones to spin?
a. gravitational pull of the Sun
b. gravitational pull of the Moon
c. revolution of the Earth around the Sun
d. rotation of the Earth in its axis

2. Homework (Optional)</td><td>4. B
5. D</td></tr>
<tr><td rowspan="3">B. Teacher’s Remarks</td><td>Note observations on any of the following areas:</td><td>Effective Practices</td><td>Problems Encountered</td><td rowspan="3">The teacher may take note of some observations related to the effective practices and problems encountered after utilizing the different strategies, materials used, learner engagement and other related stuff.</td></tr>
<tr><td>strategies explored</td><td></td><td></td></tr>
<tr><td>materials used</td><td></td><td></td></tr>
</table>

	learner engagement/ interaction			Teachers may also suggest ways to improve the different activities explored/lesson exemplar.
	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?*			Teacher's reflection in every lesson conducted/facilitated is essential and necessary to improve practice. You may also consider this as an input for the LAC/Collab sessions.