8

Lesson Exemplar for Science

Quarter 2

Lesson

1

IMPLEMENTATION OF THE MATATAG K TO 10 CURRICULUM

Lesson Exemplar for Science Grade 8
Quarter 2: Lesson 1 of 6 (Week 1)
SY 2025-2026

Development Team

Writer:
- Melody C. Alcantara (Philippine Normal University – Manila)

Reviewed and Revised:
- Vic Marie I. Camacho (Philippine Normal University – Manila)

Management Team

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

Every care has been taken to ensure the accuracy of the information provided in this material. For inquiries or feedback, please write or call the Office of the Director of the Bureau of Learning Resources via telephone numbers (02) 8634-1072 and 8631-6922 or by email at blr.od@deped.gov.ph.

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	The use of timeline and charts can illustrate scientific knowledge of the structure of the atom has evolved over time.
B. Performance Standards	*By the end of the Quarter*, learners demonstrate an understanding of the structure of the atom and how our understandings have changed over time. They draw models of the atom and use tables to represent the properties of subatomic particles. They demonstrate their knowledge and understanding of the periodic table by identifying the elements, their symbols, their valence electrons, and their positions within the groups and periods. They design and/or create timelines or documentaries as interesting learning tools.
C. Learning Competencies and Objectives	***Develop a timeline for the historical background of the development of the current Atomic Model that identifies tiny particles as atoms;*** 1. *understand how the idea of the atom came about;* 2. *draw diagrams to represent the structure of the atom at different levels of development;* 3. *explain how the subatomic particles were discovered; and* 4. *recognize the contributions of different scientists in the development of the atomic model* ***Differentiate the subatomic particles protons, neutrons, and electrons in terms of their symbol, mass, charge, and location within an atom;*** 5. *Understand the characteristics of subatomic particles and their contribution in the identity of the atom.*
D. Content	• The idea of Atoms from Democritus to Dalton • Laws of Matter • The Discovery of Electrons by J.J. Thomson • Robert Millikan and the Charge and Mass of Electrons • The Nucleus and Rutherford's Atomic Model • The Discovery of Neutrons
E. Integration	Integrate SDG 6, 12, 14 by discussing how small particles like microplastics can cause harm to the environment, specifically to marine waters and organisms. Let the students read the article entitled "Microplastics: Small Particles, Big Threat" from Microplastics: Small Particles, Big Threat · Frontiers for Young Minds (frontiersin.org) https://kids.frontiersin.org/articles/10.3389/frym.2021.608621.

II. LEARNING RESOURCES

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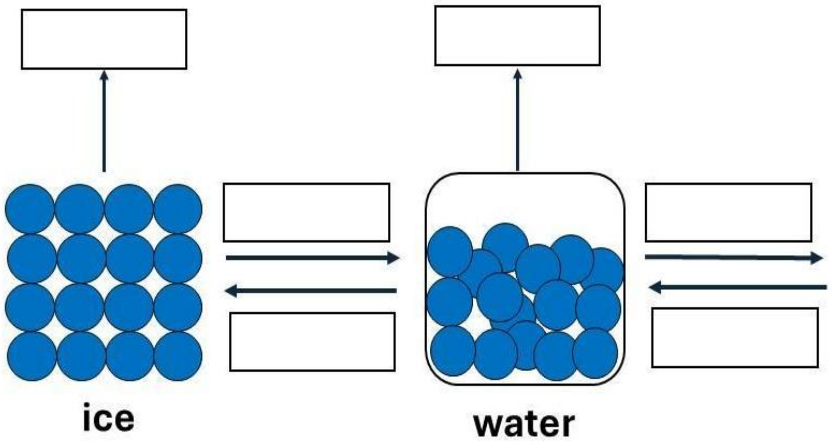
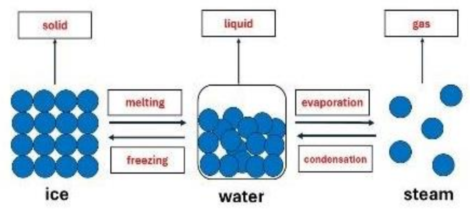
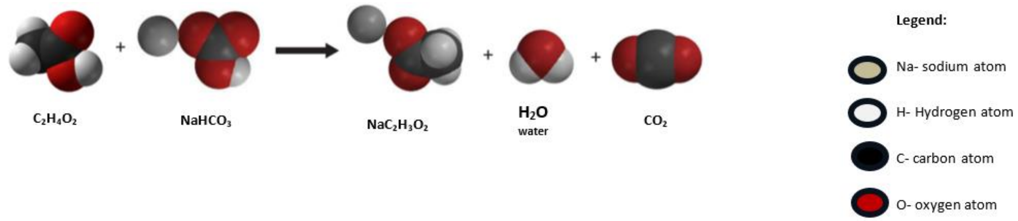
III. TEACHING AND LEARNING PROCEDURE		NOTES TO TEACHERS
A. Activating Prior Knowledge	**DAY 1** **1. Short Review** A. Label the diagram below using the words in the word-bank. Liquid melting gas freezing Boiling solid condensing	This short review activity can be used to identify possible knowledge gaps and misconceptions from the previous topic on Particulate Model of Matter from Grade 7 Q1 Science. The students are expected to recall the description of particles in terms of arrangement, motion, energy and attraction.

	 B. Answer the questions below. 1. How are particles arranged in: a. solid: b. liquid: c. gas: 2. How do the particles move in: a. solid: b. liquid: c. gas: 3. What happens to the movement and attraction of particles when the temperature increases?	 B. 1a. regular arrangement. 1b. close together and random 1c. far apart and random 2a. vibrate at fixed position. 2b._move randomly and can flow around each other 2c. move fast in all directions 3. The particles move faster due to an increase in their energy, overcoming the attraction among them in the process.
B. Establishing Lesson Purpose	**1. Lesson Purpose** **Activity Title: *"Cut it until you Make it"*** Materials: scissors and colored 11"x1" piece of paper Instructions: Fold the paper in half then cut along the centerfold. Take half of the paper, fold it again in half and then cut it again along the fold. Do this repeatedly until it is difficult to cut. Once the students can no longer cut the paper, ask them the following questions. a. How can you describe the last piece of paper you are holding? b. How can you compare it to the original size of the paper?	Ask the students to bring scissors for this day's lesson. Provide enough supervision on the use of scissors. Make sure the students do this in the same orientation of the paper. **Possible Answers:** a. Tell them that after some time, the size of the paper will be the size of an atom; b. Here you should

	2. Unlocking Content Vocabulary Present these new terms to students and explain their definition. • **Atom-** basic unit of matter. • **Nucleus-** center of the atom • **Subatomic**- smaller than the atom. • **Electrons-** negatively charged subatomic particles • **Protons –** positively charged subatomic particles • **Neutrons –** neutral subatomic particles.	expect students to come up with terms like uncuttable, indivisible, small or smaller. Let students list words they come up with. Add to the content vocab #2. These new terms will be encountered by the students in this lesson.
C. Developing and Deepening Understanding	**SUB-TOPIC 1: Greek Philosophers and the Atomos** **1. Explicitation** Discuss the experience of the students in the "Cut it until you Make it". Words such as, small, indivisible, uncuttable would most likely arise. Relate this to their idea of particles from the previous lesson. Ask the students: 1. How do you define particles? 2. What are the examples of particles? 3. What do you call the smallest particle? Relate the students' answer to how Democritus proposed his view of the components of Matter and how he was not supported by other Greek Philosophers like Aristotle. Regardless, explain the Greek philosophers' way of understanding things around them. State that early Greek philosophers preferred reason and logic over trying and observation and hence their theories lack experimentation. This led to why the idea of atoms was only brought up again in 1808, 2000 years later by John Dalton. **2. Worked Example** **Activity 1.** Group the students into an appropriate number for collaborative work. Let the students work on Activity. Let them read and discuss the content of the LAS within their group. They may conduct additional research into the scientists and their work	**Possible Answer:** 1. Students might answer, "tiny things", "small things", "small/tiny pieces" that make up matter. 2. Since students already have an idea of the particles of solid, liquid and gas, they may give these as examples or if they have an advanced knowledge, "atom", or the subatomic particles may also come up. 3. Answers may vary but there may be a student who will come up with "atom" as an answer. FOR THE TEACHER Dalton's Atomic Theory https://www.britannica.com/video/153020/John-Dalton-development-atomic-theory See Learning Activity Sheet: *Activity #1: The Atom: from Greeks to Dalton*

	Ask the students to answer the question while doing the activity. A. Democritus: 1. Draw a representation of Democritus' idea of an atom. 2. Why do you think Democritus' idea of the atom was disregarded? Who influenced this movement? 3. Cite other view/s related to matter which prevailed during the time of Ancient Greeks. B. John Dalton: 1. Draw a representation of John Dalton's description of an atom. 2. What are the similarities of Democritus and Dalton' view on atoms? 3. How does the description of an atom differ between Dalton and Democritus? Allow them to present their answers. Use their answers as a springboard for discussing the details of the Atomic Theory from Democritus then to Dalton. Discuss the Laws of Matter: Law of Conservation of Mass; Law of Definite Proportion and Law of Multiple Proportions to support Dalton's atomic theory. **DAY 2** **SUB-TOPIC 2: Daltons Atomic Theory** **Activity 2.** To further understand Dalton's atomic theory, ask them to work on the activity on LAS. Make sure that safety precautions, proper disposal and behavior while doing the activity are discussed with the students prior to the conduct of the activity. Let them record their data and answer the guide questions. A. Law of Conservation of Mass 1. What kind of change has occurred? 2. What evidence/s can support your answer in No. 1? 3. Is there a change in mass after the process? If yes, what might have happened to cause such difference? 4. The representation below shows the atoms involved in the process,	*Possible Answers To GQ: (Activity 1)* A1&B1. The students should be able to draw a circle or a sphere for both Democritus and John Dalton's atom. Students may also represent Democritus atom in other shapes/sizes as cited by other references. A2. Aside from the lack of experimental evidence, Aristotle, a famous and influential Greek Philosopher, played a major role why Democritus' idea was disregarded. He believed that matter is infinitely divisible and there is no such thing as void. Democritus' idea was also against Christian beliefs. A3. One of the possible answers may be: Aristotle and Empedocles stated that matter is composed of four elements: fire, earth, water and air. B2. Both Democritus and Dalton described atoms as being indivisible and indestructible. They also stated that all matter is composed of these atoms. They also emphasized that atoms could combine. B3. Dalton's theory, unlike Democritus' idea emphasized that atoms have specific shapes, sizes and masses. Additionally, Democritus' idea was based on reasoning and logic without scientific evidence while John Dalton's idea was based on scientific evidence such as data from chemical reactions. See Learning Activity Sheet: *Activity #2: The Law of Conservation of Mass* *Possible Answers to the GQ: (Activity 2)* A. Law of Conservation of Mass 1. chemical change 2. visible evidence like evolution of gas and change in temperature (you may feel the container became hot) should be observed.



how can you relate this to postulate 5 of Dalton's atomic theory?

Let the students present their data and answers to the guide questions. Rate the student's presentation based on the rubrics below:

Criteria	4	3	2	1
Data Collection	Accurate and complete measurements of mass before and after the reaction.	Mostly accurate measurements, with minor discrepancies.	Some inaccuracies in measurements.	Significant inaccuracies or missing data.
Explanation of Results	Thoroughly explains the observed change in mass based on the law of conservation of mass.	Provides a reasonable explanation, but may lack depth or clarity.	Superficial explanation or inaccuracies.	No explanation or incorrect understanding.
Scientific Language	Precise and appropriate scientific terminology used consistently.	Mostly accurate scientific language, with occasional errors.	Some misuse of terminology.	Frequent misuse or lack of scientific language.
Overall Presentatio n	Neat, organized, and visually appealing	Generally neat and organized, but minor improvements could be made.	Somewhat messy or disorganized.	Disorganized and difficult to follow.

DAY 3

SUB-TOPIC 3: Subatomic Particles: The Electrons

1. **Explicitation**

At this point, the idea that the atom is small and indivisible has been established by the theory of Dalton. Now ask the students to imagine how small an atom is. You may provide these examples.

3. ideally, there should be no change in mass after the reaction. **If there is a slight change, this may be attributed to some losses due to an imperfect system where some gas may have leaked or error in weighing and transferring**.
4. you may ask the students to count the atoms on the left and right side of the reaction. Ask them to compare the numbers. This shows that in a chemical reaction, atoms rearrange but their total number remains the same.

The atom is small that:		Scientific Notation
a period (.)	can fit 2 000 000 atoms across it;	
the tip of a hair	can fit 390 000 000 000Carbon atoms;	
a single grain of sand	can fit 10 000 000 atoms;	
a medium-sized orange	Can fit 1 000 000 000 atoms;	
the head of a pit	can fit more than 10 million hydrogen atoms across it and;	
the human body	Can fit about 1 000 000 000 000 000 000 000 000 000 atoms.	

As a review of their lesson on measurement, ask the students to write the big number in scientific notation containing 3 significant figures. You may also let them watch the following videos and create a table similar to the one above where they arrange the presented materials in order of decreasing size.

1. Voyage into the world of atoms: https://www.youtube.com/watch?v=7WhRJV_bAiE
2. How Small Are Atoms? until 2:49 min: https://www.youtube.com/watch?v=yf-lNTN_Ufc

When the students already have an idea of the size of an atom, discuss that developments in technology lead scientists to delve deeper into the structure of the atom.

2. Worked Example
Activity 3.

Group the students into an appropriate number for collaborative work. Let the students work on Activity on the LAS. Let them read and discuss the content of the LAS within their group.

Cathode Ray Tube Experiment:

1. Briefly describe the Cathode Ray Tube (CRT) diagram. Use the diagram as basis for completing the CPEOE table.

See Learning Activity Sheet: *Activity #3: The Electrons*

In introducing the Predict explain Observe Explain Activity, students are given enough time to fill in their ideas on the Predict and Explain columns before watching the video. Let the students present their ideas to the class.

After watching the video, give time for students to fill-in their ideas in the Observe and Explain columns. Ask the students to present their observations and corrected explanations.

Possible Answers:
1-4. CPOE answers are in red.

CONDITIONS	PREDICT	EXPLAIN	OBSERVE	EXPLAIN
What will be the direction of the ray coming from the cathode?	Answers may vary	Answers may vary	Rays moved toward the positively charged electrode (anode)	The cathode rays are composed of negatively charged particles. These particles are deflected by negatively charged pole/plate: as the saying goes, "like charges repel." In turn, these particles are attracted to the positively charged electrode just like the saying "opposite charges attract".
What will happen to the cathode ray when the magnets are moved closer to the tube	Answers may vary	Answers may vary	Cathode rays are deflected by the north pole of the magnet	
What will happen when an electric field is applied across the cathode ray tube	Answers may vary	Answers may vary	The cathode rays were attracted toward the positively charged plate.	

2. Imagine when the stated Conditions are applied in the CRT. Discuss these with your group then fill in the Predict part and provide a brief explanation in the Explain column.

Conditions	PREDICT	EXPLAIN	OBSERVE	EXPLAIN
What will be the direction of the ray coming from the cathode?				
What will happen to the cathode ray when the magnets are moved closer to the tube				
What will happen when an electric field is applied across the cathode ray tube				

3. Watch the video “Cathode Ray Tube” to visualize the characteristics of a cathode ray. Then, fill up the Observe part of the CPEOE table.
   Video: https://www.youtube.com/watch?v=vXOeehVTcRA
4. Discuss within your group how these observations can be explained. Write your explanation in the Explain part of the CPEOE table.
5. Based on the characteristics of the cathode ray you observed from the video and the findings of J.J. Thomson in his own cathode ray tube experiment, draw a model of the atom.
6. What are the other characteristics of the cathode ray tube based on the video that are not included in the CPEOE table? What do these characteristics say about electrons?

Millikan’s Oil Drop Experiment.
Guide Questions:
1. What is the purpose of Millikan’s oil drop experiment?
2. Draw the experimental set up used by Robert Millikan.
3. What are the observations made by Millikan?

5. The students’ answers may vary but they should be close to the illustration of bread/pudding with plums/raisins.

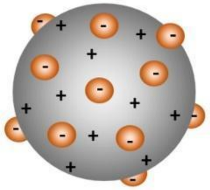


Image Source:
https://commons.wikimedia.org/wiki/File:%C3%81tomo_Thomson.png

6. Cathode rays travel in straight line which means that electrons behave as a particle; Cathode rays possess some kinetic energy which means that electrons are in motion.

Millikan’s Oil Drop Experiment
1. to determine the charge of electrons.
2. answer may look like the image below

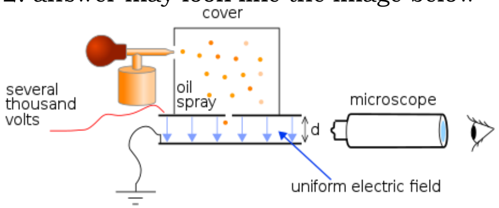


Image Source:
https://commons.wikimedia.org/wiki/File:Simplified_scheme_of_Millikan%E2%80%99s_oil-drop_experiment.svg

3. Millikan’s observations are:
a. uncharged oil droplets are suspended in air between charged plates.
b. when electric field or voltage was applied, some droplets move upward while some move downward due to gravitational force.
c. the charge of the droplets are always multiples of a fundamental unit of charge.
d. the charge of a droplet was calculated based on the amount of voltage required to

3. **Lesson Activity**

Edible Filipino Plum Pudding Model

Ask the students to bring any from **a (“pudding**”) and any from **b (“plum”)** from the local market:

a. ube halaya, kalamay, maja, pinoy style tikoy, plain biko.
b. latik, coco flakes, canned corn kernels, bukayo, fried peanuts, coconut jam, peanut butter, cashew butter.

Ask them to create a plum pudding model using any combination of the Filipino delicacies/products they brought. They may use the coconut jam/peanut butter/cashew butter as either “plum” or to glue other “plum” representations to the “pudding”.

Allow the students to present their output to the class and explain how they came up with it. Rate the students’ work based on the rubrics below.

Criteria	5	3	2	1
Representation	The “pudding” and “plums” are accurately represented, and the overall structure resembles the plum pudding model.	The representation is mostly accurate, but there are minor inconsistencies or imperfections.	The model shows effort, but significant deviations from the plum pudding concept are present.	The model lacks clear representation of the plum pudding model.
Arrangement and Distribution	The “plum” is evenly spaced around the “pudding”	Some uneven spacing, but overall arrangement is reasonable.	The spacing is inconsistent, affecting the overall appearance.	The arrangement lacks organization.
Creativity and Presentation	The student demonstrates creativity by incorporating additional edible elements or decorative touches.	Some creativity is evident, but minimal embellishments.	Basic presentation without extra flair.	Lack of effort in presentation.
Discussion and understanding	The student can explain the plum pudding model, its historical context, and its limitations.	Adequate understanding with minor gaps.	Basic understanding but lacks depth.	Limited understanding or inability to discuss the model.

balance the gravitational force such that the droplet is suspended in mid-air.

e. the charge of the droplet was found to be 1.602 × 10^(-19) coulombs- the fundamental unit of charge or the elementary charge of electron.

f. The mass of the electron was found to be 9.10 x 10-28 g.

Lesson Activity: Edible Filipino Plum Pudding Model

Note: *Prior to doing this activity, ask the students to:*
1. be aware of food allergies, especially to nuts.
wash their hands thoroughly and use plastic gloves in handling food and.
2. use clean paper plates and reusable utensils

A.
1. electrons
2. positively charged space

B.
1. answers are bold and underlined

FOR THE TEACHER:
Discovery of the electron
https://www.youtube.com/watch?v=Rb6MguN0Uj4&t=165s

Millikan
https://www.youtube.com/watch?v=2HhaQtvICe8

DAY 4

SUB-TOPIC 4: The Nuclear Model of the Atom and the Discovery of Neutrons

1. **Explicitation**

From the previous model, the plum pudding model, the students should already understand the presence of both positively charged space and negatively charged particles inside the atom. This is vital since based on observation, the atom is neutral.

You may ask the students to work on ***What you will do: Activity 3.2 Positive and Positive Poles from*** *Department of Education, Project EASE, Module 10 Chemistry p. 17.*

Place the two positive ends of a magnet near each other. Observe what happens. The students should observe that when similar poles of the magnet are placed near each other, the magnets tend to move away from each other. As the fundamental laws of Physics say, "similar poles repel" or "opposites charges attract; like charges repel".

You can also lead them to the new discovery of Oxford students that like charges (specifically negative charges) may attract in solution at certain conditions. https://www.chem.ox.ac.uk/article/like-charges-attract

2. **Worked Example**

Group the students into an appropriate number for collaborative work. Let the students work on Activity on the LAS. Let them read and discuss the content of the LAS within their group.

Ask the students to answer the Guide Questions:

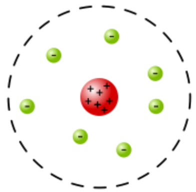
1. What observations did Rutherford make in his experiment?
2. What do his observations tell us about the structure of the atom?

See Learning Activity Sheet: *Activity #4: The Center of the Atom*

Activity 4 Possible answers to GQ

1. the observations made by Rutherford are:
a. most alpha particles pass through without deflections.
b. very few alpha particles are deflected at large angles and bounced back.

2. these observations suggest that:
a. most of the atom is empty space.
b. there's a tiny, dense, positively charged nucleus at the center of the atom.

3. 

4. neutrons are found in the nucleus; has no charge and has a mass of 1.67262 x 10^{-24}

5. the discovery of neutrons explained the mass of the atom which couldn't be accounted for with only the protons inside the nucleus; led to the development of the modern atomic model

A. Rutherford's Planetary model has a dense, positively charged center called nucleus which accounts for the mass of the atom. It contains positively charged protons. Orbiting around the nucleus (in large orbits) are negatively charged electrons. The atom is mostly empty space with the nucleus occupying only a small portion at the center.

Possible Answers:

1. When the plum pudding model was used, alpha particles passed through the gold foil with minimal deflection
2. When Rutherford's atom was used, most of the alpha particles pass through but some was deflected at large angles and some even bounced back.
3. The plum pudding model shows a spherical positively charged structure with negatively

3. Draw an illustration of an atom based on the description of Ernest Rutherford.
4. What are the characteristics of a neutron?
5. What is the significance of the discovery of a neutron in the understanding of the atomic structure?

Allow them to present their answers and discuss these among their classmates.

3. Lesson Activity

A. Give a brief description for the illustration below.

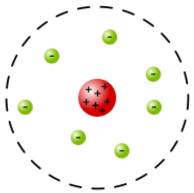


Image Source: https://commons.wikimedia.org/wiki/File:Rutherford_atomic_planetary_model.svg

B. Use the P het simulation on Rutherford scattering for students to better understand the nucleus. This can be done as a class or as small groups. Provide the simulation link to the students. Let them describe what they observe in the screen. Direct students to the important parts that they will be using for the activity.

Simulation:
https://phet.colorado.edu/sims/html/rutherford-scattering/latest/rutherford-scattering_all.html

Provide the instructions in print or flash on screen:
Instructions:

i. Select the **“Plum Pudding Atom”**. Turn on the alpha particles (blue button). Click “Traces” box. Observe the paths the alpha particles take.
ii. Select the **“Rutherford Atom”**. Turn on the alpha particles (blue button). Click “Traces” box. Observe the paths the alpha particles take.

Let learners answer the following Guide Questions

charged electrons embedded on it randomly like a plum in a pudding. Together, this makes the atom neutral overall.
Rutherford’s planetary model of the atom has a small, dense, positively charged center. Around it is a vast empty space where the negatively charged electrons can be found. These electrons orbit around the nucleus in specific paths.
4. small, dense and positively charged

Particle	Mass (g)	Charge	
		Coulomb	Charge Unit
Proton	1.67262×10^{-24}	$+1.6022 \times 10^{-19}$	+1
Neutron	1.67262×10^{-24}	0	0
Electron	9.10938×10^{-28}	-1.6022×10^{-19}	-1

1. Describe the paths of alpha particles when the plum pudding model was used.
2. Describe the paths of alpha particles when the Rutherford atom was used.
3. How do the two models differ?
4. Based on this activity (Gold Foil Experiment), what characteristics of the nucleus can be deduced?

C. Summarize the characteristics of subatomic particles in this table.

Particle	Mass (g)	Charge	
		Coulomb	Charge Unit
Proton			
Neutron			
Electron			

D. Making Generalizations

1. Learners' Takeaways

A. Let the students read the article entitled "Microplastics: Small Particles, Big Threat" from Microplastics: Small Particles, Big Threat · Frontiers for Young Minds (frontiersin.org) https://kids.frontiersin.org/articles/10.3389/frym.2021.608621.

1. What are microplastics?
2. How are microplastics formed?
3. What is/are the impact/s of microplastics to marine animals?
4. How does microplastics affect coral reefs and giant clams?
5. How can we reduce microplastics in the environment?

B. Allow the students to create a concept map about what they have learned in this week's lesson.

2. Reflection on Learning

Ask the students to answer the following questions:

1. Which classroom activities made the content clearest to me? Why did I respond to this activity well?
2. Which of the presented concepts I had difficulty learning? What did I do to learn them?
3. What will I do to the learnings I had in this lesson?

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION		NOTES TO TEACHERS
A. Evaluating Learning	**DAY 5** **1. Formative Assessment** Allow the students to answer the following questions. 1. Who introduced the idea that matter is made up of tiny, indivisible particles called atoms? A. Aristotle C. Democritus B. Chadwick D. Lavoisier 2. Which of the following statements correctly depicts the law of definite proportions? a. The mass ratio of H and O in water (H_2O) differs depending on its source. b. The mass ratio of C and O in CO_2 from burning fossil fuel and CO_2 from human and animal respiration is different. c. The mass of oxygen in water is always 8 times that of hydrogen present regardless of where it came from. d. The mass of carbon in carbon dioxide is always 3 times that of oxygen present regardless of where it came from. 3. Which of the following pairs of compounds can be used to illustrate the law of multiple proportions? A. ZnS_2 and $ZNCl_2$ C. HBr and H_2O_2 B. NH_4 and NH_4Br D. CO and CO_2 4. Who is the scientist who discovered the law of definite proportions? A. Proust C. Dalton B. Lavoisier D. J.J. Thomson 5. Whose work showed for the first time that atoms emit negatively charged particles? A. John Dalton C. J.J. Thomson B. Ernest Rutherford D. Robert Millikan 6. Which experimental evidence did Thomson use to prove that particles made up cathode rays rather than light? A. Cathode rays refract through a prism. B. Cathode rays are emitted in a vacuum tube. C. Cathode rays produce interference patterns.	**Expected Responses:** 1. C 2. C 3. D 4. A 5. C 6. D 7. C 8. C 9. C 10. B 11. B 12. C 13. C 14. A 15. D

	D. Cathode rays are deflected in the presence of electric and magnetic fields. 7. What model shows an atom as a ball of positive charge with electrons embedded in it, much like chocolate chips spread through cookie dough? A. Chocolate Chip model B. Plum and nuts model C. Plum Pudding model D. Chocolate Pudding model 8. Which of the following statements did NOT correctly describe the results of the experiments done to determine the nature of the atom? A. The cathode ray tube proved that electrons are negatively charged particles. B. Rutherford's thin gold foil experiment led to the discovery of the charge of the nucleus. C. The results of Rutherford's experiment supported J.J. Thomson's plum pudding model. D. Millikan's oil drop experiment showed that the charge of the electron is -1.6022×10^{-19} C 9. If Rutherford's experiment proved the correctness of J.J. Thomson's model, what would he observe? A. alpha particles are greatly deflected by the foil. B. alpha particles bounced back from the foil. C. Alpha particles had little to no deflection. D. more alpha particles are formed. 10. Who is the scientist whose experiment led to the idea that the center of the atom is a dense positive charge? A. John Dalton C. J.J. Thomson B. Ernest Rutherford D. Robert Millikan 11. What is the significance of the alpha particles that deflected from the gold foil? A. It showed that the gold foil is very thin. B. It showed that an atom is mostly empty space C. Alpha particles are emitted by radioactive elements.	

	D. It showed that the mass of the atom is concentrated at the space outside the nucleus. 12. What does the atom consist of? A. electrons, protons, and alpha particles B. neutrons and protons C. electrons, protons, and neutrons D. elements, protons, and electrons 13. How many protons are there in any given neutral atom relative to the number of electrons? A. more than the amount of electrons B. less than the amount of electrons C. equal to the amount of electrons D. insufficient information 14. Which of the following correctly describes a proton? A. at the subatomic particle level, it is massive and has a +1 charge B. at the subatomic particle level, it is massive and has a –1 charge C. at the subatomic particle level, it is light and has a +1 charge D. at the subatomic particle level, it is light and has a –1 charge 15. Which subatomic particle(s) are found in the nucleus and account for most of the mass of the atom? A. electrons and protons B. neutrons and electrons C. protons and electrons D. protons and neutrons **2. Homework** 1. Watch the ETUlayLevelUp for this topic on the DepEd Philippines Youtube Channel. a. Science 8 - Monday Q3 Week 4 #ETUlayLevelUp https://www.youtube.com/watch?v=3QcWMDiBLwc&t=1554s b. Science 8 - Monday Q3 Week 5 #ETUlayLevelUp https://www.youtube.com/watch?v=5fKmm8s64pw&t=647s 2. Answer the following questions.	Check and Discuss students' answers to assess learning.

	a. What specific part of the lesson became clear after watching the ETUlayLevelUp videos? b. How did the ETUlayLevelUp videos help you in understanding the topic better? c. 3. Bring a periodic table for the next meeting.			
B. Teacher's Remarks	*Note observations on any of the following areas:*	**Effective Practices**	**Problems Encountered**	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. Teachers may also suggest ways to improve the different activities explored/lesson exemplar.
	strategies explored			
	materials used			
	learner engagement/ interaction			
	others			
C. Teacher's Reflection	*Reflection guide or prompt can be on:* • *principles behind the teaching* *What principles and beliefs informed my lesson?* *Why did I teach the lesson the way I did?* • *students* *What roles did my students play in my lesson?* *What did my students learn? How did they learn?* • *ways forward* *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.