**UNION UNIVERSITY’S LESSON PLAN FORMAT**

**(Template available at** [**http://www.uu.edu/programs/tep**](http://www.uu.edu/programs/tep)**)**

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If this lesson is part of a unit, what is its number?4/4

**TN CURRICULUM STANDARDS ADDRESSED BY GOALS AND OBJECTIVES:**

**GLE0807.9.7 Explain the law of conservation of mass in a chemical reaction.**

**GLE 807.9.6 Differentiate between an endothermic and exothermic reaction in chemical changes. Make prediction about chemical reactions.**

**GLE0807.T/E.1 Explore new technology when discussing an exothermic and endothermic reaction.**

**GOAL(S) I want the students to know and understand that the law of mass states that neither energy and nor mass can be created or destroyed in all chemical reactions. I want the students to appreciate the use of new technology when understanding the Law of conservation of mass. The students will know and understand the difference between an exothermic and endothermic reaction. I want them to appreciate, understand, and know the importance of safety in the lab. I want them to know and understand that conducting a lab activity can be fun and exciting. Finally, they must understand and know these standards for a chapter test.**

**OBJECTIVES AND ASSESSMENT:**

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| **Learning Objectives**  **(stated behaviorally)** | **Assessment (formative/summative)** | **Level of Thinking (Bloom’s Taxonomy OR Webb’s Depth of Knowledge)** |
| TLW use investigations of chemical changes to describe the law of conservation of mass. | Formative-through the investigation of a chemical reactions, students will identify the energy to relate it to the law of conservation of mass. | Understanding  Knowledge |
| TLW investigate by comparing and contrasting endothermic and exothermic. Students will make predictions about the reactions. | Formative-student will conduct a lab activity to compare and contrast endothermic and exothermic reactions.  Formative- students will make predictions about the lab activity when making observations.  Formative- students will answer questions and conclusion to lab. | Analyzing  Applying  Synthesis |

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| TLW create a Acrostic Poem using new technology: mass, endo, and exo | Formative- students will use the letters as a topic word to begin each line in the poem. All lines of the poem will relate to describe the poem. | Comprehension |
| TLW view Brain Pop video and engage in discussion of law of conservation of mass. | Formative- students will locate, view and engage in discussion of content that is based upon law, exo and endo reactions. | Comprehension  Knowledge |

 **Lesson Opener**

**o Hook**: After greeting students at the door, I will ask students to take out their journal and read the “science humor” on the projected screen. “There once was a chemist named Rexo, who combined things in reactions quite exo. He took a swift fall, and combusted it all, from the tips of his toes to his necks-O!” (Holt p. 348)

**o Bridge**: Now, I will say, “You will write a definition for exo and endo and write the chemical equation for photosynthesis and sodium chloride mixture in your journal. Today we are going to investigate and distinguish between an endothermic and exothermic reaction. Also, we will investigate how these two chemical changes describe the law of conservation of mass.” I will ask the students to make predictions about the chemical reactions and write their prediction in their journal. Finally, I will tell them that after this lesson, they will create a poem showing me what they have learned about endothermic, exothermic, and law of conservation of mass while using new technology. After the completion of the lab, students will log on to (www.readwritethink.org) and create an Acrostic Poem using one of the science terms (Law of conservation of mass, exothermic, and endothermic reactions). Students will log on to (www.brainpop.com) and view the law conservation of mass to get a better understanding of the law of mass.

 **Development of concepts and/or skills (include monitoring and assessments of student learning integrated throughout instruction related directly to objectives, description of classroom structure [groups, centers, etc.], and strategies for pre-comprehension, comprehension, and post-comprehension)**

Before we begin, we will discuss the humor on the screen, talk about the definition written in their journal, prepare to get into groups, and complete a lab investigation. I will ask the students to log into Brain POP and view the law of conservation of mass and engage in a question answer discussion. I will ask them to write in their journal their understanding of the law in relation to exo and endothermic reactions.

I will ask, “Where have you seen or heard these terms before?” I will listen for clues of understand of the two terms and walk around to observe written definitions. I will ask students how do they think these two terms relate to what they know about chemical reactions?

To carry out the lab, I will divide the students into groups (2-3 students in a group) to investigate and distinguish the difference between the chemical reactions. Students will be asked to recall safety rules, wear safety goggles, aprons, and take precautions. I will make observations by checking for application of safety rules. Students will be asked to create their own chart for observations, create an analyze results in the chart, and create a chart for questions and conclusions. I will model a format for the lab and check for understanding of what is expected in creating their charts**.**

Each group will be asked to examine a burning match, a chemical reaction that forms combustion( exothermic), mix sodium and chlorine (endothermic), mix vinegar and baking soda (endothermic), examine a plant and write chemical an equation for photosynthesis

(6CO2 + 6H2O + energy → C6H12O6 + 6O2). Students will write all observations and results in their created charts. Students will answer questions and conclusions at the end of the lab.

Finally, students will gather in the computer lab and create a Acrostic Poem to demonstrate their understanding about the law of conservation of mass, exothermic and endothermic. I will observe their use of the technology and how well they connect their understanding of comparing and contrasting endothermic and exothermic in their poems. I will also look for written understanding of terms when answering question in the lab activity.

We will take an extra day to making Acrostic Poems’presentation.

 **Practice (if appropriate)**

 **Lesson Closure**

At the close of the lesson students will reflect back in their journal. They will

rewrite a definition for exo and endo terms. This time they are expected to have a

better understand, write a working definition, and be able to relate the terms

to law conservation of mass. The students will check predictions and make any

corrections.

These question will be asked to prompt their understanding. Questions: 1.

Now that you have a better understanding of exothermic and endothermic reaction,

think about the reactions conducted in class. Describe your favorite chemical reaction.

How do you think energy is involved in the chemical reactions?” Explain how the law of

mass relates to chemical reactions. 2. In your lab experiment, which reactions

were exothermic and which were endothermic reactions? Explain your answer.

3. What evidence was shown that an endothermic and exothermic took place as you made your

Observations?

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 **Alternative and/or supplemental activities for additional practice**

**Job aid:** [**www.brainpop.com**](http://www.brainpop.com/)**-**

**The students will log onto the websites below using their username and password. Once logged**

**in, they will click on the icon for science and go to see all features. They may want to navigate**

**back to the home page to view the movie. The is quiz, an activity, timeline, Q and A , FYI**

**and other related topics they can view.**

**Job aid:** [**http://BuckleDown.com**](http://BuckleDown.com)

**The student will log onto the website and click on Tennessee. The students will log in their**

**pass word and e-mail address. Once logged in, students will click their grade level and**

**subject area. Students can scroll down to the standard in science or any content area, and**

**answer questions relating to the subject.**

[**www.readwritethink.org**](http://www.readwritethink.org/)

**http://www.readwritethink.org/files/resources/interactives/acrostic/poems**

 **Adaptations for individual learners with disabilities (include adaptations for at least three types of disabilities)**

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| **Disability**  **(low/high cognition, behavioral differences, learning disabilities, hearing/visually impaired, physically impaired)** | **Type of Adaptation**  **(size, time, level of support, input, difficulty, output, participation, alternative, substitute curriculum)** | **Adaptation specific to this lesson** |
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**FUTURE ASSESSMENT TO DETERMINE RETENTION OF CONCEPT(S):**

**MATERIALS AND TECHNOLOGY NEEDED FOR THE LESSON:**

Computer Lab

Chemicals: Sodium and chlorine

Vinegar and baking soda

Test tubes

Goggles

Aprons

Matches

**EMERGING TECHNOLOGIES THAT WOULD BE USED WERE THEY AVAILABLE AND A**

**DESCRIPTION OF USE:**

How to create their own virtual lab for this activity

Smart Board

**Classroom management strategies to be used:**

**Preventative: Greet, seat, complete**

**Active learning/MI LPs**

**Cl Mgmt Plan: Rules/consequences/routines/procedures**

**Parents contacted**

**Supportive: Directions given**

**Students redirected**

**Positive learning behaviors recognized**

**Proximity control used**

**Individuals/small groups monitored**

**Appropriate learning behavior cued**

**Lesson pace considered**

**Teacher withitness achieved**

**Classroom management plan implemented (routines/consequences/routines/procedures)**

**Corrective: Procedures and rules cued**

**Individual behavior observed**

**Individual behavior described**

**Correction for individual behavior planned**

**Plan executed**

**Learning behavior rethought**

**REFLECTIONS ON TEACHING AND LEARNING:**

1. As you reflect on the lesson, how did it actually unfold as compared to what you had anticipated happening as you did your planning? **IIIC**
2. Provide the data/information that you have used to determine your students’ progress toward this lesson’s goals. Include individual and group information. **IIIA and IIIC**
3. How will you use your students’ performance today as you envision the next step for these students in learning? IIIC and Planning Domain
4. If you were to teach this lesson again to these students, what changes would you make? IIIC
5. As you reflect over this lesson, what ideas or insights are you discovering about your teaching? **IIIC**
6. How did your choices and actions of classroom management support student learning?