

Bachelor of Education (Elementary) & Bachelor of Education (Secondary) STEM Lesson Plan

Lesson Title: Endo and Exo Reactions **Lesson #** 4 **Date:** March 4, 2021
Name: Janys Pierce **Subject:** Chemistry **Grade(s):** Science 9

Rationale:

This lesson plan is quite important to the basic building blocks of chemistry. The students will be learning about the different changes of state/ phases and endo/exothermic reactions. These are both important topics within chemistry and will continue throughout their science careers, even within biology. This lesson plan includes three FPPLs.

Core Competencies:

Communication	Thinking	Personal & Social
<ul style="list-style-type: none"> • Connecting and engaging with others • Acquiring and presenting information • Working collectively 	<ul style="list-style-type: none"> • Analyzing and critiquing • Questioning and investigating • Reflecting and assessing • Generating and incubating • Creating and innovating 	<ul style="list-style-type: none"> • Self-advocating • Self-regulating • Resolving problems

Big Ideas (Understand):

The electron arrangement of atoms impacts their chemical nature.

Learning Standards:

(DO)	(KNOW)
Learning Standards - Curricular Competencies	Learning Standards - Content
<ul style="list-style-type: none"> • Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal interest • Collaboratively and individually plan, select and use appropriate investigation methods to collect reliable data • Ensure that safety and ethical guidelines are followed in their investigations • Use knowledge of scientific concepts to draw conclusions that are consistent with evidence • Transfer and apply learning to new situations 	<ul style="list-style-type: none"> • The arrangement of electrons determines the compounds formed by elements

Instructional Objectives & Assessment:

Instructional Objectives (students will be able to...)	Assessment
<ul style="list-style-type: none"> • Identify endo/exothermic reactions • Name phase changes • Identify chemical and physical change characteristics 	<ul style="list-style-type: none"> • Laboratory assignment questions (exit ticket) • Kahoot! At the end of the class

Prerequisite Concepts and Skills:

Students should briefly remember the lesson from the day before about chemical and physical changes
Students should know basic science vocabulary and basic English
Students should know and understand lab safety

Indigenous Connections/ First Peoples Principles of Learning:

This lesson plan will show the students that learning is reflective and experimental. They will hopefully recognize the consequences of one's actions (mainly in a lab setting, if something were to occur). This lesson plan also involves patience and time. The students will be reflecting on past knowledge and experience while being experimental within the laboratory. They should also recognize the consequences of one's actions, if they were to make a mistake within the laboratory. The students will also learn patience during the laboratory, when working within a group and finally, during note taking.

Universal Design for Learning (UDL):

- I am verbally going over the notes while providing a printed version
- I have prepared other examples and different examples than what the notes contain incase students need more examples
- I am using Kahoot instead of a regular paper pen quiz – although I am not taking marks, it is mainly to see where they are after the lesson
- Students are using sticky-notes and the whiteboard for a different activity that gets them up and moving
- The lab is hands on, also allowing the students to move around

Differentiate Instruction (DI):

- Allow 'thinking time', time between asking questions and expecting an answer
- Allow students to think about their answer and to discuss it with their partner to determine if it is right and then have them write it on the sticky-note for the white board
- I will be wandering the class during the lab questions to aid students
- Providing a fun/ different way to test with Kahoot!
- Using an exit ticket to see where the students are after the lesson
- Using demos for the students to see real life examples

Materials and Resources:

- <https://www.youtube.com/watch?v=xYU7RSOQZOU> **only if there is time**
- Note package
- Laboratory procedure and materials
- Kahoot! Quiz
- Tablet and projector
- White board and sticky-notes

Lesson Activities:

Teacher Activities	Student Activities	Time
Introduction (anticipatory set – “HOOK”): <ul style="list-style-type: none">• Start class with a chemical change chemistry lab – this is slight review from Mrs. Hopp lesson the day before, and it segues nicely into the lesson I will be teaching• Please sit back at your desks and grab out your chemistry note package	<ul style="list-style-type: none">• Start the lab	20 mins
	<ul style="list-style-type: none">• Sit down and grab notes	2 mins
		8 mins

<ul style="list-style-type: none"> • Move into the notes right after the lab, before they answer the questions in the lab procedure – tell them that we will finish the lab questions after our notes because they cannot answer all of the questions yet • Do the first page of notes and then ask the students to write on their sticky notes their answers to different changes of phases – I will split the board into 6 different sections and each student will go to the board and post them and then as a class go over the answers and see if they are right or not – I want examples that they have experienced and will mention that 	<ul style="list-style-type: none"> • Follow along with notes 	<p>5-10 mins</p>
<p>Body:</p> <ul style="list-style-type: none"> • Demo the iodine sublimation with the fingerprints on it and have the kids pass around the beaker ** please be careful not to drop it • Finish the notes • Finish the lab questions and go over the answers as a group • Wander the class while they go over the questions – answering/ helping when needed • Then have a demo of exothermic and endothermic reactions – for exothermic have NaOH with H₂O, the solution will heat up and they can feel the heat through the Erlenmeyer flask – for endothermic, I will cut open one cold pack and pass the other one around (with the reaction going) for the students to see and feel a different reaction 	<ul style="list-style-type: none"> • Hand around the beaker and watch the sublimation of iodine occur within the beaker • Finish the questions provided within the lab procedure 	<p>5 mins</p> <p>10-15 mins</p> <p>7 mins</p>
<p>Closure:</p> <ul style="list-style-type: none"> • Play Kahoot! There are 20 questions 30s each • Have the students' hand in their lab as an exit ticket • **Show the class this YouTube video that explains the phase changes a bit differently – this is only if there is enough time ** https://www.youtube.com/watch?v=xYU7RSoOZ0U 	<ul style="list-style-type: none"> • Play Kahoot! • Hand in Exit Ticket as they leave the classroom 	<p>10 mins</p>

Organizational Strategies:

<ul style="list-style-type: none"> • Laboratory materials are out and setup • Papers printed ahead of time • Videos loaded and ready to go, as well as Kahoot! • My copy of the notes are filled out and have extra examples within them • Demo materials are ready as well
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Proactive, Positive Classroom Learning Environment Strategies:

<ul style="list-style-type: none"> • Letting the students know ahead of time that I will be asking questions but do not necessarily expect them to answer • Using Kahoot for something fun and exciting

- No negative feedback if anyone answers incorrectly, just say not quite and lead them in the right direction – and assure them that it is not an easy topic and that I have created more practice questions if people are still having difficulties

Extensions:

Reflections (if necessary, continue on separate sheet):