

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

Lesson Title: Balancing Chemical Equations (Part 2) **Lesson #** 3 **Date:** February 27, 2020
Name: Varda Khurshid **Subject:** Science **Grade(s):** 10

Rationale:

This lesson is important because...
It provides a transition point from balancing chemical equations to the different types of reactions. This lesson will provide a starting point for the classifying of chemical reactions.

Core Competencies:

Communication	Thinking	Personal & Social
<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Students will be able to critically think about why they must change the coefficients in front of each compound to balance the chemical equations 	<ul style="list-style-type: none"> N/A

Big Ideas (Understand)

Energy change is required as atoms rearrange in chemical processes.

Learning Standards

(DO)	(KNOW)
Learning Standards - Curricular Competencies <ul style="list-style-type: none"> Formulate physical or mental theoretical models to describe a phenomenon 	Learning Standards - Content <ul style="list-style-type: none"> Energy change during chemical reactions

Instructional Objectives & Assessment

Instructional Objectives (students will be able to...)	Assessment
<ul style="list-style-type: none"> Balance chemical equations and model the law of conservation of mass 	<ul style="list-style-type: none"> Summative → Whiteboard work completion

Prerequisite Concepts and Skills:

- Ionic and covalent bonds
- Coefficients vs subscripts

Indigenous Connections/ First Peoples Principles of Learning:

- N/A

Universal Design for Learning (UDL):

- Multiple Means of Representation → visual (slides), verbal

Differentiate Instruction (DI):

- Students A-C will have direct instruction and multiple check-ins during working period

Materials and Resources

- List of five reactions that need to be balanced
- Colourful beads (Room 103)

- Whiteboard Kit
- Assessment sheet
- Endothermic and Exothermic Processes Notes [Class Set=23]
- Endothermic and Exothermic slides

Lesson Activities:

Teacher Activities	Student Activities	Time (67 mins)
Introduction (anticipatory set – “HOOK”): <ul style="list-style-type: none"> • Attendance • Debrief from previous lesson <ul style="list-style-type: none"> ○ Ask for student thoughts and how the simulations may have helped them or didn't help them ○ Go over the package with them and ask for answers to certain questions ○ Ask for Exit Tickets 		5 mins 5 mins 5 mins
Body: <ul style="list-style-type: none"> • Review and assessment of balancing <ul style="list-style-type: none"> ○ Assign students varying levels of difficulty of equations that need to be balanced ○ Mark for completion for each completed reaction (consists of balanced equation and bead model) • Introduce endothermic and exothermic reactions using Cornell notes template provided by Mr. Francis • Frontload students with concepts they will explore in lab next couple of classes • 20-word summary in their own words • Talk about the type of lab being done in the next couple of classes; review lab handout and safety 	<ul style="list-style-type: none"> • Students will balance the equations one by one and show the balanced equations in their bead models as well • Students can complete these on the small whiteboards • Students can use beads to help visualize the molecules • Students follow along with the notes and fill in the blanks for their reference 	20 mins 20 mins 5 mins
Closure: <ul style="list-style-type: none"> • Short (but very 'cool') endothermic reaction https://www.youtube.com/watch?v=GQkJI-Nq3Os 	<ul style="list-style-type: none"> • Shows students this video of an endothermic reaction • Have students explain their own words what's happening 	5 mins

Organizational Strategies:

- Print notes before class [23 copies]
- Have whiteboard kit ready for use
- Different coloured beads depending on reactions
- Have notes open before hand

Proactive, Positive Classroom Learning Environment Strategies:

- Reiterate cellphone rule, ask for raised hands for bathroom/drinks
- Make connections between different topics students learned

- Respond with positivity, treat students with respect
- Model active listening
- If something goes wrong, remain calm
- Don't remain stationary at the front – move around
- Proximity helps with distractions

Extensions:

- Textbook “Make a Difference” connection – page 127
 - Analyzing and evaluating what law of conservation of mass tells us about waste

Reflections (if necessary, continue on separate sheet):

- Self-reflection after class