



Course: Science 8

Teacher: Alistair Eggo

Unit: Chemistry

Date: March 31, 2020

Duration: 6 weeks

Description:

In terms 1 and 2, students completed work on the earth science and biology units of Science 8. We also began our unit of chemistry for this year, where students will begin talking about microscopic movement of particles. This promises to be a revelatory unit for some of the students, and I look forward to completing some small demonstrations and assigning mini-experiments you can do at home. In this unit, students will begin to understand Kinetic-Molecular Theory and the properties of chemicals we encounter every day. They will finish by connecting the very abstract concept of quarks to some of these properties. Moving online provides new challenges, but also new opportunities for learning. For example, moving into home learning may give students more control over laboratory exercises, allowing them to take control of their own experience in the virtual classroom.

	Big Ideas	Essential Questions
Understand	<p><i>Which Big Ideas will be the focus of this unit?</i></p> <p>The behaviour of matter can be explained by the kinetic molecular theory and atomic theory.</p>	<p><i>What questions will be guiding your students' inquiry?</i></p> <ul style="list-style-type: none"> - How small is small? How small do things get? What has been the process of learning about these? - How do tiny atoms combine to make bigger particles? How do these particles affect us? - What are properties of atoms/molecules/compounds and why should we care about these? - How do tiny particles interact? How do these interactions change in different states? - What are the fundamental forces of the Universe?

Do	Core Competencies	
	<p><i>Choose one or more Core Competencies that will be focused on and developed in this unit: (1) Communication; (2) Creative Thinking; (3) Critical Thinking; (4) Positive Personal and Cultural Identity; (5) Personal Awareness and Responsibility; and (6) Social Responsibility.</i></p> <ul style="list-style-type: none"> - Creative Thinking - Critical Thinking - Communication 	<p><i>Which activities, projects, exercises or discussions will teach this Core Competency? How will they implement the First Peoples Principles of Learning? How will they be inquiry-based?</i></p> <p>All 3 Core Competencies will be taught through inquiry-based projects and micro-experiments. These are inquiry assignments in that they give students choice of subject, opportunities to create procedures and critique them later, in addition to choice in how to explain their findings. These will require students to think creatively when planning and implementing the projects, and to think critically when evaluating them.</p> <p>Through these activities, students will also learn by doing, which is an important part of many FN's' traditional learning styles.</p> <p>In this unit, we will also study the history of important findings, (which can tend to be a bit dry): I will try to make this learning more entertaining by giving choice and creativity in the communication component of this project. Students will be asked to explain the scientific process, or the pattern of the development in a new and interesting way, which will build their communication skills.</p>
	Curricular Competencies	
	<p><i>Which Curricular Competencies (specific to your course) will students learn and be assessed on in this unit?</i></p> <p>Questioning and predicting</p> <ul style="list-style-type: none"> - Make observations aimed at identifying their own questions about the natural world - Identify a question to answer or a problem to solve through scientific inquiry - Make predictions about the findings of their inquiry <p>Planning and conducting</p> <ul style="list-style-type: none"> - Use appropriate SI units and perform simple unit conversions - Ensure that safety and ethical guidelines are followed in their investigations <p>Processing and analyzing data and information</p> <ul style="list-style-type: none"> - Use scientific understandings to identify relationships and draw conclusions <p>Evaluating</p>	<p><i>Which activities, projects, exercises or discussions will teach these Curricular Competencies? How will they implement the First Peoples Principles of Learning? How will they be inquiry-based? How will the Curricular Competencies be assessed?</i></p> <p>Through project work on density, properties, and the constituent particles of everyday objects students will experience the scientific process, which involves the experimental skills listed to the left. While performing calculations to do with density they will learn about scientific numeracy and SI units.</p>

	<ul style="list-style-type: none"> - Reflect on their investigation methods, including the adequacy of controls on variables (dependent and independent) and the quality of the data collected - Identify possible sources of error and suggest improvements to their investigation methods <p>Applying and innovating</p> <ul style="list-style-type: none"> - Co-operatively design projects <p>Communicating</p> <ul style="list-style-type: none"> - Communicate ideas, findings, and solutions to problems, using scientific language, representations, and digital technologies as appropriate 	
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Curricular Content		
Know	<p><i>Which Curricular Content (specific to your course) will students learn and be assessed on this unit?</i></p> <ul style="list-style-type: none"> - kinetic molecular theory: explains how particles move in different states - atomic theory: provides evidence for the existence of atoms and molecules - and models: models can be used to represent: <ul style="list-style-type: none"> - the arrangement and motion of particles in different phases - the arrangement of and forces that bind protons, neutrons, and electrons in an atom - the quarks and leptons in protons, neutrons, and electrons - protons, neutrons, and quarks: protons and neutrons (made of quarks) are held together in the nucleus by a strong nuclear force - electrons and leptons: electrons (a type of lepton) are held at a distance from the nucleus through electromagnetism 	<p><i>Which activities, projects, exercises or discussions will teach this Curricular Content? How will they implement the First Peoples Principles of Learning? How will they be inquiry-based? How will the Curricular Content be assessed?</i></p> <p>Course content will be taught through a mixture of direct instruction, interactive demonstrations and some at home experiments. We will also use online simulations to make visible microscopic particles, forces and interactions.</p> <p>The unit will be assessed through worksheets, projects and quizzes. A small portion of the grade will be from class participation to encourage involvement with the material.</p>

Required Resources

What resources (textbooks, computer programmes, website subscriptions) will students need to complete this unit?

All required resources are standard for the school, or are easily accessible within the home.

It is likely that we will do some small experiments using kitchen chemicals, but during this time we will use these resources sparingly, and unquestionably, safely. If possible these should be done with parental supervision, but they will be safely planned so that students may complete them themselves.