

Teacher(s)	Hotsinpillar	Subject group and discipline	8th grade Science		
Unit title	Chemical changes	MYP year	3	Unit duration (hrs)	2-3 weeks

Inquiry: Establishing the purpose of the unit

Key concept	Related concept(s)	Global context
Change , connections, Identities and relationships Connections	Transformation Energy	Identities and relationships
Statement of inquiry		
Matter can change from one form to another, but cannot be created or deystroyed		
Inquiry questions		
<p>Factual—how are elemements, mixtures and compounds different?</p> <p>Conceptual—If matter cannot be created or deystroyed how do the ashes from a log not equal the mass of log?</p> <p>Debatable—Should chemical be put in food to keep them from spoiling, or on/in plants or animals to prevent disease?</p>		

Objectives	Summative assessment	
<p>Criterion A Knowing and understanding</p> <p>i-outline scientific knowledge</p> <p>ii- apply scientific knowledge and understanding to solve problems set in familiar situations and suggest solutions to problems set in unfamiliar situations</p> <p>iii-interpret information to make scientifically supported judgements</p> <p>Criterion D: Reflecting on the impacts of science</p> <p>i- summarize the ways in which science is applied and used to address a specific problem or issue</p> <p>ii-describe and summarize the various implications of using science and its application in solving a specific problem or issue</p> <p>iv- document the work of others and sources of information used</p>	<p>Outline of summative assessment task(s) including assessment criteria:</p> <p>Goal: Students will understand why and how chemical reactions occur. Students will be able to determine if a reaction is exothermic or endothermic. Students will be able to balance chemical equations to show the law of conservation of mass.</p> <p>Role: Students will determine what is needed for a chemical reaction to take place, and determine if a chemical reaction has taken place.</p> <p>Audience: explain what is happening and why a chemical reaction took place.</p> <p>Situation: students will be given tasks and asked to determine if a chemical reaction has taken place and how they know</p> <p>Produce: The product of a chemical equation is different from the reactants</p>	<p>Relationship between summative assessment task(s) and statement of inquiry:</p> <ul style="list-style-type: none"> • B: Students will be able to describe a problem regarding temperature changes in two different types of chemical reaction (endothermic and exothermic). Students will be given specific reactions/reagents to be tested during the investigation. They will be able to outline and explain a testable hypothesis based on the analysis of different variables, such as volume, surface area and amount of substance. The design must include how to manipulate these variables and how sufficient data will be collected. A logical, complete and safe method is expected. • D: Students will explore different types of chemical reactions and how these reactions have helped in the development of new technology within industry. Students will have the opportunity to explore how engineers design new products to solve the problems. Students must describe and analyse the implications of science in solving the problem through exploring its impact on society, and the effect on the environment, using written or oral skills. Students are required to acknowledge the work of others and the sources of information used by appropriately documenting them (in written or verbal form) using a recognized referencing system.

Approaches to learning (ATL)		
Thinking skills		

Action: Teaching and learning through inquiry

Content	Learning process
<p>GLE0807.9.4 know the difference between elements, compounds, and mixtures</p> <p>GLE0807.9.7 law of conservation of mass states that matter cannot be created or destroyed</p> <p>GLE0807.9. Chemical equations are a shorthand way of explaining a chemical reaction</p> <p>GLE0807.9.9 Acids and bases</p> <p>GLE0807.9.8 Interpret the events represented by a chemical equation</p> <p>GLE0807inq.3 synthesize information to determine</p>	<p>Learning experiences and teaching strategies</p> <p>Students will be given general information about chemical reactions in real life, use and knowledge of key terms, physical and chemical changes and how to balance chemical equations.</p> <p>Include an activity to compare and contrast a chemical change with a physical one.</p> <p>Students will be divided into small groups and will conduct laboratory experiments to record evidence of chemical reactions. During these experiments, students will be able to observe, predict, record and conclude, based on the results.</p>

cause and effect relationships between evidence and explanations	
	<p>Formative assessment</p> <p>Students will be given different worksheets to test their understanding on physical and chemical changes, balancing chemical equations and describing and analysing important chemical reactions in real life. Students will perform laboratory investigations to collect, organize and present data. What are some signs that a chemical reaction has taken place? Use of a data table to record observations and predictions to compare main characteristics of each sample.</p>
	<p>Differentiation</p> <p>Students will be grouped together in a diverse manner – lower students will be paired with higher students and groups will be mixed by race and gender</p> <p>Students in ESL or SPED will graded on a different scale</p>
Resources	

Reflection: Considering the planning, process and impact of the inquiry

Prior to teaching the unit	During teaching	After teaching the unit
<p>Students should understand the structure of an atom, including the electron arrangement</p> <p>Students should be able to determine in a chemical change has taken place by their observations</p> <p>Students should understand the law of conservation of mass</p> <p>Students should know how substances can change form but not change mass</p>	<ul style="list-style-type: none"> • _The law of the conservation of mass • _Physical change, chemical change, reactant, product, combustion • _Definition of the terms “catalyst” and “precipitate” • _Writing word and symbol equations • _Importance of the subscript (and coefficient) in equations • _The changes in matter in terms of physical changes and chemical changes and the types of evidence that identify a chemical change from a physical change and how this is related to energy change • _Types of chemical reactions: endothermic or exothermic 	<p>Students should be able to determine if a chemical reaction has taken place or not – even if is not visually detectable.</p> <p>Students should be able to write balanced equations to show what happened.</p> <p>Students should be able to explain why they know a chemical reaction has taken place</p> <p>Students should be able to determine if the chemical reaction was endothermic or exothermic</p>