

<b>Teacher(s)</b>	Indu Dudeja, Kshama Sharma	<b>Subject group and discipline</b>	science		
<b>Unit title</b>	Classifying the living world	<b>MYP year</b>	1	<b>Unit duration (hrs)</b>	

**Inquiry: Establishing the purpose of the unit**

<b>Key concept</b>	<b>Related concept(s)</b>	<b>Global context</b>
Relationship	Patterns and forms	Identities and relationships

**Statement of inquiry**

Understanding relationship among the organisms based on their forms and patterns that can lead to create classifications based on identities.

**Inquiry questions**

**Factual—** What are the key features of living organisms?

How can we classify the living organism based on their characters?

**Conceptual—** How does the classification helps us to understand species?

How do we use dichotomous key to construct and scientifically name an organism?

**Debatable—**do you think that the current 6 kingdom classification system would change in the future? Explain your answer.

Objectives	Summative assessment	
<p><b>A. Knowing and Understanding</b></p> <p>A.1.i explain scientific knowledge</p> <p>A.1. ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations</p> <p><b>B. Inquiring and designing</b></p> <p>B.1.i Explain a problem or question to be tested through scientific investigation</p> <p>B1. Design scientific investigation</p> <p><b>C. Processing and evaluating</b></p> <p>i. present collected and transformed data</p> <p>ii. interpret data and outline results using scientific reasoning</p>	<p>Outline of summative assessment task(s) including assessment criteria:</p>	<p>Relationship between summative assessment task(s) and statement of inquiry:</p>

Approaches to learning (ATL)

**Action: Teaching and learning through inquiry**

Content	Learning process
	Learning experiences and teaching strategies
	Formative assessment

	<b>Differentiation</b>
<b>Resources</b>	

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

<b>Prior to teaching the unit</b>	<b>During teaching</b>	<b>After teaching the unit</b>

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<b>Teacher(s)</b>	Kshama Sharma, Indu Dudeja	<b>Subject group and discipline</b>			
<b>Unit title</b>	Forces and safety	<b>MYP year</b>	1	<b>Unit duration (hrs)</b>	

### Inquiry: Establishing the purpose of the unit

<b>Key concept</b>	<b>Related concept(s)</b>	<b>Global context</b>
Change	Balance and movement	Identities and relationships

#### Statement of inquiry

Understanding the **change** in motion of an object due to various forces can improve **safety** in our lives.

#### Inquiry questions

##### Factual—

1. What type of forces exist?
2. What effect does friction have in our life?
3. How is speed calculated?

##### Conceptual—

1. How does knowledge of gravitational force help us understand sports?
2. How is knowledge of forces used when designing safety equipment for sports or our daily lives?
3. How do balanced and unbalanced forces relate to the movement of objects?

##### Debatable—

1. Should safety gear be compulsory when playing contact sports?
2. Why do many people think a force is needed to keep an object moving at constant speed?

<b>Objectives</b>	<b>Summative assessment</b>	
	Outline of summative assessment task(s) including assessment criteria:	Relationship between summative assessment task(s) and statement of inquiry:
<b>Approaches to learning (ATL)</b>		

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**Action: Teaching and learning through inquiry**

<b>Content</b>	<b>Learning process</b>
	<b>Learning experiences and teaching strategies</b>
	<b>Formative assessment</b>
	<b>Differentiation</b>

<b>Resources</b>	

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

Prior to teaching the unit	During teaching	After teaching the unit

<b>Teacher(s)</b>	Indu Dudeja, Kshama Sharma	<b>Subject group and discipline</b>	Science (Biology)		
<b>Unit title</b>	Cell and diseases	<b>MYP year</b>	1	<b>Unit duration (hrs)</b>	30 hrs

**Inquiry: Establishing the purpose of the unit**

<b>Key concept</b>	<b>Related concept(s)</b>	<b>Global context</b>
<b>Systems</b>	<b>Form and consequences</b>	<b>Identities and relationships</b>
<b>Statement of inquiry</b>		
Understanding a <b>system</b> can prevent undesirable <b>consequences</b> and promote a healthy <b>lifestyle</b> .		
<b>Inquiry questions</b>		
<p><b>Factual—</b></p> <ul style="list-style-type: none"> <li>• What do cells look like?</li> <li>• What are the different organelles of the cells and what are their functions?</li> <li>• What are the different types of cells present in human body?</li> </ul> <p><b>Conceptual—</b></p> <ul style="list-style-type: none"> <li>• Importance of biologically important compounds like carbohydrates, fats, proteins etc.</li> <li>• Understanding how unhealthy and unbalanced diet leads to deficiency diseases.</li> </ul> <p><b>Debatable—</b></p>		

- To what extent understanding the functions of a cell and role of healthy lifestyle can help in curing the deficiency **diseases** in cells.

Objectives	Summative assessment	
<ol style="list-style-type: none"> <li>1. Understanding how the systems in a unicellular or multicellular organism work together to support the organism.</li> <li>2. Knowing that cell and its functioning is dependent on its environment, nutrition or food it receive.</li> <li>3. Explaining how major systems and processes work together in animals and plants, including relationships between organelles, cells, tissues, organs, organ systems, and organisms.</li> <li>4. knowing how health of a single cell is related to the</li> </ol>	<p>Outline of summative assessment task(s) including assessment criteria:</p> <p><b>Summative Task:</b></p> <ol style="list-style-type: none"> <li>1. In the link mentioned below you are provided with WHO's data of diseases in India.</li> </ol> <p>Open the following link:</p> <p>Choose one category of disease of your choice and collect WHO's data about that particular disease.</p> <p>Collect appropriate data related to the questions asked below:</p> <ul style="list-style-type: none"> <li>• Which disease is chosen by you?</li> <li>• Find out major facts for the occurrence of that disease and suggest solutions to deal with that particular disease.</li> <li>• How these diseases have affected the population size over the years? Show your data in the form of bar graphs or line graphs.</li> <li>• Explain what role does nutrition plays in prevention/ cure of these diseases.</li> <li>• Reflect upon the role of WHO and Indian government in</li> </ul>	<p>Relationship between summative assessment task(s) and statement of inquiry:</p> <p>The learner will be able to understand the role of nutrition for a cell to stop or to deal with any kind of deficiency disease which may happen in future due to inadequate uptake of nutrients through diet or pollution....</p>

<p>healthy living.</p> <p>5. Reflecting on how incomplete diet and unhealthy eating leads to the consequences for deficiency diseases.</p>	<p>controlling the spread of diseases?</p>	
<p><b>Approaches to learning (ATL)</b></p>		
<p><b>Skill category: Thinking</b>  <b>Skill cluster: Critical thinking skills</b>  In order to <b>interpret information to make scientifically supported statements students must</b></p> <ul style="list-style-type: none"> <li>• Practise observing carefully in order to recognize problems</li> <li>• Gather and organize relevant information to formulate an argument</li> </ul> <p><b>Skill category: communication, research</b>  <b>Skill cluster: communication skills, Information literacy skills</b>  In order to <b>discuss the validity of method</b> the student must</p> <ul style="list-style-type: none"> <li>• Negotiate ideas and knowledge with peers and teachers</li> <li>• Collect, record and verify data</li> </ul>		

- Process data and report results

**Skill category: self-management and research.**

**Skill cluster: Reflection skills and information literacy skills**

In order to **Describe and summarize the various implications of the use of science and its application in solving a specific problem or issue** student must

- Evaluate and select information sources and digital tools based on their appropriateness to specific tasks
- Collect and analyse data to identify solutions and make informed decisions

**Action: Teaching and learning through inquiry**

Content	Learning process
<ol style="list-style-type: none"> <li>1. <b>Know:</b> Cell organelles and functions, the differences among plant, animal, and bacterial cells, relationships between cells, organelles, tissues, organs, organ system, cell and its environment, what does it mean to be alive.</li> <li>2. <b>Understand:</b> relate cell organelles to their functions, the process of diffusion and osmosis, biologically important compounds: carbohydrates, proteins, fats, vitamins, mineral etc; healthy eating; deficiency diseases; social, ethical and health consequences related with food we eat.</li> <li>3. <b>Do:</b> Experimental skills (Microscope handling), designing, conducting and communicating the results of a scientific</li> </ol>	<p>Learning experiences and teaching strategies</p> <hr/> <p>Formative assessment</p> <ol style="list-style-type: none"> <li>1. <b>Design a weekly chart to ensure that the child of age group (11-13) will get a proper/ complete nutrition during week through meals in coherence to energy consumption and Compare it with your present diet and reflect if it is deficient of any integral or important component of nutrition on regular basis which may lead to deficiency disease.</b></li> </ol>

<p><b>investigation, research skills</b></p> <p><b>4. Labs:</b></p> <ul style="list-style-type: none"> <li>•Osmosis investigation</li> <li>•Diffusion</li> <li>•Observation of plant cell</li> <li>•Observation of animal cell</li> <li>•Checking presence of food components like protein, fat, carbohydrates etc.</li> </ul>	<p><b>Design a weekly diet chart for a child of age group (11-13) to ensure that he/she will get a proper/ complete nutrition during a week in coherence with energy consumption due to his/her physical and mental activities.</b></p> <p><b>Reflect upon present diet chart, if it is deficient of any integral or important component of nutrition on regular basis which deficiency disease might be caused by it.</b></p>
<p><b>Resources</b></p>	<p><b>Differentiation</b></p>

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

<b>Prior to teaching the unit</b>	<b>During teaching</b>	<b>After teaching the unit</b>

<b>Teacher(s)</b>	Kshama Sharma	<b>Subject group and discipline</b>	Sciences		
<b>Unit title</b>	2 changes in matter?	<b>MYP year</b>	1	<b>Unit duration (hrs)</b>	20

### Inquiry: Establishing the purpose of the unit

Key concept	Related concept(s)	Global context
<b>Change</b>	<p><b>Form</b> the visible shape or configuration of something.</p> <p><b>Transformation</b> a marked change in form, nature, or appearance.</p>	<p><b>Scientific and technical innovation</b> the impact of scientific and technological advances on communities and environments; the impact of environments on human activity; how humans adapt environments to their needs.</p>
<b>Statement of inquiry</b>		
Small changes in the forms of various matter brought out by advancement of science led to imbalance of environmental conditions		
<b>Inquiry questions</b>		
<p><b>Factual –</b>            What is matter?            What is particle nature of matter?            How do we classify matter?            How do physical changes happen?</p> <p><b>Conceptual –</b>            How might physical changes help us to manipulate matter?            How does temperature affect the state of a matter?</p> <p><b>Debatable –</b>            To what extent do scientific innovations be able to cut down on greenhouse gas emissions to limit global warming over the next century?</p>		

Objectives	Summative assessment	
	Outline of summative assessment task(s) including assessment criteria:	Relationship between summative assessment task(s) and statement of inquiry:
<b>A: All strands</b> <b>D: All strands</b>	EoUA : Students will attempt a question paper based on criteria A and D. Criteria A assessment is based on understanding, applying and interpreting the scientific knowledge. Criteria D is based on the reflection on the article published in Physics Today September 2018. 'Can carbon capture from air shift the climate change equation?	EoUA gives students the opportunity to relate the current scientific advancement and development to address the recent global environmental issues like Global warming as the impact of industrial revolution and increasing amount of greenhouse gases.

### Approaches to learning (ATL)

#### Information literacy skills:

make connections between sources of information  
 access information to be informed and inform others

#### Critical-thinking skills:

practise observing carefully in order to recognize problems  
 gather and organize relevant information to formulate an argument  
 interpret data  
 draw reasonable conclusions and generalizations  
 analyse complex concepts and projects into their constituent parts and synthesize them to create new understanding

#### Creative-thinking skills:

make guesses, ask 'what if' questions and generate testable hypotheses  
 create novel solutions to authentic problems

#### Transfer skills:

apply skills and knowledge in unfamiliar situations

## Action: Teaching and learning through inquiry

Content	Learning process
<p><b>All students should know and understand</b></p> <ul style="list-style-type: none"> <li>• <b>Matter</b></li> <li>• <b>Solid</b></li> <li>• <b>Liquid</b></li> <li>• <b>Gas</b></li> <li>• <b>Plasma</b></li> <li>• <b>Particle Theory of Matter</b></li> <li>• <b>Change of state of matter</b></li> <li>• <b>Vaporization</b></li> <li>• <b>Boiling</b></li> <li>• <b>Difference between Boiling and Evaporation.</b></li> <li>• <b>Factors effecting evaporation</b></li> <li>• <b>Melting</b></li> <li>• <b>Freezing</b></li> <li>• <b>Diffusion</b></li> <li>• <b>Sublimation</b></li> <li>• <b>What is meant by room temperature?</b></li> <li>• <b>Water cycle</b></li> <li>• <b>Weather</b></li> <li>• <b>Global warming</b></li> <li>• <b>Acid rain</b></li> <li>• <b>Heating and cooling curve</b></li> </ul>	<p><b>Learning experiences and teaching strategies</b></p> <p>The learner profile disposition for this unit is <i>caring</i> and the unit builds on the skills of question-forming in Chapter 1 to formatively develop key science skills for hypothesizing, predicting, and evaluating in the context of structured experiments. The main summative assessment is then an opportunity to put these skills to draw conclusion and reflect based on others scientific investigation and research work.</p> <ul style="list-style-type: none"> <li>• <b>Activity: Material words</b> This starter activity aims to familiarize students with different material types and revise key vocabulary. Many students may have done similar activities in the primary/elementary phase. States of Matter  <a href="http://www.collaborativelearning.org/statesofmatter.pdf">http://www.collaborativelearning.org/statesofmatter.pdf</a></li> <li>• <b>Activity: Three states of matter</b> Introduction of three states of matter and their properties.</li> <li>• <b>Particle Theory of matter</b> <a href="https://www.slideshare.net/OhMiss/particle-theory-of-matter-6425617">https://www.slideshare.net/OhMiss/particle-theory-of-matter-6425617</a> <a href="https://www.abpischools.org.uk/topic/solids-liquids-gases/2">https://www.abpischools.org.uk/topic/solids-liquids-gases/2</a> <a href="https://www.abpischools.org.uk/public/documents/legacy/solids-liquids-gases/propemat.pdf">https://www.abpischools.org.uk/public/documents/legacy/solids-liquids-gases/propemat.pdf</a></li> <li>• <b>Activity: Water cycle</b> Student will observe a picture of water cycle and label it with different changes that occur on different levels of water cycle. In this activity students identify different form of matters and their interchange due to variation in temperature and pressure.</li> </ul>

**Students should be able to reflect upon the impact of changes of state of matter in nature and environment in form of water cycle, acid rain, global warming.**

This activity introduces the water (hydrological) cycle. It also encourages students to understand and use key vocabulary for state changes.

- ***Stimulation***

Students will be able to relate the effect of temperature and pressure on the intermolecular forces and configuration.

[https://phet.colorado.edu/sims/html/states-of-matter-basics/latest/states-of-matter-basics\\_en.html](https://phet.colorado.edu/sims/html/states-of-matter-basics/latest/states-of-matter-basics_en.html)

This activity allows students to identify change in state of water in water cycle and how it occurs due to variation of temperature and pressure.

- ***Activity: Heating and cooling curve***

Individually, and in pairs: The activity allows students to investigate factors affecting state of matter. Independent/controlled variables could be time. The dependent variables might include the temperature of matter.

Students will investigate the effect of heat/temperature on the state of matter w.r.t. They will plot graph between time and temperature.

Based on particle theory, they will be able to interpret the graph and constant temperature during the change in state.

- ***Activity: Diffusion (See–Think–Wonder)***

Students will observe diffusion of ink drop in water at room temperature and will conclude the movement of particle on the basis of particle theory.

- ***Activity: Avalanche breakdown (See–Think–Wonder)***

<https://www.youtube.com/watch?v=qNOBWC9FB1c>

<https://www.youtube.com/watch?v=sy2ltGtC5Wk>

Student will watch the video of glacier melting /avalanche breakdown and understand it as an impact of global warming.

	<p><b>Formative assessment 1.</b>  Criterion A: Knowing and Understanding  <b>Inquiry question:</b> To compare amount of free space in solids, liquids and gases.  Work in group of three students each.  Take one syringe and fill it three quarters with water. Make sure there is no air inside the syringe, only water.  In another syringe draw some air.  Place the sand in the other syringe. Close the outlet of each syringe.  Compress each syringe as hard as possible and make sure you keep the end sealed.</p> <p><b>Formative assessment 2.</b>  Criterion D: Reflecting on the impacts of science  Case study based on glaciers.</p>
	<p><b>Differentiation</b>  Students are supported in developing and organizing their understanding through the use of a variety of graphic organizers, templates, modelled activities, and examples.  Opportunities for independent/partner extensions and explorations through online research allow students to engage in the inquiry process according to their individualized learning needs and interests.  The open-ended summative assessment and writing templates allow students to more independently engage in the inquiry process according to their individualized learning needs and interests.</p>
<p><b>Resources link shared in content booklet and along with topics.</b></p>	

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

Prior to teaching the unit	During teaching	After teaching the unit

Resource hodder..Change in form represents a transformation.  
The transformation of form demonstrates change.  
Transformation of form can identify the type of change.

<b>Teacher(s)</b>	<b>Kshama Sharma, Indu Dudeja</b>	<b>Subject group and discipline</b>	<b>MYP Science</b>		
<b>Unit title</b>	<b>What do scientists do.</b>	<b>MYP year</b>	<b>1</b>	<b>Unit duration (hrs)</b>	<b>3 wks</b>

<b>Key concept</b>	<b>Related concept(s)</b>	<b>Global context</b>
<b>Relationship</b>	<b>Patterns, evidence</b>	<b>Identities and relationship</b>
<b>Statement of inquiry</b>		
To be a scientist means to <b>gather evidence</b> about similarity and difference in nature to understand how things are related.		
<b>Inquiry questions</b>		
<b>Factual</b> — 1) How do scientist behave? 2) How is a laboratory different? 3) What is an experiment?		
<b>Conceptual</b> —How are scientific theories made?		
<b>Debatable</b> —Can science tell us everything we need to know?		
<b>Objectives</b>	<b>Summative assessment</b>	
<b>B. Inquiring and designing</b>	<b>How can we make a paper airplane travel farther?</b>  <u>Lab Report</u> Students design a lab experiment, test their hypothesis, collect and record data,	<b>Relationship between summative assessment task(s) and statement of inquiry:</b>  Students will be able to demonstrate an

<p>All strands.  <b>C. Processing and evaluating</b>  All strands.</p>	<p>produce a Lab report. Students may compose a Lab Report as a poster, use photos over time, create a power point, or generate a visual report in a manner the student prefers. Lab report must include logical steps of the scientific method (question/problem, hypothesis, materials, gathered data in data table, and graphed results of experiment) plus student must identify the variables in the investigations.</p>	<p>understanding of how they collect accurate data in a scientific experiment.</p> <p>Students will learn- scientific inquiry can prove, disprove or be inconclusive about a hypothesis.</p> <p>Students learn the importance of accurate data as data can influence what you think and foster new understanding.</p> <p>Students will be able to site an example of how knowledge gained from experiments and/or technology can change a person's viewpoints as data can be a powerful persuader.</p>
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**Approaches to learning (ATL)**

**Critical thinking skills**

- Organize relevant information to formulate an argument.
- Practise observing carefully in order to recognize problems.
- Evaluate evidence and arguments.
- Formulate questions

**Media literacy**

- Access information to be informed and inform others

- Make connections between various sources of information

### Communication

- Give and receive meaningful feedback
- Negotiate ideas and knowledge with peers and teachers
- Make inferences and draw conclusions

### Collaborative skills

- Exercise leadership and take on a variety of roles within groups
- Give and receive meaningful feedback

### Action: Teaching and learning through inquiry

Content	Learning process
<p>A. How do scientists behave?            B. In the laboratory            C. What is an experiment?</p> <p>All Students should</p> <p><b>Know:</b> Scientific Method, Extinction            Level Event</p> <p><b>Understand:</b> How the Scientific Method is used to answer the questions: Steps</p>	<p><b>Learning experiences and teaching strategies</b></p> <ol style="list-style-type: none"> <li>1. <b>Lab visit: Visiting the different laboratories of the school, observing the apparatus, code of conduct to be followed in the lab. Brainstorming ideas and reasons to take safety measures to be taken before any experiment</b></li> <li>2. <b>Students will frame their own lab guidelines/precautions/rules keeping the risk in mind.</b></li> <li>3. <b>Start the inquiry with the key words- analytical, rational and methodical</b></li> <li>4. <b>Introducing scientific inquiry questions- See- Think- Wonder</b>  <b>Student will comprehend their observation on the worksheet.</b></li> <li>5. <b>To introduce the process of experiment with the help of an experiment of</b></li> </ol>

<p>included</p> <ol style="list-style-type: none"> <li>1. Make an observation/Frame an inquiry question.</li> <li>2. Select the variable.</li> <li>3. Form a hypothesis, or testable explanation.</li> <li>4. Make a prediction based on the hypothesis.</li> <li>5. Test the prediction.</li> <li>6. Iterate: use the results to make new hypotheses or predictions.</li> </ol> <p><b>Do:</b> Lab Safety, Scientific Method/Experimental Cycle, variables and hypothesis formulation, Lab report format.</p>	<p><b>conditions necessary for photosynthesis- introducing the key terms variable, independent, dependent and controlled variables.</b></p> <ol style="list-style-type: none"> <li>6. <b>Identify Variables for the different experiments and unknown situation (group activity)</b></li> <li>7. <b>Practicing of hypothesis formulation in the specific format of ‘if’ and ‘then’.</b></li> <li>8. <b>Worked for the science project in the science exhibition. To understand the steps of experimentation.</b></li> <li>9. <b>Performed experiment to check ‘effect of temperature on solubility of sugar in tap water’. Started with inquiry question followed the steps till result and conclusion.</b></li> </ol>
	<p><b>Formative assessment</b></p> <ol style="list-style-type: none"> <li>1. <b>Students will understand cause and effect relationship amongst the physical quantities that brings desirable changes during experiments.</b>   <b>They will be able to identify types of variables involved for the experiment shown in video and will formulate the hypothesis based on cause and effect relationship:</b>   <a href="https://www.youtube.com/watch?v=wAASkJaDyzk">https://www.youtube.com/watch?v=wAASkJaDyzk</a> </li> <li>2. <b>Students will perform an experiment to study the effect of salt on the ice</b></li> </ol>

	<p><b>cubes after reading and following the procedure steps given in task. And will collect, organize, transform and present data to conclude the effect of salt on ice.</b></p>
	<p><b>Differentiation</b></p> <ol style="list-style-type: none"> <li>1. reinforcement provided to the students those are not able to attain the desired objectives/outcome.</li> <li>2. Hints for variables / some specific guidelines can be provided to support the learning and understanding process according to the requirement of average and below average students.</li> <li>3. Peer tutoring adopted for slow learner.</li> </ol>
<p><b>Resources</b></p>	
<p><a href="https://www.wikihow.com/Think-Like-a-Scientist">https://www.wikihow.com/Think-Like-a-Scientist</a>  <a href="https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biology-and-the-scientific-method/a/the-science-of-biology">https://www.khanacademy.org/science/high-school-biology/hs-biology-foundations/hs-biology-and-the-scientific-method/a/the-science-of-biology</a>  <a href="http://www.schoolofdragons.com/?lang=en">http://www.schoolofdragons.com/?lang=en</a> :game  <a href="http://www.stevespanglerscience.com/lab/experiments/penny-drops/">www.stevespanglerscience.com/lab/experiments/penny-drops/</a>  <a href="http://www.youtube.com/watch?v=BleCJJAKKgw">www.youtube.com/watch?v=BleCJJAKKgw</a>  <a href="http://www.telegraph.co.uk/news/science/space/10899919/Hubble-captures-star-explosion-over-four-years.html">www.telegraph.co.uk/news/science/space/10899919/Hubble-captures-star-explosion-over-four-years.html</a>  <a href="http://www.youtube.com/watch?v=7MLWHGRnqfl">www.youtube.com/watch?v=7MLWHGRnqfl</a>            Sciences Hodder education: Paul Morris and Patricia Deo</p>	

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

<b>Prior to teaching the unit</b>	<b>During teaching</b>	<b>After teaching the unit</b>
<p>For MYP 1 students designing an experiment with controlled and independent variables seems to be difficult.</p> <p>Students might need individual support to explore and inquiry.</p>	<p>Few students understand variables and hypothesis for known situation only but not able identify and apply unforeseen conditions.</p>	<p>Identifying variables as an abstract concept is challenging for this age group of students.</p> <p>Variables in unfamiliar situations and conditions is a difficult concept at this early level it should either limits to familiar situation or</p>