

IB Biology SL Year 2: Interactions and Interdependence

Teachers	IB Biology PLC	Subject group and course	IB Biology SL Y2		
Course part and topic	IB Biology Year 2: Unit 5: Interactions and Interdependence Topic 4 (4.1-4.4) Option C	SL or HL/Year 1 or 2	SL; Year 2	Dates	7 weeks
Unit description and texts		DP assessment(s) for unit			
<p>In this unit students will investigate the movement of matter and energy through ecosystems. More specifically ecosystem's structure, nutrient cycling, community ecology and climate change. In addition, the role humans play in the changing environment will be evaluated.</p> <p>Statement of Inquiry: In recent years, the underlying biochemical unity of all plants, animals and microbes has become increasingly apparent.</p> <p>Phenomenon: The Great Barrier Reef—Organisms adapt to changing conditions and are sensitive to stress imposed by humans</p>		<ul style="list-style-type: none"> • Formative quizzes • Notebook check • Design Lab: Quadrat study and chi-square analysis to determine biodiversity • Practicum: Designing a mesocosm experiment • Summative Unit Assessment 			

INQUIRY: establishing the purpose of the unit

Transfer goals
List here one to three big, overarching, long-term goals for this unit. Transfer goals are the major goals that ask students to “transfer” or apply, their knowledge, skills, and concepts at the end of the unit under new/different circumstances, and on their own without scaffolding from the teacher.
<p>SWBAT:</p> <p>Investigate the role enzymes play in transferring energy through organisms and ecosystems using the following science and engineering practices</p>

- Asking Questions and Defining Problems
- Developing & Using Models
- Constructing Explanations

ACTION: teaching and learning through inquiry

Content/skills/concepts—essential understandings	Learning process	
<p>Students will know the following content:</p> <p>4.1: The continued survival of living organisms, including humans, depends on sustainable communities</p> <p>4.2: Ecosystems require a continuous supply of energy to fuel life processes and to replace energy lost as heat</p> <p>4.3: Continued availability of carbon in ecosystems depends on carbon cycling</p> <p>4.4: Concentrations of gasses in the atmosphere affect climates experienced on Earth's Surface</p> <p>Students will develop the following skills:</p> <ul style="list-style-type: none"> • Classifying species as autotrophs, consumers, detritivores or saprotrophs from a knowledge of their mode of nutrition. • Setting up sealed mesocosms to try to establish sustainability. (Practical 5)) • Testing for association between two species using the chi-squared test with data obtained by quadrat sampling. • Recognizing and interpreting statistical significance. • Quantitative representations of energy flow using pyramids of energy. • Construct a diagram of the carbon cycle. <p>Students will grasp the following concepts</p> <ul style="list-style-type: none"> • Systems and Models • Interactions and Equilibrium 	<p>Check the boxes for any pedagogical approaches used during the unit. Aim for a variety of approaches to help facilitate learning.</p> <p>Learning experiences and strategies/planning for self-supporting learning:</p> <p>Lecture</p> <p>Socratic seminar</p> <p>Small group/pair work</p> <p>PowerPoint lecture/notes</p> <p>Individual presentations</p> <p>Group presentations</p> <p>Student lecture/leading</p> <p>Interdisciplinary learning</p> <p>Details: Students will view lectures at home through the schoology LMS. Class time will be dedicated to investigations and assessments.</p> <p>Other/s:</p>	

<ul style="list-style-type: none"> Stability and Change 		
<p>Formative assessment: Online quizzes per topic will be conducted to determine growth of learners throughout the unit.</p> <p>Summative assessment: Summative practical-assessments will mirror Internal Assessment (IA) criteria described by the IB Biology curriculum. Unit test will mirror the IB exam students will take at the end of the year.</p>		
	<p>Differentiation:</p> <ul style="list-style-type: none"> Affirm identity—build self-esteem Value prior knowledge Scaffold Learning <p>Details: Growth will be monitored using formative assessments by instructor and self-assessed using provided rubric. Remediation/ extension will be conducted through homework activities and investigations conducted in class.</p>	
<p>Approaches to learning (ATL)</p> <p>Check the boxes for any explicit approaches to learning connections made during the unit. For more information on ATL, please see the guide.</p>		
	<p>Details:</p> <p>The ATL for this unit will be Research. This focus will be carried out during the planning and preparation of the mesocosm practical.</p>	

Language and learning Check the boxes for any explicit language and learning connections made during the unit. For more information on the IB's approach to language and learning, please see the guide .	TOK connections Check the boxes for any explicit TOK connections made during the unit	CAS connections Check the boxes for any explicit CAS connections. If you check any of the boxes, provide a brief note in the “details” section explaining how students engaged in CAS for this unit.
<p>Activating background knowledge</p> <p>Scaffolding for new learning</p> <p>Acquisition of new learning through practice</p> <p>Demonstrating proficiency</p> <p>Details: This unit applies vocabulary acquired through previous courses. Proficiency will be assessed through formative and summative assessments.</p>	<p>Personal and shared knowledge</p> <p>Ways of knowing</p> <p>Areas of knowledge</p> <p>The knowledge framework</p> <p>Details: Natural science as an area of science will be investigated in this unit.</p>	<p>Creativity</p> <p>Activity</p> <p>Service</p> <p>Details: Development and execution of practicum requires students to think creatively. The work may not be applied to CAS projects but skills developed could be used on developing CAS activities.</p>
Resources List and attach (if applicable) any resources used in this unit		
<ul style="list-style-type: none"> • Damon, A.; McGonegal, R.; Tosto, P.; Ward, W. Standard level biology; Pearson Education Limited: Harlow, Essex, 2014. • Greenwood, T.; Pryor, K.; Bainbridge-Smith, L.; Allan, R. Environmental science: student workbook; Biozone International: Hamilton, New Zealand, 2013. • Van de Lagemaat, R. www.inthinking.net: Andorra la Vella, Andorra, 2019. • IB Biology Schoology Course 		

Reflection—considering the planning, process and impact of the inquiry

What worked well List the portions of the unit (content, assessment, planning) that were successful	What didn't work well List the portions of the unit (content, assessment, planning) that were not as successful as hoped	Notes/changes/suggestions: List any notes, suggestions, or considerations for the future teaching of this unit