

CLIL LEARNING UNIT – Lower Secondary School

Title	LIVING BEINGS RELATIONSHIPS		Class	2 nd year secondary school – (13 years old students)
Subject(s) involved	SCIENCE		Number of lessons	6
Teaching aims	<ul style="list-style-type: none"> • <i>students will be aware of the importance of relationships between living beings and environment;</i> • <i>students will understand that every living being interacts with other BIOTIC and NON-BIOTIC factors in its habitat;</i> • <i>students will be able to classify living beings as PRODUCERS and CONSUMERS and to understand how the food chains are organized and how the food chains can cross to compose a food web;</i> • <i>students will be able to explain the difference between HETEROTROPHS and AUTOTROPHS and they will understand that one of the main differences between plants and animals is the way they get living energy;</i> • <i>students will understand the meaning of biodiversity and the important role that every species plays in its habitat;</i> • <i>students will be aware that a delicate balance exists between all the living species, and that it is dramatically important to protect it.</i> 			
Learning outcomes	What learners will be able to know by the end of the unit	<ul style="list-style-type: none"> • Different meaning of habitat, ecological niche, biotic community and biotope; • the role played by the photosynthesis for life; • the difference between plants and animals in terms of energy production; • the structure of food chain and a food web; • the meaning of biodiversity and the importance that every species has for the environment. 		
	What learners will be able to do by the end of the unit	<ul style="list-style-type: none"> • Organize the living beings into specific categories, like producers and consumers (and decomposer); • sketch and explain a food chain; • recognize the role of all the living beings all around them; • collect samples of living beings in their local park (like leaves and seeds) and dry them to build a book of biodiversity with every species named with its Latin, English and Italian name; • distinguish between different species of trees and animals living in their surroundings. 		
	What learners will be able to be aware of by the end of the unit	<ul style="list-style-type: none"> • how life is organized and how living beings interact together; • the importance of the relationships between the different species; • the balance of energy between all the species that live in one ecosystem; • the key role that plants have in the food chains; • the role that every biological species has in its habitat; • the meaning of biodiversity and the importance of protecting it. 		

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Content	CLIL theme with possible crosscurricular links	<ul style="list-style-type: none"> • Habitat, ecological niches, biotic communities and biotopes, ecosystems and biomes; CROSSLINKS WITH GEOGRAPHY. • relationships between different species; • heterotrophs and autotrophs living beings; • roles played by living beings: producers, consumers and decomposers; • relationship between living beings: predator-prey relationship, food chains and levels of consumers; • food chains intersection and food webs; • biodiversity as a measure of the amount of variation of species in each area. CROSSLINK WITH STATISTICS AND ECOLOGY.
Communication	Language of Learning	<p><i>Vocabulary:</i> Scientific vocabulary about the topic (heterotrophs, autotrophs, producers, consumers, decomposers, food-chain and web, biodiversity, niche, habitat, ecosystems...); Names of some of the species living in Monza park; Names of some living beings that have significant relationships (e.g. lions and hyenas, clown fish and sea anemones...) Habitats names (e.g. Tundra, Desert...)</p> <p><i>Structures:</i> SIMPLE PAST; COULD AND WOULD; the present-future if clause; more advanced comparative or superlative structures (THE MOST, AS WELL AS,).</p> <p><i>Functions:</i> Describing this scientific topic using appropriate vocabulary; comparing data; expressing personal opinions and the evidence on which the personal opinions are based.</p>
	Language for learning	<p><i>Vocabulary:</i> the basic scientific vocabulary (e.g. ENERGY, HEAT, FOOD, LIVING BEINGS, PLANTS, ANIMALS, MICROORGANISMS...)</p> <p><i>Structures:</i> PRESENT SIMPLE, CAN/MUST, basic comparative structures (as-as, more-than, less-than).</p> <p><i>Functions:</i> Ask and answer questions to identify and describe.</p>
Cognition	Thinking skills development (LOTS and HOTS)	<p>Recognizing the complexity of the ecosystems, Explaining the rules that determine the ecosystem balance; Understanding the effect that some actions can have on the environment, like introducing a non-native species in an ecosystem; Classifying trees of the local park; Understanding the scientific basis of the environmentalist claims and analyse them to be able to build an opinion.</p>

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Culture	Awareness of topic relevance to daily life	Understand the role ecology plays in our lives; Understand the danger of biodiversity loss; Promote actions to preserve the environment health; Know the difference between the living beings populating our park.
Materials and resources	<p>Resources for the lessons: Interactive Multimedia board, PC, worksheets, photocopies, pictures, videos. A photo camera to take pictures in the local park. An exercise-book to collect and classify leaves, seeds and photos of living beings. Resources from the environment: samples of leaves or seeds, pictures of animals, trees or other living beings.</p> <p>REFERENCES:</p> <p>Activities and readings from: http://www.ck12.org/ Pictures from the following web sites: http://www.nature.com/ http://wesharepics.info/ http://slideplayer.com/slide/7274015/ http://brunelleschi.imss.fi.it/ http://hyenas.zoology.msu.edu/ www.oceanlight.com http://hdimagelib.com/ www.pinterest.com en.wikipedia.org http://phenomena.nationalgeographic.com/ http://www.johnawad.net/famsize.jpg www.britannica.com</p> <p>Videos from http://www.youtube.com edited with http://www.edpuzzle.com</p>	
Assessment	<p>During the module: student's participation in discussions, student's ability in solving games and puzzles. Group activities will be considered too, assigning scores for each activity well solved with a good collaboration between ALL the members of the group.</p>	

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	At the end of the module: written test.
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Each Learning unit will be divided in single lessons. The steps to follow during the learning unit are the following:

- ACTIVATION
- FIND OUT (INPUT)
- SORT OUT (INPUT PROCESSING)
- OUTPUT (SPEAKING AND WRITING TO PRESENT THE NEW PRODUCT/INDIVIDUAL/GROUPWORK)
- ASSESSMENT (SUMMATIVE ASSESSMENT OF THE UNIT)

These steps will be developed during a certain number of lessons each teacher will plan.

LESSON PLAN

Lesson 1

Title **NICHE, HABITAT AND ECOSYSTEMS**

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	(5 min)		
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Lesson 2

Title **AUTOTROPHS VS. HETEROTROPHS**

Timing 2h (≈100 min)

Lead in of the lesson (warm up)	<p>The teacher starts the lesson asking: “What does every living organism need to survive?” He asks the students to put the red words in slide 1 in the right cloud (essential or not essential). Then the teacher can show slide 1 of the teacher’s presentation and discuss with the class about their choices. (10 min).</p>	Interactional Pattern* <i>W</i>	Resources and Materials A copy of AUTOTROPHS AND HETEROTROPHS-lesson2-ST.pptx Student’s presentation AUTOTROPHS AND HETEROTROPHS-lesson2-TE.pptx Teacher’s presentation
Core activities	<p>ACTIVITY 5: GUIDED DISCUSSION ABOUT PLANTS</p> <p>Teacher will ask the students how plants (or grass, or flowers or seaweed) can survive. Do they eat or not? Can they produce food (organic matter) by themselves? Probably some of</p>	<i>W</i>	AUTOTROPHS AND HETEROTROPHS-

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<p>Sort out (input processing)</p>	<p>them know already that plants can do the photosynthesis, anyway using slide 2 and 3 the teacher must give the right definition and explanation of the chemical reaction. Sometimes students think that water is the food that plants eat. Discuss with them about what food is, and make them aware that plants produce the organic matter they need to grow up, using water, carbon dioxide and sunlight as energy. (20 min)</p> <p>ACTIVITY 6: PRODUCERS AND CONSUMERS Watch the edited video about the energy flow from autotrophs to heterotrophs, including a definition of decomposers. Students must answer the questions and write them in their exercise-book. (https://edpuzzle.com/media/581f3d2eae44125c085db0fe) (20 min)</p> <p>ACTIVITY 7: AUTOTROPHS AND HETEROTROPHS GAME Each group work together to answer the questions, one for each group can go to the board to play. The teacher keeps track of the score for each group. (http://sciencereviewgames.com/srg/games/hs.php?id=85) (30 min)</p> <p>ENDING LESSON: the teacher builds a spidergram (or a map) on the board that summarizes the most important ideas of the lesson. Students must do the activity “autotrophs and heterotrophs” as homework (They have to read the descriptions and try to solve the game). (Activity link) (20 min)</p>	<p style="text-align: center;">W</p> <p style="text-align: center;">G</p> <p style="text-align: center;">W</p>	<p>lesson2-TE.pptx presentation interactive board.</p> <p>Video link interactive board</p> <p>Game link interactive board</p> <p>Activity link</p>
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Lesson 3

Title **BIODIVERSITY**

Timing 2h (≈100 min)

Lead in of the lesson (warm up)	The Teacher presents the topic of the lesson showing slide 1 and asking the student to guess what the photos are supposed to mean. (5 min)	Interaccional Pattern *	Resources and Materials
<p>Core activities Sort out 2 (input processing 2 if necessary)</p>	<p>ACTIVITY 8: UNDESTANDING BIODIVERSITY Show “What is biodiversity?” video. Then the teacher starts a discussion about the meanings of the word “biodiversity”. The Teacher can use slides 2,3 and 4 to focus on the different meanings that “biological diversity” can have. Video link: https://www.youtube.com/watch?v=ErATB1aMiSU (20 min)</p> <p>ACTIVITY 9: WHY IS BIODIVERSITY SO IMPORTANT? Understand the benefits we have as humans from the biodiversity. Reading. (30 min)</p> <p>ACTIVITY 10: THE IMPORTANCE OF BIODIVERSITY Watch the video that makes a resume of the concept of the lesson. https://edpuzzle.com/media/5904f70f72de9d3e2f620d51 (10 min)</p> <p>ACTIVITY 11 Students in pair must try to answer each question until they get all the right answers http://www.ck12.org/biology/Biodiversity/asmtpractice/Biodiversity-Practice/?referrer=featured_content (30 min)</p>	<p>W</p> <p>W</p> <p>I</p> <p>W</p> <p>P</p>	<p>BIODIVERSITY-lesson3-TE.pptx presentation</p> <p>“What is biodiversity Video”</p> <p>A copy for each student of the reading: Importance of biodiversity-lesson3-ST.docx Video at this link</p> <p>A PC with internet</p>

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	<p>ENDING the LESSON: the teacher shows slide 5 and talks about some of the endangered species on our planet. As homework, the students (in groups) can choose an endangered species and examine the causes of the risk of extinction in depth. (10 min)</p>	G	<p>connection for each couple of students. Activity at this link</p> <p>BIODIVERSITY-lesson3-TE.pptx and BIODIVERSITY-lesson3-ST.pptx</p>
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Lesson 4

Title **BIODIVERSITY IN MONZA PARK**

Timing 2h (≈100 min)

Lead in of the lesson (warm up)	<p>Explain to the students that we want to make a “notebook of biodiversity in Monza Park”. So, we need samples of living beings that have their habitat in the Monza Park. We will pick up leaves (that we will dry) and we will take pictures of the animals or other living beings we can’t dry (like mushrooms or footsteps). (5 min)</p>	Interactional Pattern* W	Resources and Materials
Input	<p>ACTIVITY 12: A STROLL IN THE PARK A walk through Monza Park to collect leaves and photos of living beings. The Teacher must suggest which samples to collect in order to have the most widespread species of the park. Students can be left free to collect some other samples if they want. (75 min)</p>	W	Photocamera. Bags or boxes to collect leaves and seeds

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Assessment (1h≈50min)	<i>Written test</i> FINAL TEST.docx
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**Whole class: W, groupwork: G, pairwork: P, individual work: I*