CLIL Module Plan

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School	Liceo Scientifico “Da Vinci” Trento				
School Grade	○ Primary		○ Middle		◉ High
School Year	○ 1	○ 2	○ 3	○ 4	◉ 5
Subject	Scienze	**Topic**	Inside Earth		
CLIL Language	◉ English		○ Deutsch		

Personal and social-cultural preconditions of all people involved	The scientific high school "Leonardo da Vinci" is one of the historical “Liceo” of the Province of Trento. Nowadays the "Leonardo da Vinci" high school proposes two curricula, foreseen by the reform of the high school, the ordinary scientific curriculum and the applied sciences scientific curriculum. A typical 3th grade class consists of 25 students. There are students of foreign origin, but normally perfectly integrated into the class; there are no or few SEN students. The classroom is rather small and the available space is therefore limited. The position of the desks s is the classic one (in pairs). The narrow space is a factor to consider when planning activities that require movement or different allocation of the desks. A PC, an interactive whiteboard (IWB) and a blackboard are availablein the class. Although the students are particularly bright, their average behavior is polite and participating. The class is generally close-knit and collaborative. The class presents on average linguistic competence level B1+. The motivation and enthusiasm are high. The teacher, who will carry out the CLIL module, teaches Science and Environmental education and she/he is the main teacher. She/he has a C1 English level certification. She/he is planning Science-CLIL modules in collaboration with some colleagues of her/his disciplinary Department.

Students' prior knowledge, skills, competencies	**Subject**	**Language**
	● Earthquakes and differences between seismic waves ● Type and characteristics of rocks ● Magnetic fields ● Managing trigonometric data ● Plotting data ● Interpreting information from plots ● Elaborating and editing short texts using also pictures ● Predicting data from a model	Present, past, future, modal verbs, conditional forms; Reporting verbs; Scientific basic vocabulary related to geology (see "glossary"); To be able to listen and understand the main concepts/meaning of a new video/speech. To be able to read and understand the main concepts/meaning of a new text. To be able to express an opinion. To take notes while listening. To simply answer open questions

Timetable fit	◉ Lesson	Length 10 lessons

Description of teaching and learning strategies	The whole unit is based on a slide presentation and so there is a file called “inside earth .ppt” with pictures, texts and useful slides. There is also a folder with all the handouts to print out; a folder with assessment sheets, videos and pictures. All these folders are inside a main folder called “lesson materials”. At the beginning of the unit we start with an activity to recall previous information and knowledge of seismic waves, earthquakes and rocks. The next activities aim to stimulate the process of modelling reality in order to understand the meaning of indirect evidence of interior layers. After, the unit aims to stimulate the editing of paragraphs obtaining information from pictures, diagrams and graphs. Students also have to do homework, like using wordcloud to write sentences or to review topics or exercises. The teacher will scaffold the lesson, in particular by verbally supporting the students with paraphrases, providing definitions and questions in order to stimulate the students’ cognitive processes. The teacher will explain the activities clearly and will try to be flexible when managing the lesson plan’s timetable, group work, and timing. The learning and teaching objectives aim at highlighting disciplinary-specific cognitive processes, considering both transversal and communicative outcomes. The lessons have been designed to encourage the development of creative thinking and ideas; transversal skills, such as critical thinking and problem solving; the comprehension and production (in both verbal and written form) of the language of intercommunication and the micro-language related to the specific topic.

Overall Module Plan

Unit: 1 INSIDE THE EARTH **Unit length:** 10	**Lesson 1** BRAINSTORMING SEISMIC WAVES
	Lesson 2 HOW TO DISCOVER DISCONTINUITY
	Lesson 3 FROM DATA TO A MODEL
	Lesson 4 EARTH’S LAYERS 4.A Introduction to the layers 4.B Earth's layers characteristics
	Lesson 5 INNER PART OF THE EARTH From slide to text
	Lesson 6 HEAT IN EARTH’S INTERIOR
	Lesson 7 PALEOMAGNETISM
	Lesson 8 HOTSPOTS
	Lesson 9 Assessment

CLIL Lesson Plan

Unit number	1	**Lesson number**	1	**Title**	BRAINSTORMING SEISMIC WAVES

Activity	**Timing**	**Learning Outcomes**	**Activity Procedure**	**Language**	**Interaction**	**Materials**	**Assessment**
1	50'	To understand how deep we can explore the Earth's interior. To remember and review the main characteristics of seismic waves.	A) Watch video: what is the deepest hole we can possibly dig? B) Ask students to talk about HOW CAN WE STUDY, UNDERSTAND, DESCRIBE WHAT THERE IS INSIDE THE EARTH. Try to communicate what came to mind. Write key-points on the board. C) Using handout 1.2 ask students to match pictures with the correct sentences. Check the work with the whole class.	**Skills** L S R W **Key vocabulary** LONGITUDINAL WAVE, PRIMARY WAVE (P-WAVE), SECONDARY WAVE (S-WAVE), TRANSVERSAL WAVE, SURFACE WAVES **Communicative structures** In my opinion..., WE CASN STUDY, UNDERSTAND, DESCRIBE WHAT THERE IS INSIDE THE EARTH....?	☑ Whole class ☐ Group work ☐ Pair work ☐ Individual work	• INSIDE EARTH.pptx • 1.2.HANDOUT SEISMIC WAVES TO PRINT.docx Video "what is the deepest hole we can possibly dig?": link Presentation file: INSIDE EARTH.ppt Handout 1.2 SEISMIC WAVES	none

CLIL Lesson Plan

Unit number	1	**Lesson number**	2	**Title**	HOW TO DISCOVER DISCONTINUITY

Activity	**Timing**	**Learning Outcomes**	**Activity Procedure**	**Language**	**Interaction**	**Materials**	**Assessment**

1	50	To describe how primary and secondary waves propagate through Earth. To demonstrate that Earth is not homogenous. To explain how the internal structure of Earth (concentric layers of different density and composition) is inferred through the analysis of seismic data. To reason, to hypothesize, to evaluate if data is good, useful, predictive of a phenomenon.	Divide the students into two groups: Seismologists & Theoreticians. - For Seismologists: your task is to analyze a set of seismograms from a real earthquake to determine how long it takes for the seismic waves released from an earthquake to arrive at various points on Earth's surface. - For Theoreticians: calculate the time the seismic waves take to travel to each station Using an electronic spreadsheet draw a plot with angular distance and arrival time of seismic waves B) Discuss with the class using slide 13 Questions for discussion after having created graphs of the data; you can use slide 13	**Skills** L S **R** **W** **Key vocabulary** seismograms, angular distances and arrival times, **Communicative structures** the assumptions of your model is that... Our model data match the observed data because...	☒ Whole class ☒ Group work ☐ Pair work ☐ Individual work	• INSIDE EARTH.pptx • 2.1 HANDOUT SEISMOGRAM.docx • 2.2 HANDOUT TEORETICIANS.docx Presentation file: INSIDE EARTH.ppt Handout 2.1 for Seismologist Handout 2.2 for Theoretician Sheets for drawing diagrams	none

CLIL Lesson Plan

Unit number	1	**Lesson number**	3	**Title**	FROM DATA TO A MODEL

Activity	**Timing**	**Learning Outcomes**	**Activity Procedure**	**Language**	**Interaction**	**Materials**	**Assessment**
1	50	To explain the role models play in the scientific process, especially when used in combination with observational data. To describe Earth's internal structure (layers of different material, properties and composition) and summarize how this is inferred through the analysis of seismic data. To estimate the size of Earth's core using a record section from	Use handout 3 A) Students have to cut out this shape from the model. Next, rotate the cut out and continue to trace its edges simulating a certain numbers of earthquake. Ask students to answer the questions on the handout. B) Discuss the answers with the class.	**Skills** L S R W **Key vocabulary** EPICENTER, interruption , shadow zone **Communicative structures** This scale model of the P-wave shadow zone help us to determine..... We used the seismic waves to ... We determined the structure ... I think this represents... There is a correlation because.... ..	☒ Whole class ☒ Group work ☐ Pair work ☐ Individual work	• INSIDE EARTH.pptx • 3 FROM DATA TO A MODEL.docx Presentation file: INSIDE EARTH.ppt Handout 3 Scissors	formative

CLIL Lesson Plan

Unit number	1	**Lesson number**	4	**Title**	EARTH’S LAYERS 4.A Introduction to the layers 4.B Earth's layers characteristics

Activity	**Timing**	**Learning Outcomes**	**Activity Procedure**	**Language**	**Interaction**	**Materials**	**Assessment**
1	50'	Listening and writing using content - compatible and subject-specific language	A) Play video from min 00.23 to min 01.56 Use handout 4.1 Students fill in the gaps while listening to the clip. At the end they write the missing words on the board. B) Ask students to complete the table in handout 4.2 while watching video clip. PLAY VIDEO LAYERSEARTH.MP4 FROM MIN 01:56 TO 04:22 Give handout 4.3 for homework	**Skills** L S R W **Key vocabulary** crust, composition, density refract, mantle , hypocenter, core, asthenosphere and lithosphere, CHEMICAL COMPOSITION , ROCK COMPOSITION, temperature, pressure **Communicative structures** They thus determined...., these layers can be compared to ...	☐ Whole class ☐ Group work ☐ Pair work ☑ Individual work	• INSIDE EARTH.pptx • 4.1 handout FILL IN student.docx • 4.1 handout FILL IN teacher.docx • 4.2 HANDOUT COMPLETE THE TABLE stuedent.docx • 4.3 handout wordcloud homework.docx Presentation file: INSIDE EARTH.ppt Handout 4.1 link Handout 4.2 Handout 4.3 for homework	

CLIL Lesson Plan

Unit number	1	**Lesson number**	5	**Title**	INNER PART OF THE EARTH From slide to text

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment

1	50'	To add details to the differences between Earth's layers based on chemical composition and physical properties of the rocks. To highlight all data about temperature, composition, density, seismic activity for each layer. To understand the meaning of discontinuities. To use descriptive language to describe the crust, mantle and core.	Collect homework (handout 4.3) and correct for the next class. A) Enter in the website link or link Ask one student to come to the smart-board and do this interactive activity B) Using handout 5.2 and all the previous materials students are asked to write paragraphs about the topic: characteristics of the earth's layers. C) One group shows the class their work and other students can suggest changes or complete the texts. Homework: review all the texts and handouts.	**Skills** L S R W **Key vocabulary** oceanic crust, continental crust, felsic, mafic, discontinuity, MOHO, liquid, siolid, ductile, brittle, magnetic field **Communicative structures** Can you identify the different parts of…? What do you think about…? Can you identify the different parts of…?	☒ Whole class ☒ Group work ☐ Pair work ☒ Individual work	• INSIDE EARTH.pptx • 4.3 handout wordcloud homework.docx • 5.2 handout from slide to text.docx • GRIGLIE DI VALUTAZIONE INSIDE EARTH.docx link link Presentation file: INSIDE EARTH.ppt Handout 5.2 Pictures from: link	FORMATIVE homework handout 4.3 FORMATIVE handout 5.2

CLIL Lesson Plan

Unit number	1	**Lesson number**	6	**Title**	HEAT IN EARTH’S INTERIOR

Activity	**Timing**	**Learning Outcomes**	**Activity Procedure**	**Language**	**Interaction**	**Materials**	**Assessment**

1	50'	To understand the meaning of Earth's Thermal Profile - The Geotherm. To find relationships with previous features they have seen about Earth’s layers. To establish the cause and effect relationship. To understand the source of the heat in Earth’s interior. To review definitions	A) As review watch video “review video on earth” B) Using handout 6.2 invite students to analyse the diagram and to answer the questions. Choose one group to discuss the matter in front of the class. C) Invite single student to reorder the text in the handout 6.3. D) Check the texts: ask students to pass their handout 6.3 to the person next to them. Ask them to tick the mistakes. Teacher reads aloud the correct text. Collect all the handouts. As homework ask students to complete the glossary from handout 6.4.	**Skills** L S R **W** **Key vocabulary** melt, depth, geothermal gradient, planetesimals , radioactive elements **Communicative structures** Look at the diagramm … Are there any relationships with previous features you have seen about Earth’s layers. …? How hot is it inside Earth?	☑ Whole class ☐ Group work ☑ Pair work ☐ Individual work	• 6.2 HANDOUT Geothermal gradient.docx • 6.3 HANDOUT TEACHER.docx • 6.4 glossary teacher.docx • 6.4 handout glossary.docx • 6.5 crossword on glossary 1 complete.doc.docx • 6.5 crossword on glossary 1.doc.docx Presentation file: INSIDE EARTH.ppt Video: “review video on earth”: link Handout 6.2 Handout 6.3 Handout 6.4 for homework	none

CLIL Lesson Plan

Unit number	1	**Lesson number**	7	**Title**	PALEOMAGNETISM

Activity	**Timing**	**Learning Outcomes**	**Activity Procedure**	**Language**	**Interaction**	**Materials**	**Assessment**
1	50	To understand some geological phenomena: Curie temperature, Earth’s magnetic field, ferromagnetism and thermoremanent magnetization. To apply knowledge to a new text about Earth’s magnetic field. To recognize the cause and effect relationship between rock magnetization and seafloor spreading. To communicate and explain what is paleomagnetism	A) Check glossary using 6.4 handout glossary teacher. B) Give students handout 7.2. Let them read the text and if necessary explain some terms or words. C) Give students handout 7.3 fill in the gaps while watching video “paleomagnetism” from min 03:48 to min 07:11. Ask students to complete handout 7.3. D) Paleomagnetism review. Use handout 7.4. Check the answers with the whole class. Also use questions from the ppt slide 39/40. Give	**Skills** L S R W **Key vocabulary** Curie temperature, Earth's magnetic field, permanent magnetic properties, induced magnetism, paleomagnetism	☐ Whole class ☐ Group work ☒ Pair work ☒ Individual work	• INSIDE EARTH.pptx • 7.3 handout paleomagnetism for student.docx • 7.2 handout magnetism.docx • 7.3 handout paleomagnetism for teacher.docx • 7.4 handout paleomognetism review.docx Handout 7.2 Handout 7.3 Video “paleomagnetism”: link Handout 7.4 paleomagnetism review Handout 8.1 for homework	

		paleomagnetism.	ppt slide 39/40. Give handout 8.1 for homework	**Communicative structures** We get them by studying...., They registered magnetic fields....By recording these data....For example in this image we see that.... Describe how scientists knew that.... Try to explain.....			

CLIL Lesson Plan

Unit number	1	**Lesson number**	8	**Title**	HOTSPOTS

Activity	**Timing**	**Learning Outcomes**	**Activity Procedure**	**Language**	**Interaction**	**Materials**	**Assessment**
1	50'	To identify the key points of this phenomenon. To reason about cause and effects. To summarise the content.	A) Watch the video “hot spots”. B) Check the homework from handout 8.1. C) Give students handout 8.2 and ask them to read the text and complete the table.	**Skills** L S R W **Key vocabulary** hot spot, distance, volcanic mountains, Pacific Plate, overriding plates, magma blobs, active volcanoes. **Communicative structures** Do Hot Spots Move?.... What is the .....? Summarize the ..... The "Hot Spot" Hypothesis consits in	☐ Whole class ☐ Group work ☐ Pair work ☑ Individual work	• 8.2 handout hot spots.docx Video “hot spots”: link) Handout 8.2	none

CLIL Lesson Plan

Unit number	1	**Lesson number**	9	**Title**	Assessment

Activity	**Timing**	**Learning Outcomes**	**Activity Procedure**	**Language**	**Interaction**	**Materials**	**Assessment**
1	50'			**Skills** L S R W **Key vocabulary** **Communicative structures**	☐ Whole class ☐ Group work ☐ Pair work ☑ Individual work	• GRIGLIE DI VALUTAZIONE INSIDE EARTH.docx • assessment inside earth.docx • corrected assessment inside earth.docx	summative