

# CLIL Module Plan

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<b>School Grade</b>	<input type="radio"/> Primary		<input type="radio"/> Middle		<input checked="" type="radio"/> High
<b>School Year</b>	<input type="radio"/> 1	<input type="radio"/> 2	<input checked="" type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
<b>Subject</b>	Fisica	<b>Topic</b>	Hydrogen Atom Models		
<b>CLIL Language</b>	<input checked="" type="radio"/> English		<input type="radio"/> Deutsch		

<b>Personal and social-cultural preconditions of all people involved</b>	<p>These units were tested over a third-year scientific high school class: 25 students (19 boys and 6 girls) and their Physics teacher together with a Science teacher. No special needs or foreign students in the class. General motivation for school subject. Quite disordered type of students: they are interested in problem solving but they are chaotic in their speeches. One third of the class students does not apply enough and they have not reached the expected level (especially in Math and Physics). Physics teacher has an official CLIL qualification but hasn't a C1 certificated level of English, Science teacher has C1 certificated level of English, but has not an official CLIL qualification. Both of the teachers are motivated to teach their subject in English.</p>
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Students' prior knowledge, skills, competencies	Subject	Language
	<p>Know the meaning of the acronym CLIL. Understand the general aim of CLIL lessons. Have a general Classical Physics preparation as a 3rd year scientific high school student. Understand the concept of kinetic energy, potential energy, linear momentum, torque, circular motion. Know the definition of matter and energy. Know the meaning of atom. Know the International System of Units. Can read and produce a diagram.</p>	<p>All of the students (B1 level according the European Framework of References for languages): Can understand the main points of clear standard input on familiar matters regularly encountered in school, leisure, etc. Can deal with most situations likely to arise while travelling in an area where the language is spoken. Can produce simple connected text on topics that are familiar or of personal interest. Can describe experiences and events, dreams, hopes and ambitions and briefly give reasons and explanations for opinions and plans. Some of them (B2 level according the European Framework of References for languages): Can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions. Can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party. Can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options. Two students are English/Italian mother tongue speakers.</p>

<b>Timetable fit</b>	<div> <div>●</div> <div>Module</div> </div>	Length 5 lessons (50 minutes each)
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<b>Description of teaching and learning strategies</b>	<p>In general, “Golabz.eu” website will be used to collect teacher’s and students’ material. It is a platform combining labs and apps into Inquiry Learning Spaces (ILS). Either the lessons can be kept by the Physics teacher alone, or by Physics and Science teachers together (in this case Science teacher could pay more attention to student’s conversations, take notes of them and use them for assessing their learning process). A number of internet connected computers equal to at least half of the students’ number is needed for this module. Teacher will: go to the link: <a href="https://www.golabz.eu/user/2150">https://www.golabz.eu/user/2150</a> register (with their google account or any other else) copy the ILS: “Hydrogen Atom’s Models and The Concept of Quantization” invite their students With the “Golabz.eu” support, during the lessons many different approaches will be used. Participatory lesson Problem solving Scientific laboratory simulations Students’ presentations Videos with answers and questions Work in couples Work in small groups</p>
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# Overall Module Plan

<b>Unit: 1</b>  Light: waves and photons. The strange behaviour of quantum realm  <b>Unit length: 2</b>	<b>Lesson 1</b>  EM radiation
	<b>Lesson 2</b>  Lesson 2 Hydrogen's Atom Models
	<b>Lesson 3</b>  Lesson 3 Planck's Problem and the role of "h"
	<b>Lesson 4</b>  Lesson 4 The strange concept of Action.
	<b>Lesson 5</b>  Lesson 5 Conclusion and Final Test

# CLIL Lesson Plan

<b>Unit number</b>	1	<b>Lesson number</b>	1	<b>Title</b>	EM radiation
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Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment				
1	15'	SUBJECT Introduce the Module and discuss the CLIL methodology features LANGUAGE Listen to original English language video understanding the main concepts	The teacher shares the link: <a href="#">link</a> with the students Students follow the indications of the ILS in the tab “Introduction”	<b>Skills</b>	<input checked="" type="checkbox"/> Whole class <input type="checkbox"/> Group work <input type="checkbox"/> Pair work <input type="checkbox"/> Individual work	<a href="#">link</a>					
				<table><tr><td>L</td><td>S</td><td>R</td><td>W</td></tr></table>				L	S	R	W
				L				S	R	W	
<b>Key vocabulary</b> Key vocabulary Integrated, critical thinking, hands-on activity, introverted/extroverted											
				<b>Communicative structures</b> Communicative structures Functional language to describe, using simple present							

2	30	<p><b>SUBJECT</b> Understand the necessity of the use of indirect methods for studying atoms Understand what is electromagnetic spectrum and waves characteristics</p> <p><b>LANGUAGE</b> Produce simple sentences to hypothesise cause - effect relations</p>	<p>The teacher explains the necessity of the use of indirect methods for studying atoms and that electromagnetic radiation was used by scientists to understand atom Students follow the indications of the ILS in the tab “Electromagnetic Radiations” and simulate, hypothesise working in pairs The teacher controls their works using the ILS and going around the class listening to students’ conversations, supporting the use of English</p>	<div><b>Skills</b></div> <div><div>L</div><div>S</div><div>R</div><div>W</div></div> <div><b>Key vocabulary</b> Wave, wavelength, radiation, spectrum, frequency</div> <div><b>Communicative structures</b> Communicative structures Functional language to describe physical elements and using simple present</div>	<div><input type="checkbox"/> Whole class</div> <div><input type="checkbox"/> Group work</div> <div><input checked="" type="checkbox"/> Pair work</div> <div><input type="checkbox"/> Individual work</div>	<a href="#">link</a>	
3	5	<p>Reflect on learnings</p>	<p>The teacher stimulates a discussion to summarize the lesson’s main learnings and invites the students to fill-in their logs</p>	<div><b>Skills</b></div> <div><div>L</div><div>S</div><div>R</div><div>W</div></div> <div><b>Key vocabulary</b> See before</div> <div><b>Communicative structures</b> See before</div>	<div><input type="checkbox"/> Whole class</div> <div><input type="checkbox"/> Group work</div> <div><input type="checkbox"/> Pair work</div> <div><input type="checkbox"/> Individual work</div>	<a href="#">link</a> report tool in ILS about radiation: what is EM radiation	Evaluation of the report

# CLIL Lesson Plan

<b>Unit number</b>	1	<b>Lesson number</b>	2	<b>Title</b>	Lesson 2 Hydrogen's Atom Models
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Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	5	SUBJECT Review of lesson 1 LANGUAGE Produce simple sentences to summarize key concepts	The teacher recalls the mains steps of the previous lesson with open questions to the students	Skills	<input checked="" type="checkbox"/> Whole class <input type="checkbox"/> Group work <input type="checkbox"/> Pair work <input type="checkbox"/> Individual work	<a href="#">link</a>	As part of a more comprehensive assessment, in this particular phase, the teacher will take notes about how spontaneously, and how often each student answers the questions, using the general assessment table
				L S R W			
				Key vocabulary See lesson 1			
				Communicative structures Functional language to describe using simple present			

2	40	<p>SUBJECT Experiment the different models of atoms and understand their limits</p> <p>LANGUAGE Understand simple indications and experiment procedure</p>	<p>The teacher invites the students to open the ILS in the tab “Hydrogen Atom’s Model”</p> <p>Students follow the indications of the ILS and simulate, hypothesise working in pairs</p> <p>Teacher controls their works using the ILS and go around the class listening to students’ conversations supporting the use of English</p>	<div><p><b>Skills</b></p><div><div>L</div><div>S</div><div>R</div><div>W</div></div><p><b>Key vocabulary</b> photon, electron, proton, nucleus, orbit, orbital</p><p><b>Communicative structures</b> Functional language to describe using simple present</p></div>	<div><div><input type="checkbox"/> Whole class</div><div><input type="checkbox"/> Group work</div><div><input checked="" type="checkbox"/> Pair work</div><div><input type="checkbox"/> Individual work</div></div>	<a href="#">link</a>	
3	5	<p>SUBJECT Reflect on learnings</p> <p>LANGUAGE Discuss Write a report</p>	<p>Teacher stimulates a discussion to summarize the lesson’s main learnings and invites the students to fill-in their logs</p>	<div><p><b>Skills</b></p><div><div>L</div><div>S</div><div>R</div><div>W</div></div><p><b>Key vocabulary</b> see before</p><p><b>Communicative structures</b> see before</p></div>	<div><div><input checked="" type="checkbox"/> Whole class</div><div><input type="checkbox"/> Group work</div><div><input type="checkbox"/> Pair work</div><div><input type="checkbox"/> Individual work</div></div>	<p>The students have to write a report about hydroge's atom modelsas homework. The report tool is a part of ILS.</p>	<p>evaluation of the report</p>



# CLIL Lesson Plan

<b>Unit number</b>	1	<b>Lesson number</b>	3	<b>Title</b>	Lesson 3 Planck's Problem and the role of "h"
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Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	5	SUBJECT Review of unit 2 LANGUAGE Produce simple sentences to summarize key concepts	The teacher recalls the mains steps of the previous lesson with open questions to the students	<b>Skills</b> <div>L S R W</div> <b>Key vocabulary</b> see units 2 <b>Communicative structures</b> Functional language to describe using simple present	<input checked="" type="checkbox"/> Whole class <input type="checkbox"/> Group work <input type="checkbox"/> Pair work <input type="checkbox"/> Individual work		As part of a more comprehensive assessment, in this particular phase, the teacher will take notes about how spontaneously, and how often each student answers the questions, using the general assessment table <a href="#">link</a>

2	40	SUBJECT Experiment the photoelectric effect and understand Planck's problem LANGUAGE Understand simple indications and experiment procedure Talk with school mates about difficult scientific concepts using specific language	The teacher invites the students to open the ILS in the tab "Photoelectric Effect and the Role of "h"" Students follow the indications of the ILS and simulate, hypothesise working in pairs Teacher controls their works using the ILS and go around the class listening to students' conversations supporting the use of English	<b>Skills</b>	<input type="checkbox"/> Whole class <input type="checkbox"/> Group work <input checked="" type="checkbox"/> Pair work <input type="checkbox"/> Individual work	<a href="#">link</a>	
				<div>L S R W</div>			
				<b>Key vocabulary</b> photoelectron, work function, potential, photon			
3	5	SUBJECT Reflect on learnings LANGUAGE Discuss Write a report	SUBJECT Reflect on learnings LANGUAGE Discuss Write a report Teacher stimulates a discussion to summarize the lesson's main learnings and invites the students to fill-in their logs	<b>Skills</b>	<input checked="" type="checkbox"/> Whole class <input type="checkbox"/> Group work <input type="checkbox"/> Pair work <input type="checkbox"/> Individual work		the students have also a homework: write a report about photoelectric effect using the report tool in the ILS
				<div>L S R W</div>			
				<b>Key vocabulary</b> see before			
				<b>Communicative structures</b>			
				functional language to describe using simple present and conditional			
				<b>Communicative structures</b>			
				functional language to describe using simple present and conditional			

# CLIL Lesson Plan

<b>Unit number</b>	1	<b>Lesson number</b>	4	<b>Title</b>	Lesson 4 The strange concept of Action.
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Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment				
1	5	SUBJECT Review of unit 3 LANGUAGE Produce simple sentences to summarize key concepts	he teacher recalls the mains steps of the previous lesson with open questions to the students	<b>Skills</b>	<input checked="" type="checkbox"/> Whole class <input type="checkbox"/> Group work <input type="checkbox"/> Pair work <input type="checkbox"/> Individual work		As part of a more comprehensive assessment, in this particular phase, the teacher will take notes about how spontaneously, and how often each student answers the questions, using general assessment table. <a href="#">link</a>				
				<table><tr><td>L</td><td>S</td><td>R</td><td>W</td></tr></table>				L	S	R	W
				L				S	R	W	
				<b>Key vocabulary</b> see unit 3							
<b>Communicative structures</b> Functional language to describe using simple present and conditional											

2	30	<p>SUBJECT Understand the concept of action and its quantization.</p> <p>LANGUAGE Understand simple indications</p>	<p>The teacher invites the students to open the ILS in the tab “Hydrogen Atom’s Model”</p> <p>Students follow the teacher’s presentation. Teacher controls their works using the ILS and go around the class listening to students’ conversations supporting the use of English</p>	<div><b>Skills</b></div> <div><div>L</div><div>S</div><div>R</div><div>W</div></div> <div><b>Key vocabulary</b> action, energy, period, time, phase space, closed surface, area, linear momentum, velocity, mass</div> <div><b>Communicative structures</b> Functional language to describe using simple present</div>	<div><input checked="" type="checkbox"/> Whole class</div> <div><input type="checkbox"/> Group work</div> <div><input type="checkbox"/> Pair work</div> <div><input type="checkbox"/> Individual work</div>	<div>link presentation: link</div>	
3	15	<p>SUBJECT Reflect on learnings</p> <p>LANGUAGE Discuss Write a report</p>	<p>Teacher stimulates a discussion to summarize the lesson’s main learnings and invites the students to fill-in their logs</p>	<div><b>Skills</b></div> <div><div>L</div><div>S</div><div>R</div><div>W</div></div> <div><b>Key vocabulary</b> see before</div> <div><b>Communicative structures</b> see before</div>	<div><input type="checkbox"/> Whole class</div> <div><input type="checkbox"/> Group work</div> <div><input type="checkbox"/> Pair work</div> <div><input checked="" type="checkbox"/> Individual work</div>	<div>wite a report in ILS</div>	

# CLIL Lesson Plan

<b>Unit number</b>	1	<b>Lesson number</b>	5	<b>Title</b>	Lesson 5 Conclusion and Final Test
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Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	50	SUBJECT Verify: EM radiation, EM spectrum Quantization, hydrogen's atom models Photoelectric effect, Planck's constant Action, phase space LANGUAGE Understand written questions and problems Write in a clear and schematic form synthetic answers	The teacher invites the students to open the ILS in the tab "Hydrogen Atom's Model" and to answer to the last space "Conclusion - test"	<b>Skills</b>	<input type="checkbox"/> Whole class <input type="checkbox"/> Group work <input type="checkbox"/> Pair work <input checked="" type="checkbox"/> Individual work	See the test on ILS TEST Q&A: <a href="#">link</a> Rubric: <a href="#">link</a>	
				<div>L</div> <div>S</div> <div>R</div> <div>W</div>			
				<b>Key vocabulary</b> see units before			
				<b>Communicative structures</b> synthetic sentences			