CLIL Module Plan

Author(s)	Massimo Bosetti, Giulia Andina						
School	I.I. L. Guetti	I.I. L. Guetti					
School Grade	O Primary		O Middle			• High	
School Year	01 02		⊚ 3 ○ 4		0 4		0 5
Subject	Fisica	Topic		Hydrogen Atom Models			
CLIL Language				O Deutsch			

Personal and social-cultural preconditions of all people involved

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.

Students' prior knowledge, skills, competencies

Subject

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.

Language

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.

Timetable fit

Module

Length 5 lessons (50 minutes each)

Description of teaching and learning strategies

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: https://www.golabz.eu/user/2150 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

Overall Module Plan

Unit: 1

Light: waves and photons. The strange behaviour of quantum realm

Unit length: 2

Lesson 1

EM radiation

Lesson 2

Lesson 2 Hydrogen's Atom Models

Lesson 3

Lesson 3 Planck's Problem and the role of "h"

Lesson 4

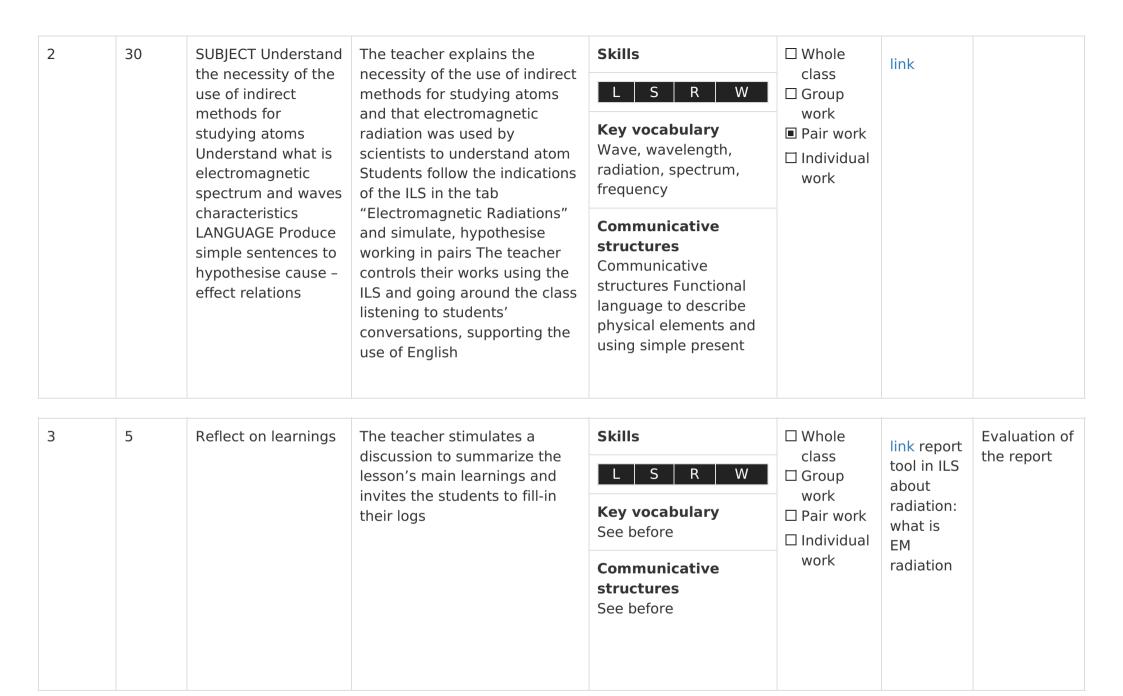
Lesson 4 The strange concept of Action.

Lesson 5

Lesson 5 Conclusion and Final Test

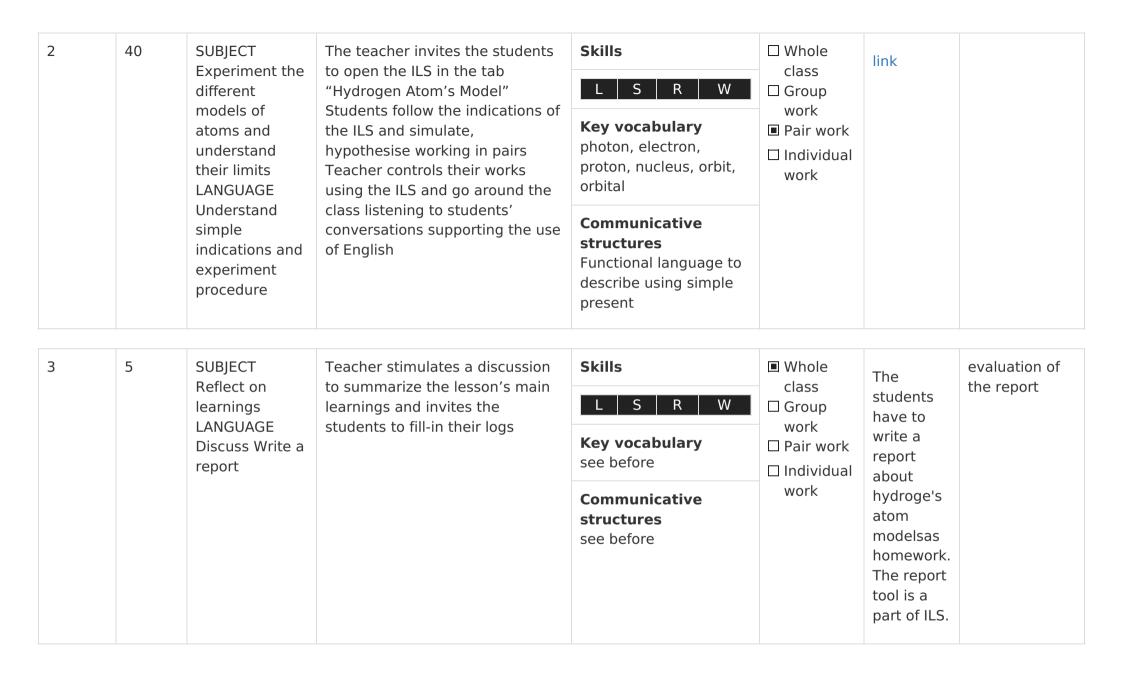
 Unit number
 1
 Lesson number
 1
 Title
 EM radiation

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: link with the students Students follow the indications of the ILS in the tab "Introduction"	Key vocabulary Key vocabulary Key vocabulary Integrated, critical thinking, hands-on activity, introverted/extroverted Communicative structures Communicative structures Functional language to describe, using simple present	■ Whole class □ Group work □ Pair work □ Individual work	link	



Unit number 1 Lesson number 2 Title Lesson 2 Hydrogen's Atom Models

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	L S R W Key vocabulary See lesson 1 Communicative structures Functional language to describe using simple present	■ Whole class □ Group work □ Pair work □ Individual work	link	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



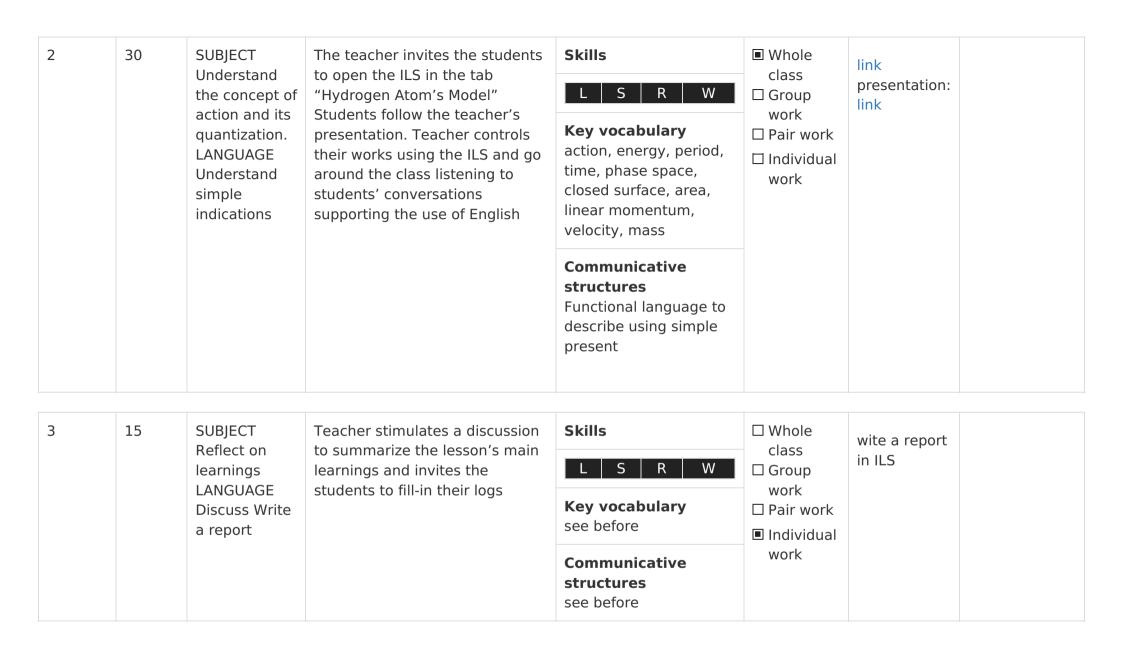
Unit number 1 Lesson number 3 Title Lesson 3 Planck's Problem and the role of "h"

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	L S R W Key vocabulary see units 2 Communicative structures Functional language to describe using simple present	■ Whole class □ Group work □ Pair work □ 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 link

2	40	SUBJECT Experiment the photoelectric effect and understand Planck's problem LANGUAGE Understand simple indications and experiment	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	Skills L S R W Key vocabulary photoelectron, work function, potential, photon	□ Whole class □ Group work ■ Pair work □ Individual work		
	procedure Talk with school mates about difficult scientific concepts using specific language controls their works using the ILS and go around the class listening to students' conversations supporting the use of English	Communicative structures functional language to describe using simple present and conditional					
3	5	SUBJECT Reflect on learnings LANGUAGE	SUBJECT Reflect on learnings LANGUAGE	Skills	■ Whole class		the students have also a
		Discuss Write a report	Discuss Write a report Teacher stimulates a	LSRW	☐ Group work		homework: write a report
		discu lesso invite	discussion to summarize the lesson's main learnings and invites the students to fill-in their logs	Key vocabulary see before	☐ Pair work ☐ Individual		about photoelectric
				Communicative structures see before	work		effect using the report tool in the ILS

Unit number 1 Lesson number 4 Title Lesson 4 The strange concept of Action.

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	L S R W Key vocabulary see unit 3 Communicative structures Functional language to describe using simple present and conditional	■ Whole class □ Group work □ Pair work □ 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. link



Unit number 1 Lesson number 5 Title Lesson 5 Conclusion and Final Test

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"	Skills L S R W Key vocabulary see units before Communicative structures synthetic sentences	□ Whole class □ Group work □ Pair work ■ Individual work	See the test on ILS TEST Q&A: link Rubric: link	