#### CLIL Module Plan

Author(s)	M.Silvia Defrar	M.Silvia Defrancesco						
School	Liceo Scientific	Liceo Scientifico Galilei Tren						
School Grade	O Primary	O Primary			O Middle			gh .
School Year	01 02			○ 3		<b>•</b> 4		0 5
Subject	Fisica	Fisica <b>T</b>		Topic		electrostatics		
CLIL Language	<ul><li>English</li></ul>	English			O Deut	tsch		

#### Personal and social-cultural preconditions of all people involved

The class is formed by students with an almost homogeneous background, both from a social-cultural point of view and from the learning point of view. Learning level is satisfactory/good. Students motivation and willingness to study are in average satisfactory. Average language level: B1/B2. Number of students: 19 Learning spaces are excellent (classes, laboratories (physics and computer labs available). Subject taught by the teacher both in Italian and in CLIL: physics.

Students' prior knowledge, skills, competencies

#### Subject

The classe attended a CLIL module in physics last year; therefore students already know a basic vocabulary of technical terms. This educational path has been carefully chosen among many other possibilities, because of a straightforward theory and a consistent part of experimental work. All the students can therefore face both the content and the language involved in the module. I would like to point out that this module is coherent with the two other modules proposed for the classes 3 and 5; all the three modules are meant to introduce the idea of "field" (gravitational, electric and electromagnetic respectively) in a soft, experimental way; moreover, all the three modules give basic information about history of science.

#### Language

SPEAKING SKILLS: most of the students can make meaning clear: some of them can develop a topic well enough to be followed without difficulty; at times they may not use connectives and discourse markers always appropriately. WRITING SKILLS:in their written tests, the students use an adequate range of structure and vocabulary, even if a number of errors may be present. Ideas are adequately organised, with simple linking devices. Generally speaking, they show a good degree of control of simple grammatical forms. They can write a simple review of a film, book or play. LISTENING SKILLS: Students can understand the main ideas of linguistically complex speech on both concrete and abstract topics, including technical discussions in their field of specialisation. They can follow extended speech and complex lines of argument provided the topic is reasonably familiar,.

**Timetable fit** 

Module

Length 14

Description of teaching and learning strategies Various strategies are used: Communicative approach; laboratory work; cooperative learning; team work; pairs work; task based learning; discussions with the whole class; ICT tools

#### Overall Module Plan

Unit: 1

Introduction to electrostatics

Unit length: 14

Lesson 1

Introduction

Lesson 2

Experiments

Lesson 3

Electric charges

Lesson 4

Coulomb's law

Lesson 5

Insulator and conductors

Lesson 6

Prof. Lewin's lecture

Lesson 7

**Exercises** 

Lesson 8

Historical interlude

Lesson 9

Discussion of the documentary

Lesson 10

kahoot!

 Unit number
 1
 Lesson number
 1
 Title
 Introduction

Activity	Timing	Learning Outcomes	<b>Activity Procedure</b>	Language	Interaction	Materials	Assessment
1	55 min	- To activate prior knowledge and revision of known content - To acquire a specific vocabulary - to motivate students to enjoy the new topic (electrostatics)	Warming up: students are stimulated to share their knowledge about electric charges with their classmates. Teacher writes key words on the blackboard. Students are asked to begin building their own glossary with new words (personalized learning)	L S R W  Key vocabulary electric charge- attraction-repulsion- force-insulator- conductor- electrostatics	■ Whole class □ Group work □ Pair work □ Individual work		teacher feedback
				Communicative structures Can you list some effect of electric charges? Could you tell me anything about? What do you know about Where can we find electric charges? How is it possible to detect a charged body?			

Unit number	1	Lesson number	2	Title	Experiments
-------------	---	---------------	---	-------	-------------

Outcomes	Act	tivity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
----------	-----	--------	--------	----------------------	-----------------------	----------	-------------	-----------	------------

1 110 -To apply the Teacher Skills ☐ Whole electrostatics experiments.pdf group scientific divides class assessment straws, metallic rod, paper, rubber S R W method students in Group teachers balloon, soda can, plastic bags (the (from groups work monitors ones used for vegetables), plastic **Key vocabulary** ☐ Pair work experiments following the groups dishes, sellotape, electroscope, straws, metallic rod, to theory) cooperative ☐ Individual wool tissue, aluminium foil paper, rubber, soda To be able to learning work can, sellotape, organize an strategies. electroscope, experimental Students aluminium foil activity -To organize the be aware of experimental Communicative the work structures difficulties in following the imperative verbs instructions organizing of the an experimental worksheet. activity - to Students be able to write their explain the observations. experimental Each group results - to perform all observe the assigned experiments several Teacher phenomena helps the concerning groups when electrostatics needed.

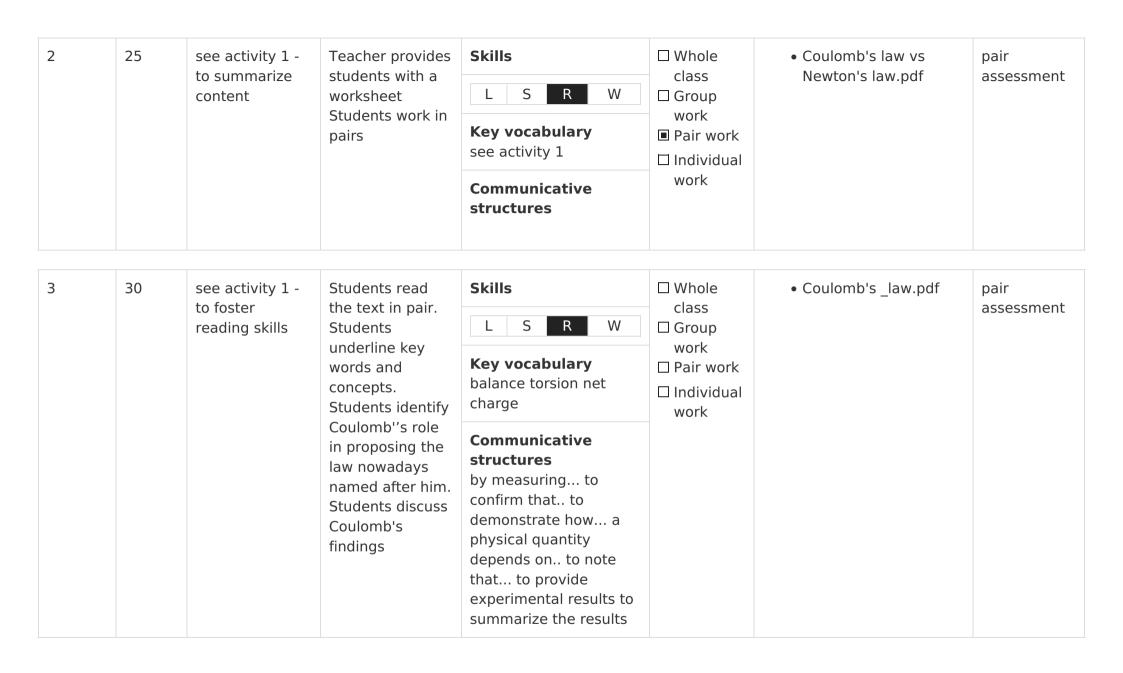
Unit number 1 Lesson number 3 Title Electric charges

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	40	- to be able to recognize the main features of a scientific written test - to be able to interpret a scientific written test - to identify main ideas and concepts	Teacher recall the main observations made in laboratory (5 -10 min) Theory is introduced in order to have a full comprehension of the experiments Teacher provides students with a text Students read the text in pairs. They underline the unknown terms.	Key vocabulary amber- model- like charges-unlike charges- electric fluid- experimental evidence- conservation of charge- spark  Communicative structures	□ Whole class □ Group work ■ Pair work □ Individual work	Electric_charges.pdf	Pair assessment

2 1	5 see	Plenary. Students are invited to organize new knowledge on the blackboard . Discussion	Skills  L S R W  Key vocabulary see activity 1	■ Whole class □ Group work □ Pair work □ Individual	teacher feedback
			Communicative structures Use of adverbs and conjunctions frequently used in scientific speeches and reports: hence, thus, therefore; so	work	

Unit number 1 Lesson number 4 Title Coulomb's law

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	30 MIN	- to be able to describe the behaviour of electrical forces -to acquire specific mathematical language - to deepen the properties of the inverse square law - to be aware of similarities and differences of electric force and gravitational force	Teacher introduces Coulomb's law. Teacher outlines the main features of the electric force Teacher compares the electric force with the gravitational force	Key vocabulary inverse-square law- medium- similarity- difference- infinity  Communicative structures mathematical language: the force tends to proportional to q over r squared	■ Whole class □ Group work □ Pair work □ Individual work		teacher feedback

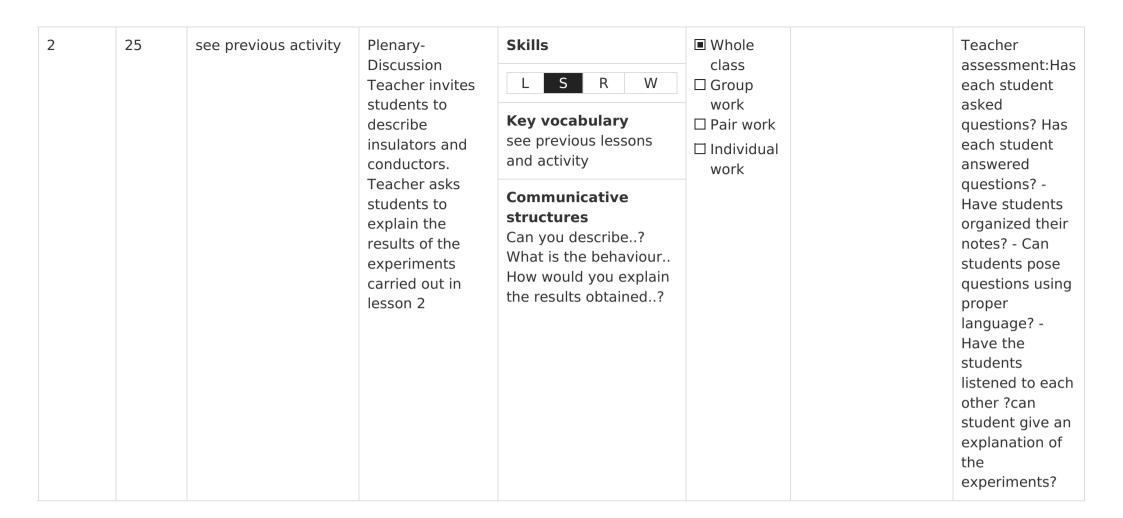


4	25	see previous activities -to foster speaking skills	Students discuss the issues outlined in the previous activities Teacher	L S R W  Key vocabulary sees previous activities	■ Whole class □ Group work □ Pair work □ Individual	teacher feedback
			encourages questions	Communicative structures How many types of charge exist? Describe the electrostatic force The force is proportional to What sort of experiment Explain how	work	

5 Skills teacher 55 -to understand Students watch a ☐ Whole experiment\_Coulomb's the brief video class law pdf.pdf feedback S R W experimental introducing the ☐ Group link link procedure to torsion balance work **Key vocabulary** verify experiment If the ☐ Pair work see previous activities Coulomb's law physics lab is ☐ Individual to learn how the properly work Communicative torsion balance equipped (see structures works picture ), the see previous activities teachers carries out the experiment to verify Coulomb's law (step-by-step instructions can be found in italian in the wiki page of Liceo Galilei link). A translation is given in the material Students take notes

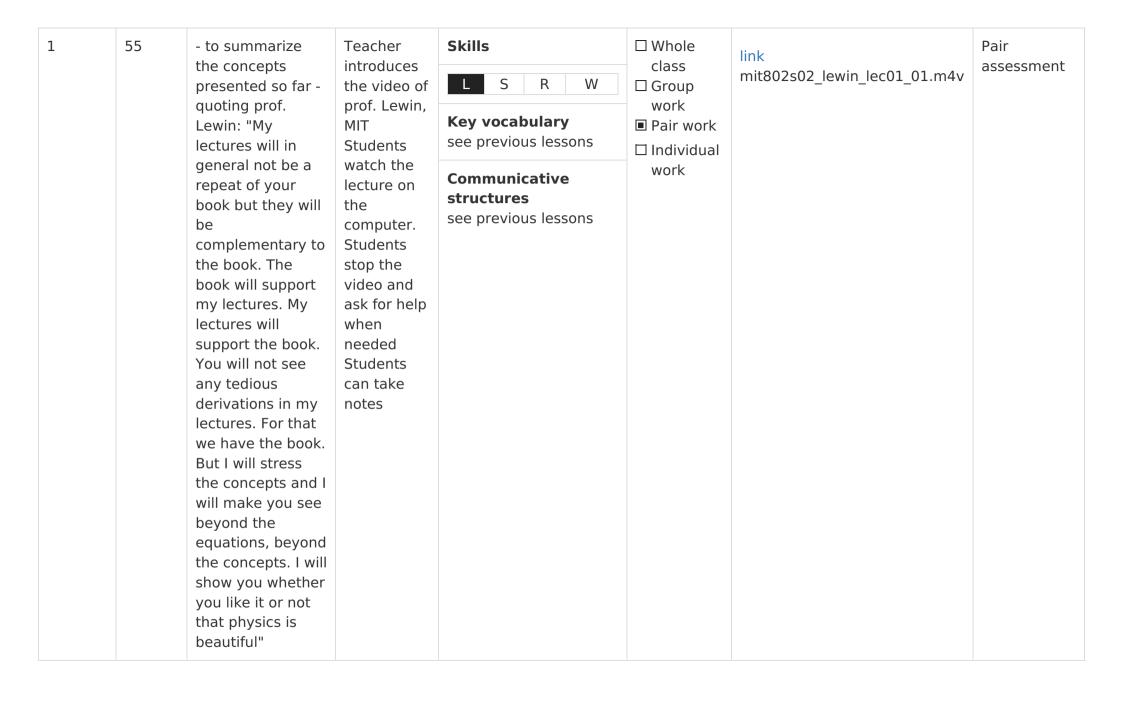
Unit number 1 Lesson number 5 Title Insulator and conductors

Activity Timin	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1 30	- to know about the behaviour of bodies in an electric field - to be able to describe insulators and conductors - to be able to classify bodies as insulators or conductor -to understand the results of the experiments carried out in lesson 2	Teachers give students a brief text describing insulators and conductors Students read in pair. They underline the unknown terms and unintelligible concepts	Key vocabulary insulator, conductor, metallic conductor, free electrons, neutral object, electrostatic induction  Communicative structures	□ Whole class □ Group work ■ Pair work □ Individual work	Insulators and conductors.pdf	pair assessment



Unit number	1	Lesson number	6	Title	Prof. Lewin's lecture
-------------	---	---------------	---	-------	-----------------------

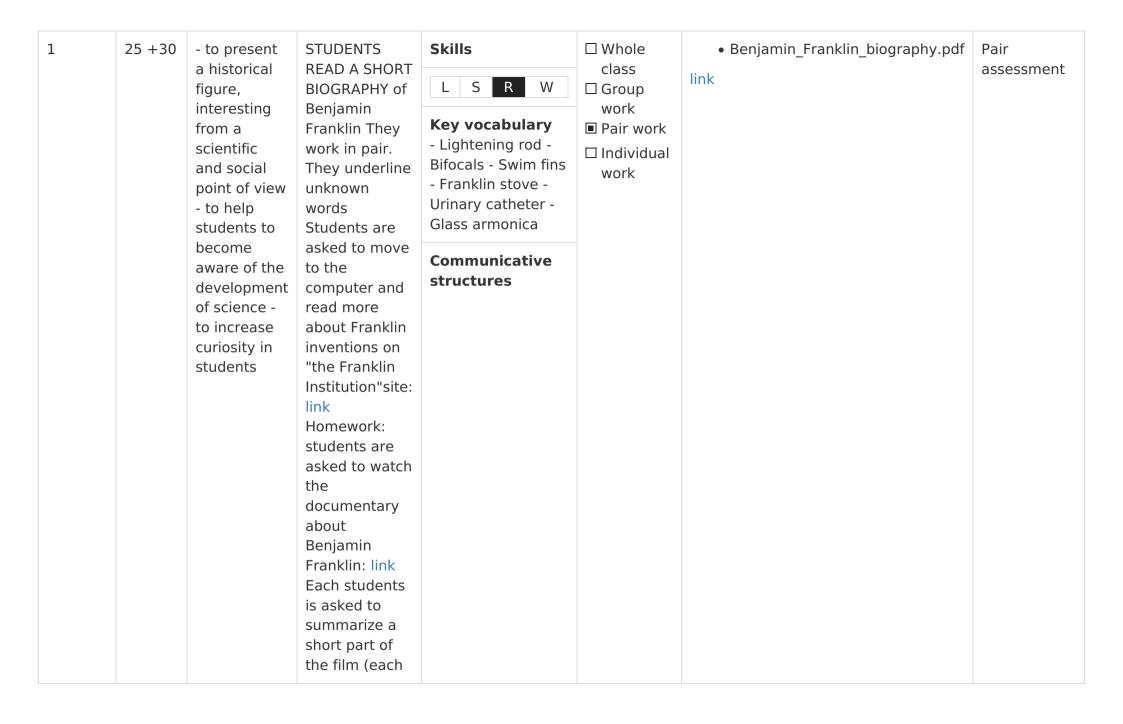
Outcomes Procedure		Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
--------------------	--	----------	--------	----------------------	-----------------------	----------	-------------	-----------	------------



Unit number 1 Lesson number 7 Title Exercises

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	110	- To be able to apply Coulomb's law - To be aware of the situations where Coulomb's law can be applied - to develop specific skills in problem solving (the questions proposed in the worksheet differ in typology) - To develop specific language	Teacher provides each pair with a worksheet. Students solve problems and answer questions. They discuss the chosen procedure. Teacher monitors students' work	L S R W  Key vocabulary see previous lessons  Communicative structures	□ Whole class ■ Group work □ Pair work □ Individual work	• EXERCISES.pdf	group assessment

Activity 1			Activity Procedure	Language	Interaction	Materials	Assessment	
------------	--	--	-----------------------	----------	-------------	-----------	------------	--



 Unit number
 1
 Lesson number
 9
 Title
 Discussion of the documentary

Activity	Timing	Learning Outcomes	<b>Activity Procedure</b>	Language	Interaction	Materials	Assessment
1	55	- to foster speaking and writing skills -to use specific language - to "have a break" from physics theory	The documentary on Benjamin Franklin is discussed. Students present their reports Teacher encourages questions and discussion.	L S R W  Key vocabulary see previous lessons  Communicative structures	■ Whole class □ Group work □ Pair work □ Individual work		Teacher feedback

Unit number 1 Lesson number 10 Title kahoot!

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	55	Teacher provides each pair with a task sheet. Students solve problems and answer questions. They discuss the chosen procedure. Teacher monitors students' work kahoot	- To review ideas acquired so far - To motivate students - To revise contents	Skills  L S R W  Key vocabulary see previous lessons  Communicative	☐ Whole class ☐ Group work ☐ Pair work ☐ Individual work	link	Self assessment Performance ranking is produced by the software
				structures see previous lessons			