CLIL Module Plan

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School Grade	○ Primary	○ Middle	◉ High
School Year	◉ 1 ○ 2	○ 3	○ 4 ○ 5
Subject	Fisica	**Topic**	Kinematics
CLIL Language	◉ English		○ Deutsch

Personal and social-cultural preconditions of all people involved	This class is made up of twelve students, who attend quite a demanding experimental course, which condenses in four school years the curriculum of a Scientific Grammar School. All students have a medium-high socio-cultural background and are highly motivated. Neither students with special needs nor with migratory background are present in this context. The average language level of the class is B1/B2. The Physics teacher has known them for five months and every single lesson has been conducted in English, with CLIL methodology, since the beginning of the school year.

Students' prior knowledge, skills, competencies	**Subject**	**Language**
	Measuring (procedures, instruments, units). Basic data processing (average, half-the-spread). Diagrams construction and base interpretation. Proportionality. Linear and quadratic functions (graphs and interpretation, and least). Linear and quadratic equations.	BICS. Base structures of English language (present tenses, past tenses, future tenses, comparatives, superlatives). General understanding of if-clauses.

Timetable fit	◉ Module	Length 13 lessons (20 hours overall)

Description of teaching and learning strategies	• Several methodological approaches will be fostered (task-based learning, learning by doing, cooperative learning); • Most of the activities will be chosen to allow the integration of language and content learning by promoting students' interaction (research activities, presentations, lab reports, discussions); • All lessons will involve as many language skills as possible (reading, writing, listening, speaking) in order to activate language learning processes. • Students will be given some language inputs (on word level, on sentence level and on paragraph level); • A wide range of different materials, both on paper and digital (texts, videos, lab activities, presentations, various simulation software ,...) will be used to meet different learning styles. • Self and peer correction will be promoted all through the module. • In terms of in-task communication, students will be exposed to functional language exponents and lexical chunks to develop both their BICS and CALP competences. • The teacher will act as facilitator and guide in all student-centered activities. • Continuous and formative assessment will be fostered to include motivation, language use and language accuracy. • A summative assessment at the end of the module will verify the acquisition of both the content and the language connected to what will have been done.

Overall Module Plan

Unit: 1	Lesson 1
Introduction to Kinematics	Introduction to kinematics
Unit length: 5 hours	Lesson 2
	Concept of time
	Lesson 3
	Space-time and speed-time diagrams

Unit: 2	Lesson 1
Uniform Motion	Introduction to UM
Unit length: 5 hours	Lesson 2
	Experiment on UM
	Lesson 3
	Problems about UM

Unit: 3	Lesson 1
Uniformly Accelerated Motion and Free Fall	Introduction to UAM
Unit length: 7 hours	Lesson 2
	Experiment on UAM
	Lesson 3
	Introduction to FF
	Lesson 4
	Measuring g through FF
	Lesson 5
	Problems about UAM

Unit: 4	**Lesson 1**
Final recap, Test and Correction	Final recap
Unit length: 3 hours	**Lesson 2**
	Test and test correction

CLIL Lesson Plan

Unit number	1	Lesson number	1	Title	Introduction to kinematics

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	10	Recall concepts from previous knowledge. List the main quantities related to kinematics.	T must have prepared in advance an empty page on their mentimeter.com account with the question "What physical quantities are related to motion?" and the possibility for Ss to insert up to five words to form a collective wordcloud. T projects the slide and invites Ss to visit menti.com using their smartphones and to answer the question on the website. T also writes on the whiteboard the code to access the specific wordcloud. Ss use their smartphones to visit menti.com and answer the question.	**Skills** | L	S	R	**W** | **Key vocabulary** Motion Physical quantity **Communicative structures** …is related to…	☑ Whole class ☐ Group work ☐ Pair work ☐ Individual work	• U1_L1_ALL1.docx • U1_L1_ALL1.pdf • U1_L1_ALL2.docx • U1_L1_ALL2.pdf menti.com (online wordcloud builder) Ss' smartphones U1_L1_ALL1 (mentimeter slide) U1_L1_ALL2 (example of wordcloud)	(none)

| 2 | 10 | Compare ideas and comment the resulted wordcloud about motion, giving opinions and defending them. | T comments on the wordcloud and, if appropriate, invites Ss to clarify some words or ideas. Ss, if invited or if they feel like, clarify the words they have suggested. | **Skills**

| **L** | **S** | R | W |

Key vocabulary
Acceleration, velocity, speed, motion, position, time, force,…

Communicative structures
What do you mean by…? In your opinion, why is …connected to motion? What is the relation between…and motion? Do you agree with…? I agree because… | ☒ Whole class
☐ Group work
☐ Pair work
☐ Individual work | • U1_L1_ALL1.docx
• U1_L1_ALL1.pdf
• U1_L1_ALL2.docx
• U1_L1_ALL2.pdf

menti.com (online wordcloud builder)
U1_L1_ALL1 (mentimeter slide)
U1_L1_ALL2 (example of wordcloud) | Formative: T elicits or models the language. |
| 3 | 10 | Identify the definition of the main physical quantities involved in kinematics in order to memorize them. Acquire specific vocabulary. | T hands out the worksheets and invites Ss to complete the first short task. Then T circulates to help Ss. Ss complete the task in pairs, matching words and their definitions. Since they work in pairs, they are invited to discuss their matching hypotheses with their classmate. | **Skills**

| L | **S** | **R** | W |

Key vocabulary
Motion, time, position, distance, displacement, average speed, velocity, acceleration.

Communicative structures
I think… This could be… | ☐ Whole class
☐ Group work
☒ Pair work
☐ Individual work | • U1_L1_ALL3.docx
• U1_L1_ALL3.pdf

U1_L1_ALL3 (matching activity) | Formative: T monitors the general understanding of the definitions on the handout and the acquisition of specific terms. |

| 4 | 15 | Apply the learnt definitions about motion. Analyze some potentially real kinematic situations and interpret them, also comparing different results. | T invites Ss to complete the second task on the handouts then circulates to facilitate. Since Ss work in pairs, they are invited to discuss their hypotheses and ideas with their classmate. Some questions require to justify Ss' answers in written form. | **Skills**

L **S** **R** **W**

Key vocabulary
Motion, time, position, distance, displacement, average speed, velocity, acceleration.

Communicative structures
Why do you say that...? How can you tell? I think that... | ☐ Whole class
☐ Group work
☒ Pair work
☐ Individual work | • U1_L1_ALL3.docx
• U1_L1_ALL3.pdf

U1_L1_ALL3 (task about the learnt definitions) | Formative: T monitors the general understanding and the application of the learnt concepts. |

| 5 | 5 | Compare ideas and results about the definitions of motion, defending one's own hypotheses. | T invites every pair to join another one to compare results. Ss are invited to give reasons of their choices and, if they are different from the ones of the other pair, they should discuss briefly in order to come to an agreement. | **Skills**

L **S** R W

Key vocabulary
Motion, time, position, distance, displacement, average speed, velocity, acceleration.

Communicative structures
Why do you say that...? How can you tell? I think that... | ☐ Whole class
☒ Group work
☐ Pair work
☐ Individual work | • U1_L1_ALL3.docx
• U1_L1_ALL3.pdf

U1_L1_ALL3 (task about the learnt definitions) | Formative: T monitors the discussions and helps Ss find an agreement on uncertain answers. Peer: Ss correct each other exchanging ideas. |

CLIL Lesson Plan

Unit number	1	Lesson number	2	Title	Concept of time

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment

| 1 | 60 | Interpret a video and a text about the concept of time and summarize them pointing out the main aspects. Create a poster which can support them in a presentation. Defend their ideas in a group, while preparing the poster about the concept of time. | T forms four groups and distributes one laptop per group. Then T distributes blank posters along with markers and drawing material. Moreover, T hands out the worksheets, inviting Ss to follow the instructions on them, which include watching a suggested video and visiting a linked web page to get the information they need to prepare a presentation. Ss watch the video and visit the web page. Then they prepare a poster to describe a different aspect of time. Ss should also rehearse to get prepared to deliver their presentation. T circulates to model language and content, helping Ss understand and interpret the given material. | **Skills**

 L S R W

 Key vocabulary
 Time

 Communicative structures
 In my opinion… What is the meaning of…? According to… On the other hand… Listen to the speech… | ☐ Whole class
 ☒ Group work
 ☐ Pair work
 ☐ Individual work | • U1_L2_ALL1.docx
 • U1_L2_ALL1.pdf
 • U1_L2_ALL2.docx
 • U1_L2_ALL2.pdf
 • U1_L2_ALL3.docx
 • U1_L2_ALL3.pdf
 • U1_L2_ALL4.docx
 • U1_L2_ALL4.pdf

 Laptops. U1_L2_ALL1 U1_L2_ALL2 U1_L2_ALL3 U1_L2_ALL4 (worksheets with links to videos and web pages which examine different aspects of the concept of time) | Formative: T models content and language. |

| 2 | 25 | Retell in Ss' own words the content of the analyzed videos and web pages about the concept of time. Evaluate other groups' works. Recall prior knowledge and recognize new one (metacognition). | T distributes one evaluation grid per group and invites Ss to complete them after listening to each presentation. Each group of Ss delivers their own presentation, while the other groups listen carefully and ask questions, if they feel like. At the end of each presentation, every group fills the corresponding line on the evaluation grid. Ss should come to an agreement in each group, since there is only one grid per group. | **Skills**

 L　**S**　**R**　W

 Key vocabulary
 Time

 Communicative structures
 As you can see... According to the material... From the point of view of...it appears that... On the other hand... Although... | ◉ Whole class
 ◉ Group work
 ☐ Pair work
 ☐ Individual work | • U1_L2_ALL5.pdf
 • U1_L2_ALL5.xlsx

 U1_L2_ALL5 (evaluation grid) | Formative: T models content, after each group's presentation. T also observes Ss in their group while they are evaluating other groups' works. Peer: Ss evaluate other Ss' works. |

| 3 | 15 | Understand the main aspects of the concept of time and identify similarities and dissimilarities between any two ways of looking at it. | T invites Ss to share what they have just written on their grids, justifying their comments and conclusions. After that, T invites the class to discuss in order to point out similarities and differences in various concepts of time. | **Skills**

 L S R W

 Key vocabulary
 Time

 Communicative structures
 In our opinion... The reason why... is... According to..., while... | ▣ Whole class
 ☐ Group work
 ☐ Pair work
 ☐ Individual work | • U1_L2_ALL5.pdf
 • U1_L2_ALL5.xlsx

 U1_L2_ALL5 (evaluation grid) | Formative: T elicits language. |

CLIL Lesson Plan

Unit number	1	Lesson number	3	Title	Space-time and speed-time diagrams

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	35	Interpret space-time and speed-time diagrams, relating them to position and velocity of a real object.	T hands out the worksheets and invites Ss to work in pairs to complete the assigned tasks. Ss work in pairs and use their smartphones to explore an online simulation of a moving man, following the instructions on the worksheets to get confident with space-time and speed-time charts. Ss should discuss in their pair to agree on what to write to answer the given questions.	**Skills** L **S** R **W** **Key vocabulary** Time, time interval, position, speed, velocity, acceleration, movement, forwards, backwards, remaining still, diagram, chart, graph, constant, function, axis. **Communicative structures** In my opinion... What is the meaning of...? Look at the graph... Considering what happens in the simulation, I can assume that...	☐ Whole class ☐ Group work ☑ Pair work ☐ Individual work	• U1_L3_ALL1.docx • U1_L3_ALL1.pdf Ss' Smartphones. U1_L3_ALL1 (worksheets with links to an online simulation and some tasks to be completed in relation to it)	Formative: T models content and cognition, helping Ss understand graphs and their meaning.

2	10	Compare results in order to define what a space-time and a speed-time charts are.	T invites Ss to compare results, asking them to take turns to share their answers. Whenever a S proposes an answer, T asks the others whether they agree or not and why.	**Skills**	☒ Whole class	• U1_L3_ALL1.docx	Formative: T models or elicits language and content.
						• U1_L3_ALL1.pdf	
					L	S	R	W		Ss' smartphones U1_L3_ALL1 (worksheets with links to an online simulation and some tasks to be completed in relation to it)	
				Key vocabulary Time, time interval, position, speed, velocity, acceleration, movement, forwards, backwards, remaining still, diagram, chart, graph, constant, function, axis.	☐ Group work ☐ Pair work ☐ Individual work		
				Communicative structures Why do you say that…? Do you agree on…? What happens if…? How can you tell?			

| 3 | 10 | Compare space-time, speed-time charts and motion descriptions and identify the same features seen from different points of view. | T distributes one graph or description per S and tells them that all given papers describe four situations overall: every situation is described through a space-time chart, a speed-time chart and a written description. Of course, T must have cut the papers in advance. Ss should circulate and describe to other Ss what they have without showing their card, in order to find their match (triad). While Ss are looking for their match, T circulates to facilitate and to help Ss with the language. When Ss find a match, they ask T to check if it is right or not. | **Skills**

L S R W

Key vocabulary
Time, time interval, position, speed, velocity, acceleration, movement, forwards, backwards, remaining still, diagram, chart, graph, constant, function, axis.

Communicative structures
In my graph there is… At first the object is moving with… then… First… then… From… to… After… Before… Do you have… in your graph? I am looking for a graph which… | ☒ Whole class
☐ Group work
☐ Pair work
☒ Individual work | • U1_L3_ALL2.docx
• U1_L3_ALL2.pdf

U1_L3_ALL2 (cards containing graphs or descriptions to be matched) | Formative: T models or elicits language. When Ss find a match, T checks it and gives Ss a feedback about its correctness. |

| 4 | 25 | Create a space-time chart and recognize its features. | T forms four groups on the basis on the matches found in the previous activity. Then, T invites every group to produce two copies of the same space-time chart, with random features. When all groups have produced their graphs, one copy is handed in to the T, who mixes the graphs. T then redistributes those graphs randomly and every group needs to analyze the received graph. Finally, T invites one representative per group to play the received graph for real, walking through the classroom: every group should look at the walking classmate and compare his or her movements to the kept copy of the graph they have produced. Every group should recognize the play of their own original graph. | **Skills**

| L | **S** | R | W |

Key vocabulary
Time, time interval, position, speed, velocity, acceleration, movement, forwards, backwards, remaining still, diagram, chart, graph, constant, function, axis.

Communicative structures
In this graph there is… That is our graph because… At first the object is moving with… then… First… then… From…to… After… Before… | ☒ Whole class
☒ Group work
☐ Pair work
☐ Individual work | Pens and paper. | Formative: T models or elicits language and content. T checks whether Ss' interpretations of the charts is correct. |
| 5 | 20 | Create a space-time | T maintains the same | **Skills** | | Pens and paper. | Formative: T models or |

space-time chart and convert it into a speed-time chart and vice-versa. Interpret such graphs. Evaluate differences and analogies between graphs.

groups as in the previous activity and labels them with a letter A, B, C, D. Then, T invites every group to produce one simple space-time chart, with random features. When all groups have produced their graphs, all groups hand them in to another group (A to B, B to C, C to D and D to A). Ss are required to build the corresponding speed-time chart and write the initial position. When all groups have produced their new graphs, they pass them on (A to B, B to C, C to D and D to A). All groups should now build the corresponding space-time chart from the information they can infer from the received chart. In the end, all groups receive the original space-time chart corresponding to their situation (A's original given to C, B's original given to D, C's original given to A, D's original given to B) and compare it with the one they produced themselves, in

| L | **S** | R | W |

☐ Whole class
☑ Group work
☐ Pair work
☐ Individual work

Key vocabulary
Time, time interval, position, speed, velocity, acceleration, movement, forwards, backwards, remaining still, diagram, chart, graph, constant, function, axis.

Communicative structures
In this graph there is… That is our graph because… At first the object is moving with… then… First… then… From…to… After… Before…

models of elicits language and content. T checks whether Ss' interpretations of the charts is correct. Self: Ss compare their products with the expected ones, corresponding to the original graphs.

order to check what got wrong and what they did right. During all activity, T circulates to elicit content and language, helping Ss interpret graphs correctly.

CLIL Lesson Plan

Unit number		2	Lesson number		1	Title	Introduction to UM

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	30	Formulate a model to describe UM, by finding a formula to express position in function of time. Interpreting the main features of UM in the light of its speed-time and space-time charts. Distinguish UM from other examples of motion, where either speed or direction are not constant.	T introduces the topic, telling Ss they are going to analyze a particular example of motion. Then T distributes the worksheets and invites Ss to complete them in pairs, agreeing on the answers to provide. Then T circulates to facilitate.	**Skills** L **S** R **W** **Key vocabulary** Uniform, constant, velocity, speed, direction, position, time, axis, straight line, angular coefficient, slope, intercept. **Communicative structures** I think that... Why is the graph...? It doesn't look like a UM because...	☐ Whole class ☐ Group work ☑ Pair work ☐ Individual work	• U2_L1_ALL1.docx • U2_L1_ALL1.pdf U2_L1_ALL1 (worksheet to approach UM, finding a formula and interpreting its meaning)	Formative: T elicits or models language.

| 2 | 10 | Compare Ss' ideas to come to a common formalization of UM. | T invites every two pairs to join and compare their answers, in order to come to an agreed final answer for each question or task in the worksheet. Ss are invited to defend their answers providing justification and reasoning. | **Skills**

 L · S · R · W

 Key vocabulary
 Uniform, constant, velocity, speed, direction, position, time, axis, straight line, angular coefficient, slope, intercept.

 Communicative structures
 We think that… Our answer is different from yours because… I agree with you up to a point, because… I disagree… | ☐ Whole class
 ☑ Group work
 ☐ Pair work
 ☐ Individual work | • U2_L1_ALL1.docx
 • U2_L1_ALL1.pdf

 U2_L1_ALL1 (worksheet to approach UM, finding a formula and interpreting its meaning) | Formative: T elicits or models language. Peer: Ss compare results, correcting each other. |

3	10	Combine all Ss' ideas to formulate a final model about UM and summarize its features.	T invites all Ss to share the final answers they have just agreed on. Every group can ask other groups for clarification, if they do not agree on some point. In the end, Ss are invited to summarize what they have learnt and T makes sure that the equation for UM comes to light, as well as the main features of the related space-time and speed-time charts.	**Skills**	☑ Whole class	• U2_L1_ALL1.docx	Formative: T elicits or models both content and language.
					☐ Group work	• U2_L1_ALL1.pdf	
				L | S | R | W	☐ Pair work	U2_L1_ALL1 (worksheet to approach UM, finding a formula and interpreting its meaning)	
				Key vocabulary Uniform, constant, velocity, speed, direction, position, time, axis, straight line, angular coefficient, slope, intercept.	☐ Individual work		
				Communicative structures The equation to describe UM is…, where…means… The slope of the space-time chart is… If we consider the speed-time chart, we have…			

CLIL Lesson Plan

Unit number	2	Lesson number	2	Title	Experiment on UM

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment

| 1 | 10 | Identify the components of an experimental apparatus and give opinions and formulate hypotheses about its functioning. Design an experiment to analyze the main properties of a uniform motion, with particular attention to the constancy of speed under certain conditions. | T projects the slide and asks Ss what they think the experimental material is about and how it works. T invites Ss to discuss about the way that experimental material could be used to test and verify the main properties of uniform motion. Particular attention must be paid on the fact that the two photocells can be moved (so the distance between them can change) and on the presence of the stopping plane: specific questions should be asked about its relevance and about the position it should have. Ss interact with one another to come to an agreement about the way to conduct the experiment. Along the process, T helps Ss to come to an end, formulating stimuli-questions. | **Skills** ⬛ L ⬛ S ☐ R ☐ W **Key vocabulary** Acceleration, velocity, speed, uniform motion, time, distance, photocell, pulley, string, air track,… **Communicative structures** What is the purpose of…? In my opinion… What happens if…? Why could we not…? Speed should be constant because… Another idea could be… Is it not possible to…? I am not sure, but… The reason why…is… | ◫ Whole class ☐ Group work ☐ Pair work ☐ Individual work | • U2_L2_ALL1.jpg Physics Lab Experimental apparatus as shown in U2_L2_ALL1 U2_L2_ALL1 (slide with the image of the experimental apparatus) | Formative: T elicits or models language and content. |

| 2 | 35 | Perform the agreed experiment, measuring time and distance and calculating speed, in order to find out what the main properties of a uniform motion are. | T forms small groups (three Ss per group) and distributes one laptop per group. T makes four Ss come out at a time (one per group) and use the experimental apparatus: one S sets the position of the photocells and measures the distance between them; another S puts the cart in position paying attention to the position of the string on the pulley and of the stopping plane; a third S activates the air track and deactivates the electromagnet from the PC; a fourth S writes the collected data on the whiteboard, to make sure all Ss have them. While the experimenters are working, the remaining Ss complete the data table T has previously shared with them. Every time a new measurement is taken, T invites four other Ss to come out. | **Skills**

| L | **S** | R | W |

Key vocabulary
Acceleration, velocity, speed, uniform motion, time, distance, photocell, pulley, string, air track,...

Communicative structures
Can I…? What is the number you found? Could you repeat the reading, please? Let's repeat the measurement one more time. Next group of four! | ☑ Whole class
☑ Group work
☐ Pair work
☐ Individual work | • U2_L2_ALL1.jpg
• U2_L2_ALL2.pdf
• U2_L2_ALL2.xlsx

Physics Lab Experimental apparatus as shown in U2_L2_ALL1 Laptops U2_L2_ALL2 (data table to be filled during the experiment) | Formative: T models content, helping Ss use the experimental material appropriately and paying attention on the table filling. |

| 3 | 35 | Analyze the collected data, elaborating them with appropriate calculations and graphs. | T invites all groups to focus on data and to use them to complete the guided lab report T must have shared in advance. Ss follow the instructions on the digital worksheet and discuss in their group about the way to use a spreadsheet in order to complete the data processing on the previous table and to build appropriate space-time and speed-time charts. Following the questions on the worksheets, Ss are led to interpret the acquired data in the light of a uniform motion. T makes clear that the yellow parts on the guided lab report (the instructions) are to be removed, so that the final document is a proper and real lab report. T circulates to facilitate. | **Skills**

L **S** **R** **W**

Key vocabulary
Acceleration, velocity, speed, uniform motion, time, distance, photocell, pulley, string, air track,…

Communicative structures
This happens because… If there weren't the stopping plane… …is calculated by applying… | ☐ Whole class
☒ Group work
☐ Pair work
☐ Individual work | • U2_L2_ALL1.jpg
• U2_L2_ALL2.pdf
• U2_L2_ALL2.xlsx
• U2_L2_ALL3.docx
• U2_L2_ALL3.pdf

Physics Lab Experimental apparatus as shown in U2_L2_ALL1 Laptops U2_L2_ALL2 (data table to be filled during the experiment) U2_L2_ALL3 (guided lab report) | Formative: T models content and elicits language. |

| 4 | 20 | Evaluate one's own and other Ss' lab reports and give opinions about possible ways to improve them. | T invites all groups to exchange the produced lab report (A to B, B to C,…) and Ss comment on the received lab report, writing notes about possible ways to improve it and correct it. When they are ready, Ss pass the reports back to the respective original authors, who decide what suggestions to accept and what to ignore, in order to make their lab report more complete and correct. At the end of the lesson Ss send to T all their final versions of the lab reports, to be assessed. | **Skills**

 | L | **S** | **R** | **W** |

 Key vocabulary
 Acceleration, velocity, speed, uniform motion, time, distance, photocell, pulley, string, air track,…

 Communicative structures
 This part is not correct, because… An improvement could be… To be more precise, you should state that… In my opinion… Are you sure about…? | ☐ Whole class
 ☑ Group work
 ☐ Pair work
 ☐ Individual work | • U2_L2_ALL1.jpg
 • U2_L2_ALL2.pdf
 • U2_L2_ALL2.xlsx
 • U2_L2_ALL3.docx
 • U2_L2_ALL3.pdf

 Physics Lab Experimental apparatus as shown in U2_L2_ALL1 Laptops U2_L2_ALL2 (data table to be filled during the experiment) U2_L2_ALL3 (guided lab report) | Peer and Self: Ss exchange material and evaluate one's own and other's. Summative: at the end of the lesson, T receives all lab reports, which are evaluated and assessed. |

CLIL Lesson Plan

Unit number		2	Lesson number		3	Title	Problems about UM

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	15	Interpret the meaning and the use of a simulation which describes uniform motion.	T forms small groups (three people per group) and distributes one laptop per group and one worksheet per S. T must have shared the simulation in advance, so Ss can open it on their laptops in order to explore it. Ss perform only Task 1 in their group, in order to familiarize themselves with the software and its functioning. Then results are shared in plenary and T ensures that all Ss have understood how to use the simulation and the meaning of its parts. If necessary, T runs the simulation on the smartboard in order to make all parts clear.	**Skills** | L	**S**	R	W | **Key vocabulary** Velocity, speed, initial position, slider, straight line, settings, intersection, diagrams. **Communicative structures** What happens when…? What is the physical meaning of…? How does the situation change if…? The charts represent…	▣ Whole class ▣ Group work ☐ Pair work ☐ Individual work	• U2_L3_ALL1.docx • U2_L3_ALL1.pdf • U2_L3_ALL2.zip Laptops GeoGebra U2_L3_ALL1 (worksheets, only Task 1 for this activity) U2_L3_ALL2 (GeoGebra simulation about uniform motion)	Formative: T models content and cognition.

| 2 | 25 | Apply what is known to solve basic problems about UM. | T invites Ss to complete the guided exercises they can find on the worksheets (Task 2): they help Ss get confident with the simulation and with some useful techniques to face problems about uniform motion (find position, time, speed, meeting point or time, convert units,...). Ss complete the guided exercises in their groups and use the simulation to check answers and hypotheses. T circulates and monitors general understanding of the guided exercises, which are the basis for the comprehension of the following ones. | **Skills**

| L | **S** | **R** | W |

Key vocabulary
Velocity, speed, initial position, slider, straight line, settings, intersection, diagrams, axis.

Communicative structures
Look at the simulation... Let's consider... This system yields the solution... According to... | ☐ Whole class
☑ Group work
☐ Pair work
☐ Individual work | • U2_L3_ALL1.docx
• U2_L3_ALL1.pdf
• U2_L3_ALL2.zip

Laptops U2_L3_ALL1 (worksheets, only Task 2 for this activity) U2_L3_ALL2 (GeoGebra simulation about uniform motion) | Formative: T models content and elicits language. |

| 3 | 50 | Find out strategies to solve new open problems. | T invites Ss to complete the open exercises they can find on the worksheets (Task 3). Ss apply the learnt techniques and use the GeoGebra simulation to check their answers and hypotheses, self-correcting and peer-correcting according to the scaffolding provided by the simulation. T circulates to facilitate and monitor general understanding. | **Skills**

 L **S** **R** **W**

 Key vocabulary
 Velocity, speed, initial position, slider, straight line, settings, intersection, diagrams, axis.

 Communicative structures
 Look at the simulation… Let's consider… This system yields the solution… According to… | ☐ Whole class
 ☒ Group work
 ☐ Pair work
 ☐ Individual work | • U2_L3_ALL1.docx
 • U2_L3_ALL1.pdf
 • U2_L3_ALL2.zip

 Laptops U2_L3_ALL1 (worksheets, only Task 3 for this activity) U2_L3_ALL2 (GeoGebra simulation about uniform motion) | Self: Ss use a simulation to get immediate feedback about their errors and mistakes. Formative: T models content and elicits language. |

4	10	Evaluate and correct other Ss' work.	T makes every group join another one. Ss should share doubts and breakthroughs with the new group members and help each other understand better the concepts which were not clarified by the simulation alone.	**Skills**	☐ Whole class	• U2_L3_ALL1.docx	Peer: Ss help each other clarify doubts.
					☑ Group work	• U2_L3_ALL1.pdf	
						• U2_L3_ALL2.zip	
					☐ Pair work		Formative: T elicits or models the language.
					☐ Individual work	Laptops U2_L3_ALL1 (worksheets, only Task 3 for this activity) U2_L3_ALL2 (GeoGebra simulation about uniform motion)	

Skills

L	S	R	W

Key vocabulary
Acceleration, velocity, speed, motion, position, time, force,…

Communicative structures
Why is your result different? How did you get to that solution? How did your group face that problem?

CLIL Lesson Plan

Unit number	3	Lesson number	1	Title	Introduction to UAM

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	25	Formulate a model to describe UAM, by finding a formula to express position in function of time. Interpreting the main features of UAM in the light of its speed-time and space-time charts.	T introduces the topic, telling Ss they are going to analyze a particular example of motion. Then T distributes the worksheets and invites Ss to complete them in pairs, agreeing on the answers to provide. Then T circulates to facilitate.	**Skills** L **S** **R** **W** **Key vocabulary** Uniformly accelerated, constant acceleration, changing speed, direction, position, time, axis, straight line, parabola. **Communicative structures** I think that… Why is the graph…? Hence… Therefore… First of all… …by definition… Since…	☐ Whole class ☐ Group work ☑ Pair work ☐ Individual work	• U3_L1_ALL1.docx • U3_L1_ALL1.pdf U3_L1_ALL1 (worksheet to find out the formula of UAM and to understand its meaning)	Formative: T models content and cognition.

| 2 | 15 | Compare Ss' ideas to come to a common formalization of UAM. | T invites every two pairs to join and compare their answers, in order to come to an agreed final answer for each question or task in the worksheet. Ss are invited to defend their answers providing justification and reasoning. | **Skills**

| L | S | R | W |

Key vocabulary
Uniformly accelerated, constant acceleration, changing speed, direction, position, time, axis, straight line, parabola.

Communicative structures
I think that… Why is the graph…? Hence… Therefore… First of all… …by definition… Since… | ☐ Whole class
☒ Group work
☐ Pair work
☐ Individual work | • U3_L1_ALL1.docx
• U3_L1_ALL1.pdf

U3_L1_ALL1
(worksheet to find out the formula of UAM and to understand its meaning) | Formative: T elicits or models language. Peer: Ss compare results and correct each other. |

| 3 | 10 | Combine all Ss' ideas to formulate a final model about UAM and summarize its features. | T invites all Ss to share the final answers they have just agreed on. Every group can ask other groups for clarification, if they do not agree on some point. In the end, Ss are invited to summarize what they have learnt and T makes sure that the two equations for UAM (position and velocity) come to light, as well as the main features of the related space-time and speed-time charts. T invites Ss to consider similarities and dissimilarities between UM and UAM. | **Skills**

 | L | S | R | W |

 Key vocabulary
 Uniformly accelerated, constant acceleration, changing speed, direction, position, time, axis, straight line, parabola.

 Communicative structures
 The equation to describe UAM is..., where... means... The shape of the space-time chart is... If we consider the speed-time chart, we have... because... The main difference between the equation for UM and that for UAM is... | ▣ Whole class
 ☐ Group work
 ☐ Pair work
 ☐ Individual work | • U3_L1_ALL1.docx
 • U3_L1_ALL1.pdf

 U3_L1_ALL1 (worksheet to find out the formula of UAM and to understand its meaning) | Formative: T elicits or models both content and language. |

CLIL Lesson Plan

Unit number	3	Lesson number	2	Title	Experiment on UAM

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment

| 1 | 10 | Memorize the characteristics of a tracking software. | Ss in plenary listen to T who explains how to use the software Tracker, by showing the provided example or directly processing a video about a generic motion (preferably not UAM, not to give Ss answers in advance). T pays much attention in pointing out the relevance of: - a homogeneous background for the video; - the orthogonal position of the camera; - the presence of length references; - the deinterlace filter. All explanation is interactive: T invites Ss to suggest why all previous aspects are relevant and what would happen if they were not properly taken into account. | **Skills**

 L \| S \| R \| W

 Key vocabulary
 Acceleration, velocity, speed, uniformly accelerated motion, time, distance, camera, spatial reference, frame rate, deinterlace filter, background,…

 Communicative structures
 Why is … relevant?
 What happens if…?
 What is the reason why…? | ☑ Whole class
 ☐ Group work
 ☐ Pair work
 ☐ Individual work | • U3_L2_ALL1.docx
 • U3_L2_ALL1.pdf

 Physics Lab Tracker U3_L2_ALL1 (Tracker example) | Formative: T models content and cognition. |

2	5	Design an experiment to investigate the properties of a UAM.	T projects the same slide of the experiment about UM and asks Ss what should be modified in the experimental apparatus to analyze a UAM instead of a UM. Ss propose their ideas and come to a general agreement under T's guidance.	**Skills**	☒ Whole class	• U3_L2_ALL4.jpg	Formative: T models content and cognition.
					☐ Group work	Physics Lab Experimental apparatus as shown in U3_L2_ALL4 U3_L2_ALL4 (image of the experimental apparatus)	

Skills

L	S	R	W

Key vocabulary
Acceleration, velocity, speed, uniform and uniformly accelerated motion motion, time, distance, photocell, pulley, string, air track, camera, spatial reference, frame rate, deinterlace filter, background,…

Communicative structures
Why is … relevant?
What happens if…?
What is the reason why…?

☒ Whole class
☐ Group work
☐ Pair work
☐ Individual work

| 3 | 30 | Perform the agreed experiment, filming a body moving with UAM and analyzing its properties with a tracking software. | T forms small groups (three Ss per group) and distributes laptops and handouts with a guideline to use Tracker to explore the properties of a uniformly accelerated motion. Ss take turns to use the experimental apparatus and use their smartphones to shoot one video per group. Then Ss analyze their videos by using Tracker. | **Skills**

| L | **S** | R | W |

Key vocabulary
Acceleration, velocity, speed, uniform and uniformly accelerated motion, time, distance, photocell, pulley, string, air track, camera, spatial reference, frame rate, deinterlace filter, background,…

Communicative structures
Why is … relevant?
What happens if…?
What is the reason why…? | ☐ Whole class
☒ Group work
☐ Pair work
☐ Individual work | • U3_L2_ALL2.docx
• U3_L2_ALL2.pdf

Physics Lab Laptops Ss' smartphones Tracker U3_L2_ALL2 (guideline to perform the experiment and analyze data with Tracker) | Formative: T models content and cognition. |

4	35	Analyze the collected data, elaborating them with appropriate calculations and graphs.	T invites all groups to focus on the data obtained through the videos and to use them to complete the guided lab report T must have shared in advance. Ss follow the instructions on the digital worksheet and discuss in their group about the way to interpret the acquired data in the light of a uniformly accelerated motion. T makes clear that the yellow parts on the guided lab report (the instructions) are to be removed, so that the final document is a proper and real lab report. T circulates to facilitate.	**Skills**				☐ Whole class ☒ Group work ☐ Pair work ☐ Individual work	• U3_L2_ALL2.docx • U3_L2_ALL2.pdf • U3_L2_ALL3.docx • U3_L2_ALL3.pdf Physics Lab Laptops Ss' smartphones Tracker U3_L2_ALL2 (guideline perform the experiment and analyze data with Tracker) U3_L2_ALL3 (guided lab report)	Formative: T models content and elicits language.
				L	**S**	**R**	**W**			
				Key vocabulary Acceleration, velocity, speed, uniform and uniformly accelerated motion, time, distance, photocell, pulley, string, air track, camera, spatial reference, frame rate, deinterlace filter, background,…						
				Communicative structures This happens because… As we can see from the graph… …is calculated by applying… This is (not) consistent with what we already know because…						

| 5 | 20 | Evaluate one's own and other Ss' lab reports and give opinions about possible ways to improve them. | T invites all groups to exchange the produced lab report (A to B, B to C,...) and Ss comment on the received lab report, writing notes about possible ways to improve it and correct it. When they are ready, Ss pass the reports back to the respective original authors, who decide what suggestions to accept and what to ignore, in order to make their lab report more complete and correct. At the end of the lesson Ss send to T all their final versions of the lab reports, to be assessed. | **Skills** L **S R W** **Key vocabulary** Acceleration, velocity, speed, uniform and uniformly accelerated motion, time, distance, photocell, pulley, string, air track, camera, spatial reference, frame rate, deinterlace filter, background,... **Communicative structures** This part is not correct, because... An improvement could be... To be more precise, you should state that... In my opinion... Are you sure about...? In our report we did not take account of... but... | ☐ Whole class ☑ Group work ☐ Pair work ☐ Individual work | • U3_L2_ALL2.docx • U3_L2_ALL2.pdf • U3_L2_ALL3.docx • U3_L2_ALL3.pdf Physics Lab Laptops Ss' smartphones Tracker U3_L2_ALL2 (guideline perform the experiment and analyze data with Tracker) U3_L2_ALL3 (guided lab report) | Peer and Self: Ss exchange material and evaluate one's own and other's. Summative: at the end of the lesson, T receives all lab reports, which are evaluated and assessed. |

CLIL Lesson Plan

Unit number		3	Lesson number		3	Title	Introduction to FF

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	10	Predict the behavior of falling objects, formulating hypotheses about a specific experiment.	T introduces the topic pointing out that the purpose of the lesson is to determine whether a free fall is a UM or a UAM. T hands out the worksheets and invites Ss to complete Task 1 and Task 2 only. Of course, T must have prepared in advance the experimental material, consisting in two cords with some tied iron nuts, respecting the distances indicated on the worksheets. Ss work in pairs to complete the first two tasks on the worksheets in order to predict the behavior of falling objects.	**Skills** L · S · **R** · **W** **Key vocabulary** Acceleration, velocity, fall, free fall, gravity, hang, cord, iron nut, distance, regular sound, increasing distances. **Communicative structures** Observe that… What are similarities and differences between…? Predict what will happen if…	☐ Whole class ☐ Group work ☑ Pair work ☐ Individual work	• U3_L3_ALL1.docx • U3_L3_ALL1.pdf Physics Lab Experimental material as shown on U3_L3_ALL1 (hanging cords) U3_L3_ALL1 (worksheet to analyze the properties of a free fall)	Formative: T models language and cognition.

2	10	Compare ideas and share predictions.	Ss, invited by T, share with the entire class their prediction. If their predictions are different from one another, they can ask other Ss to give reasons.	**Skills**	☒ Whole class	• U3_L3_ALL1.docx • U3_L3_ALL1.pdf	Formative: T models language and cognition.

Skills

L	S	R	W
■	■		

Key vocabulary
Acceleration, velocity, fall, free fall, gravity, hang, cord, iron nut, distance, regular sound, increasing distances.

Communicative structures
Why do you think that...? In my opinion... Our prediction is that... How can you tell...?

☒ Whole class
☐ Group work
☐ Pair work
☐ Individual work

• U3_L3_ALL1.docx
• U3_L3_ALL1.pdf

Physics Lab Experimental material as shown on U3_L3_ALL1 (hanging cords) U3_L3_ALL1 (worksheet to analyze the properties of a free fall)

Formative: T models language and cognition.

| 3 | 10 | Perform an experiment about free fall and analyze its main features. | T invites Ss to perform the experiment. Two Ss will reach a upper point (e.g. stairs in the school hall, a ladder, a window, …) and will hold the two hanging cords, to release them separately. All the other Ss watch carefully, paying much attention to the sound the two cords will produce once released. If they want to, Ss can use their smartphones to shoot a video of the falling cords, in order to listen to it in slow-mo (an example is provided). It could be necessary to repeat the experiment more than once to hear the sound clearly. | **Skills**

| L | S | R | W |
| --- | --- | --- | --- |

Key vocabulary
(none)

Communicative structures
Please, release the cords. | ◉ Whole class
☐ Group work
☐ Pair work
☐ Individual work | • U3_L3_ALL1.docx
• U3_L3_ALL1.pdf
• U3_L3_ALL2.zip

Physics lab Experimental material as shown on U3_L3_ALL1 (hanging cords) U3_L3_ALL1 (worksheet to analyze the properties of a free fall) Ss' smartphones U3_L3_ALL2 (examples of videos) | (none) |

| 4 | 10 | Analyze the observed phenomenon. | T invites Ss to complete the final part of the worksheet, according to what they have observed, listened to and recorded. Ss work in pairs to complete the tasks. | **Skills**

| L | S | **R** | **W** |

Key vocabulary
Acceleration, velocity, fall, free fall, gravity, hang, cord, iron nut, distance, regular sound, increasing distances.

Communicative structures
Observe that… If… then… Hence… We can conclude that… | ☐ Whole class
☐ Group work
☑ Pair work
☐ Individual work | • U3_L3_ALL1.docx
• U3_L3_ALL1.pdf
• U3_L3_ALL2.zip

Physics Lab Experimental material as shown on U3_L3_ALL1 (hanging cords) U3_L3_ALL1 (worksheet to analyze the properties of a free fall) Ss' smartphones with the shot videos (example on U3_L3_ALL2) | Formative: T models language and cognition. |

| 5 | 10 | Compare ideas and share predictions. Identify free fall as an instance of uniformly accelerated motion. | Ss, invited by T, share with the entire class their conclusions and inferences, also reading their answers on the worksheet. If their observations and reasoning are different from one another, they can ask other Ss to give reasons. T makes sure that all Ss understand that free fall is an instance of uniformly accelerated motion. | **Skills**

 L **S** **R** W

 Key vocabulary
 Acceleration, velocity, fall, free fall, gravity, hang, cord, iron nut, distance, regular sound, increasing distances.

 Communicative structures
 Why do you think that...? In my opinion... Our conclusion is that... How can you tell...? | ☑ Whole class
 ☐ Group work
 ☐ Pair work
 ☐ Individual work | • U3_L3_ALL1.docx
 • U3_L3_ALL1.pdf
 • U3_L3_ALL2.zip

 Physics lab Experimental material as shown on U3_L3_ALL1 (hanging cords) U3_L3_ALL1 (completed worksheet to analyze the properties of a free fall) Ss' smartphones with the shot videos (example on U3_L3_ALL2) | Formative: T models language, content and cognition. |

CLIL Lesson Plan

Unit number	3	Lesson number	4	Title	Measuring g through FF

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	10	Recall that free fall is a uniformly accelerated motion and find out that all objects fall with the same acceleration.	T hands out the worksheets and invites Ss to read the passage in Task 1. Then T plays the linked video on the smartboard so that all Ss can watch it together. If something is not clear to Ss (the video is meant just as a little glimpse on a much wider issue) T can answer quickly to some answers, keeping in mind that the only concept Ss should acquire in this context is that g does not depend on the mass of a free falling object. T can then provide a demonstration of the same fact with a Newton tube, if available.	**Skills** L S R W **Key vocabulary** Acceleration, free fall, vacuum chamber, air resistance, mass,... **Communicative structures** Surprisingly,... Even though we might think that,... How is it possible that...?	☑ Whole class ☐ Group work ☐ Pair work ☐ Individual work	• U3_L4_ALL1.docx • U3_L4_ALL1.pdf U3_L4_ALL1 (worksheet. This activity involves only Task 1 and the video linked on the worksheet) Newton tube (if available)	Formative: T models content and cognition.

| 2 | 10 | Design an experiment to measure g through free fall. | T invites Ss to work in pairs to complete Task 2 on the same worksheet, referring both to the picture and to the real experimental apparatus T shows the class. They complete the task, guided in designing an experiment about free fall. T circulates to help. | **Skills**

 L S **R** **W**

 Key vocabulary
 Gravity acceleration, free fall, air resistance, mass, release, electromagnet, photocell, support, axis, position, velocity,…

 Communicative structures
 Since… According to… We could…then… Hence… | ☐ Whole class
 ☐ Group work
 ☒ Pair work
 ☐ Individual work | • U3_L4_ALL1.docx
 • U3_L4_ALL1.pdf

 Physics Lab Experimental apparatus as shown in U3_L4_ALL1 U3_L4_ALL1 (worksheet. This activity involves only Task 2) | Formative: T models content and cognition. |

| 3 | 20 | Perform an experiment to measure g through free fall. | T forms small groups (three Ss per group). T makes four Ss come out at a time (one per group) and use the experimental apparatus: one S sets the position of the movable photocell and measures the distance between it and the electromagnet; another S activates and deactivates the electromagnet from the PC; a third S gets ready to catch the falling ball before it rolls on the floor; a fourth S writes the collected data on the whiteboard, to make sure all Ss have them. While the experimenters are working, the remaining Ss complete the data table on the worksheet. Every time a measurement is taken, a new set of four Ss comes out to take another one. | **Skills**

| L | **S** | R | W |

Key vocabulary
Gravity acceleration, free fall, air resistance, mass, release, electromagnet, photocell, support, axis, position, velocity,…

Communicative structures
Attach the photocell…
Release the ball…
Switch the electromagnet off! | ▣ Whole class
▣ Group work
☐ Pair work
☐ Individual work | • U3_L4_ALL1.docx
• U3_L4_ALL1.pdf

Physics Lab Experimental apparatus as shown in U3_L4_ALL1
U3_L4_ALL1 (worksheet) | Formative: T models content, helping Ss use the experimental material appropriately and paying attention on the table filling. |

4	10	Analyze the collected data and interpret their meaning.	Ss work in their groups to complete the table on the worksheet in order to process the collected data and come to a final value for g. T circulates to help.	**Skills**	☐ Whole class	• U3_L4_ALL1.docx	Formative: T models content and elicits language.
				L | **S** | R | **W**	☑ Group work	• U3_L4_ALL1.pdf	
				Key vocabulary Gravity acceleration, free fall, axis, position, velocity, multiply, divide, calculate, average, half-the-spread, consistent, within the error	☐ Pair work ☐ Individual work	Physics Lab Experimental apparatus as shown in U3_L4_ALL1 U3_L4_ALL1 (worksheet)	
				Communicative structures It is not consistent because... We should calculate...			

CLIL Lesson Plan

Unit number	3	Lesson number		5	Title	Problems about UAM

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment

| 1 | 10 | Interpret the meaning and the use of a simulation which describes uniform motion. | T forms small groups (three Ss per group) and distributes one laptop per group and one worksheet per S. T must have shared the first simulation in advance, so Ss can open it on their laptops in order to explore it. Ss perform only Task 1 in their group, in order to familiarize themselves with the software and its functioning. Then results are shared in plenary and T ensures that all Ss have understood how to use the simulation and the meaning of its parts, also in comparison with previous simulations Ss have already used. If necessary, T runs the simulation on the smartboard in order to make all parts clear. | **Skills**

| L | **S** | R | W |

Key vocabulary
Velocity, speed, initial position, slider, straight line, settings, intersection, diagrams, parabola, acceleration, space-time chart,…

Communicative structures
What happens when…? What is the physical meaning of…? How does the situation change if…? The charts represent… | ▣ Whole class
▣ Group work
☐ Pair work
☐ Individual work | • U3_L5_ALL1.docx
• U3_L5_ALL1.pdf
• U3_L5_ALL2.zip

Laptops GeoGebra U3_L5_ALL1 (worksheets, only Task 1 for this activity) U3_L5_ALL2 (GeoGebra simulation about uniformly accelerated motion) | Formative: T models content and cognition. |

| 2 | 25 | Apply what is known to solve basic problems about UAM. | T invites Ss to complete the guided exercises they can find on the worksheets (Task 2): they help Ss get confident with the simulation and with some useful techniques to face problems about uniformly accelerated motion (find position, time, speed, meeting point or time…). Ss complete the guided exercises in their groups and use the simulation to check answers and hypotheses. T circulates and monitors general understanding of the guided exercises, which are the basis for the comprehension of the following ones. | **Skills**

| L | **S** | **R** | W |

Key vocabulary
Velocity, speed, initial position, initial velocity, slider, straight line, parabola, settings, intersection, diagrams, axis.

Communicative structures
Look at the simulation… Let's consider… This system yields the solution… According to… | ☐ Whole class
☑ Group work
☐ Pair work
☐ Individual work | • U3_L5_ALL1.docx
• U3_L5_ALL1.pdf
• U3_L5_ALL2.zip

Laptops GeoGebra U3_L5_ALL1 (worksheets, only Task 2 for this activity) U3_L5_ALL2 (GeoGebra simulation about uniformly accelerated motion) | Formative: T models content and elicits language. |

| 3 | 40 | Find out strategies to solve new open problems about uniformly accelerated motion. | T invites Ss to complete the open exercises they can find on the worksheets (Task 3). Ss apply the learnt techniques and use the first GeoGebra simulation to check their answers and hypotheses, self-correcting and peer-correcting according to the scaffolding provided by the simulation. T circulates to facilitate and monitor general understanding. | **Skills**

L \| **S** \| **R** \| **W**

Key vocabulary
Velocity, speed, initial position, initial velocity, slider, straight line, parabola, settings, intersection, diagrams, axis.

Communicative structures
Look at the simulation… Let's consider… This system yields the solution… According to… | ☐ Whole class
☑ Group work
☐ Pair work
☐ Individual work | • U3_L5_ALL1.docx
• U3_L5_ALL1.pdf
• U3_L5_ALL2.zip

Laptops GeoGebra U3_L5_ALL1 (worksheets) U3_L5_ALL2 (GeoGebra simulation about uniformly accelerated motion) | Self: Ss use a simulation to get immediate feedback about their errors and mistakes. Formative: T elicits content and language. |

4	15	Find out strategies to solve new open problems about free fall.	T invites Ss to complete the open exercises they can find on the worksheets (Task 4). Ss apply the learnt techniques and use the second GeoGebra simulation to check their answers and hypotheses, self-correcting and peer-correcting according to the scaffolding provided by the simulation. T circulates to facilitate and monitor general understanding.	**Skills**	☐ Whole class	• U3_L5_ALL1.docx	Self: Ss use a simulation to get immediate feedback about their errors and mistakes. Formative: T elicits content and language.

Skills

L	S	R	W

Key vocabulary
Velocity, speed, initial position, initial velocity, slider, straight line, parabola, settings, intersection, diagrams, axis.

Communicative structures
Look at the simulation… Let's consider… This system yields the solution… According to…

☐ Whole class
☑ Group work
☐ Pair work
☐ Individual work

• U3_L5_ALL1.docx
• U3_L5_ALL1.pdf
• U3_L5_ALL2.zip
• U3_L5_ALL3.zip

Laptops GeoGebra
U3_L5_ALL1 (worksheets)
U3_L5_ALL2 (GeoGebra simulation about uniformly accelerated motion)
U2_L3_ALL3 (GeoGebra simulation about free fall)

5	10	Evaluate and correct other Ss' work.	T makes every group join another one. Ss should share doubts and breakthroughs with the new group members and help each other understand better the concepts which were not clarified by the simulation alone. T circulates to facilitate.	**Skills**	☐ Whole class	• U3_L5_ALL1.docx	Peer: Ss help each other clarify doubts.
					☑ Group work	• U3_L5_ALL1.pdf	
						• U3_L5_ALL2.zip	
						• U3_L5_ALL3.zip	

Skills

L	S	R	W

Key vocabulary
Velocity, speed, initial position, initial velocity, slider, straight line, parabola, settings, intersection, diagrams, axis.

Communicative structures
Why is your result different? How did you get to that solution? How did your group face that problem?

☐ Whole class
☑ Group work
☐ Pair work
☐ Individual work

• U3_L5_ALL1.docx
• U3_L5_ALL1.pdf
• U3_L5_ALL2.zip
• U3_L5_ALL3.zip

Laptops GeoGebra
U3_L5_ALL1
(worksheets)
U3_L5_ALL2
(GeoGebra simulation about uniformly accelerated motion)
U2_L3_ALL3
(GeoGebra simulation about free fall)

Peer: Ss help each other clarify doubts.
Formative: T elicits or models the language.

CLIL Lesson Plan

Unit number	4	Lesson number		1	Title	Final recap

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	50	Recall all learnt concepts in order to revise them. Identify correct definitions and answers to close questions. Calculate physical quantities by using what learnt .	T projects the slide to make Ss use their smartphones to go on kahoot.com. T also writes on the whiteboard the access code to join the questionnaire. Ss use their smartphones to access the recap questionnaire. When all of them are in, T makes the quiz start. After every question, Ss should feel free to ask both T and other Ss what they have not understood correctly, in order to clarify base concepts. Although every S answers the quiz on their own, Ss are free to (and invited to) share ideas and strategies with neighbors while thinking.	**Skills** L | **S** | **R** | W **Key vocabulary** (all vocabulary from the module) **Communicative structures** (all structures of the module)	☑ Whole class ☐ Group work ☐ Pair work ☑ Individual work	• U4_L1_ALL1.docx • U4_L1_ALL1.pdf • U4_L1_ALL2.docx • U4_L1_ALL2.pdf goo.gl/hGeRKi (online quiz on Kahoot.com to recap) U4_L1_ALL1 (Kahoot slide) U4_L1_ALL2 (Kahoot questions – paper version)	Formative: T elicits content.

CLIL Lesson Plan

Unit number		4	Lesson number		2	Title	Test and test correction

Activity	Timing	Learning Outcomes	Activity Procedure	Language	Interaction	Materials	Assessment
1	50	Recall all learnt concepts. Apply what learnt to familiar situations in order to solve problems which involve motion in general. Analyze unfamiliar situations to design solving strategies.	T hands out the tests and invites Ss to complete them on their own. Ss take the test. At the end of the lesson, T collects the answer sheets to assess them, whereas Ss keep the test sheet.	**Skills** L S **R** **W** **Key vocabulary** (all vocabulary from the module) **Communicative structures** (all structures of the module)	☐ Whole class ☐ Group work ☐ Pair work ☑ Individual work	• U4_L2_ALL1.docx • U4_L2_ALL1.pdf U4_L2_ALL1 (final test)	Summative: at the end of the lesson, T collects the tests in order to assess them.

2	30	Compare results and analyze one's own mistakes.	T invites Ss to work in pairs to share results and strategies. Ss help each other understand what is still not clear.	**Skills** **L** **S** R W **Key vocabulary** (all vocabulary from the module) **Communicative structures** How did you solve…? Why did you come to this solution…? Could you tell me how…?	☐ Whole class ☐ Group work ☑ Pair work ☐ Individual work	• U4_L2_ALL1.docx • U4_L2_ALL1.pdf U4_L2_ALL1 (final test)	Peer: Ss compare respective results and correct one another. Formative: T analyzes Ss remaining doubts.
3	20	Compare results and analyze one's own mistakes.	T distributes the handouts containing the keys to the taken test and invites Ss to work in pairs to compare their results with the expected ones. Ss feel free to ask T for clarifications and further explanations. T circulates to clarify final doubts.	**Skills** **L** **S** **R** W **Key vocabulary** (all vocabulary from the module) **Communicative structures** Look at this solution… Is my strategy equivalent to that?	☐ Whole class ☐ Group work ☑ Pair work ☐ Individual work	• U4_L2_ALL1.docx • U4_L2_ALL1.pdf • U4_L2_ALL2.docx • U4_L2_ALL2.pdf U4_L2_ALL1 (final test) U4_L2_ALL2 (keys to the final test)	Peer: Ss compare respective results and correct one another. Formative: T analyzes Ss remaining doubts.