

This is Science!



Escola Calvet d'Estrella
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Generació Plurilingüe (GEP)

Year 1
2018-2019



GEP 1	Task 1 : Input & Cooperative /Collaborative learning in CLIL	
Title of the lesson or topic	This is Science!	
Course / year / age	5th grade	
Timing	3h (one session of 1h and one session of 2h)	
Collaboration with	Science and English Teacher	
Short description of the session/s	On the first session, we introduce the scientific method in pairs. On the second session, we will deal with the concept of density and the properties of matter.	
<i>The descriptions of the activities below should contain:</i> <ol style="list-style-type: none">1. <i>type of input,</i>2. <i>questions (explicit, implicit and referential) posed by the teacher to ensure the students' involvement</i>3. <i>dynamic instructions with collaborative and cooperative activities,</i>4. <i>materials used.</i>		
S E S S	Activity 1	Puzzle grouping to make pairs → 5 minutes As the students enter the classroom, each one of them will receive one half of a picture of a famous scientist. In order to find their pair they will have to find the other half of the picture.



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Activity 2

To introduce the scientific method they are going to apply later and its vocabulary:

Dictagloss - The Scientific Method → 20 minutes (in pairs)

Each pair gets a set of pictures related to different pieces of a speech they are going to listen to. As they hear the key words directly associated to the pictures they have to put them in the correct order. The teacher highlights key words with her intonation.





1. Ask a **QUESTION**



2. Observe the world and collect information



3. Form a **HYPOTHESIS** (guess the answer)



4. Design an experiment to test your hypothesis



5. Analyze the results of your tests

flight_num	hour	days	start_point	dest_point
1	5	1	2	4
2	5	1	4	3
3	2	3	5	4
Autopilot				

6. Present a conclusion

Confirming or refuting your hypothesis





The SCIENTIFIC METHOD is the way the scientists study or learn new things no one else knows yet.

It consists of 6 steps:

1. **Ask a question.** For example, *why are plants green?*

2. **Observe the world and collect information.**

Continuing with the example, we would observe a lot of different plants trying to understand the reason why they are green.

3. **Form a hypothesis.** The hypothesis is a guess. You try to guess the answer to the question based on the observations you made before.

*In the plant experiment, one hypothesis could be: *The plants are green because little green insects live inside the leaves.**

4. **Design an experiment** to test your hypothesis, to discover if you guessed the answer to the question correctly. Every time you do a test you need to register it, usually using a chart, so you don't forget any of the results.

A test could be observing a leave using a microscope to see if there are any insects inside it. Then writing down the results in a chart.

5. **Analyse the results of your tests** and see if your hypothesis was correct or not.

According to the results in your chart, did you see any insects living inside the leaves?

6. **Present a conclusion**

After checking your results, you can confirm or refute your hypothesis. If you confirm it, it means the hypothesis was correct. If you refute it, it means your hypothesis was incorrect.

When the hypothesis is refuted you can think of a new hypothesis and start the process again.



A Power Point presentation will be displayed on the board with some important sentences to lead their interaction.

I think this card goes here.

This card goes first/second / third.

I agree/disagree.

Well done.

Activity 3

Filling a worksheet with the steps of the scientific method → 15 minutes

Once they finish the dictogloss and correction is made, each student will have to glue each one of the images on a new worksheet and write a line about the step the picture represents.



THE SCIENTIFIC METHOD

CUT-OUT





Present a ...
Ask a ...
Design an ...
Form a ...
Analyse ...
Observe the... and collect...



A Power Point presentation will be projected on the board with some important sentences to help them complete the sentences of each step of the Scientific Method.

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Activity 4

Make a line in order of date of birth and then split the line in four different groups.

Vocabulary matching relay → 10 minutes (in 4 groups)

Each one of the groups will have a poster with the labels of 13 different objects and a space next to each one of them to attach its picture.

The group must make a line and when the teachers gives the order the first person of the line must run to the hall and look for a picture to match with one of the labels in their group's poster.

As soon as the first participant has matched the picture to its label the next person in the line can run to the hall to continue with the relay.



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LEAF	PENCIL		NUTS		
PLASTICINE	CLOTHES PEGS		CUTLERY		
BOTTLE CAP	TOYS		KEY		
COINS	BALLS				
PIECE OF CLOTHING	SCREW				

Activity 4

Previous knowledge detection (Quizlet) of mass and volume → 15 minutes (in pairs, in Computers room)



1	<p>Volume</p> <hr/> <p>TÉRMINO</p>	<p>≡+</p> <p>🔊</p>	<p>The quantity of space something occupies</p> <hr/> <p>DEFINICIÓ</p>
2	<p>Mass</p> <hr/> <p>TÉRMINO</p>	<p>≡+</p> <p>🔊</p>	<p>the quantity of matter in an object</p> <hr/> <p>DEFINICIÓ</p>
3	<p>Density</p> <hr/> <p>TÉRMINO</p>	<p>≡+</p> <p>🔊</p>	<p>Mass per unit volume or how compact something is</p> <hr/> <p>DEFINICIÓ</p>

Activity 5

Think - pair- share 25 minutes

Have you ever thrown a stone into the sea? What happened?
Have you ever thrown some bread into a lake? What happened?
Why do you think that happened?
What is high density? and low density?



LET'S THINK A BIT...

Have you ever thrown a stone into the sea? What happened?



Have you ever thrown some bread into a lake? What happened?



Why do you think that happened?
What is high density? and low density?



	Activity 6	Molecules grouping + different roles within the group (register, spokesperson, question solver, executor) Experiment on Density - 1h



Let's experiment with density!

REMEMBER! When an object doesn't sink, it floats!



Materials:

- Objects: bottle cap, coins, piece of clothing, cutlery, clothes pegs, toys, balls, screw, key, nuts, leaf, pencil, plasticine, ...
- A container filled with water.

Form a hypothesis!



Name of the object:	Sinks	Floats

Test your hypothesis!

Name of the object:	Sinks	Floats



Analyse the results of your tests!

Compare the chart of the hypothesis and the chart of the results

- We were right in most of the hypothesis.
- We were right in some of the hypothesis.
- We were wrong in most of the hypothesis.



Some more tests:



Make two balls of plasticine of the same weight.



Model one in the shape of a canoe.



Set them slowly on the surface.
What happens? Write it!

.....

.....

.....

Draw it!:



Ball of plasticine:

Plasticine canoe:



When we put an object inside a liquid, the object floats or sinks depending on its density. If the density of the object is higher than the density of the water the object will sink.



In addition to the worksheet they have to fill in, the pupils will be provided with a *cheat sheet* including some of the structures they might need to interact when carrying out the tests.

Some sentences you may need...

I think it will float.



I disagree



I think it will sink.



I think you're right.



Do you agree?



I think you're wrong.



I agree



In terms of academic

They are learning the Scientific Method and how to implement it.



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content, what are the students learning and what are they learning to do?	They are learning new vocabulary: hypothesis, test, conclusion, refute, confirm.
In terms of language, what are the students practicing or learning to do?	They are making questions and guessing (I think). They are regulating their participation with agreement/ disagreement sentences.
In what way is this lesson plan a good example of what we learnt in the GEP course session?	There is a varied range of input (hands-on, visual, written and spoken input) The questions made are competential and centered to their own experience. Have you ever thrown a stone into the sea? What happened? Have you ever thrown some bread into a lake? What happened? Why do you think that happened? What is high density? and low density?
Other important information	
ANNEXES (materials, handout, pictures... if not possible to include in the activity section.)	

Self assessment Checklist

Plantilla creada pel grup de formadores del Programa GEP (Generació Plurilingüe) del Departament d'Ensenyament. Curs 2018-2019





Task 1 : Input & Cooperative /Collaborative learning in CLIL	YES/NO
1. Students are presented with multimodal and varied input (spoken, written, visual, hands-on...)	yes
2. The input presented is used to help learners understand ideas and construct meaning	yes
3. The input is presented at the right cognitive level and the right language level , i.e. it is neither too challenging in terms of content nor too difficult in terms of language.	yes
4. Students are helped in some way to understand , i.e. input is made comprehensible	yes
5. Students are helped in some way to process the input presented, i.e. activities or questions make students think and construct meaning.	yes
6. The input and activities presented cater to multiple intelligences	yes
7. Students are presented with good questions (explicit, implicit and referential) that help them process input and that challenge them not only to understand, but to think, create...	yes
8. A variety of collaborative learning strategies are used throughout the session.	yes



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9. At least one of the activities presented requires cooperation among students.	yes
10. Students are explicitly taught how to work in groups (or pairs).	yes
11. Students are explicitly guided to succeed in group/pair work discussions and interactions . Clear support to guide their interactions is provided.	yes
12. At least one ICT tool is used to promote digital collaborative learning .	yes



GEP 1	Task 2: Reading, writing and Assessment in CLIL
Title of the lesson or topic	This is Science!
Author	Mariona Sabatés and Maria Muñoz
Course / year / age	5th grade
Number of sessions	3h (one session of 1h and one session of 2h)
Collaboration with...	Science and English Teachers
Main objectives of the sessions	<p>Session one:</p> <ul style="list-style-type: none">- Identify the two different types of mixtures- Write a descriptive text about the two types of mixtures. <p>Session two:</p> <ul style="list-style-type: none">- Identify four techniques for separating heterogeneous mixtures.- Synthesize and communicate a read content to other members of the group.



Short description of the sessions	<p>In session one the students will learn the different types of mixtures and some examples of them. They will write a short text about it.</p> <p>In session two, the students will learn and apply the different mixture separations techniques and complete a short report on how they did it.</p>
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<i>The descriptions of the activities below should contain:</i>		
<ol style="list-style-type: none"> 1. <i>collaborative and cooperative activities instructions (including the timing and the language support)</i> 2. <i>type of support,</i> 3. <i>readings and writings planned,</i> 4. <i>assessment tools</i> 5. <i>materials used</i> 		Timing
S E S S I	Activity 1	ClassDojo to make groups:
		2min



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Marina C.	Sinay C.	Lean L.	Camila V.	Ismael F.
Fatima E.	Diana R.	Sarah K.	Jia H.	Arianne A.
Carmen M.	Marina A.	Romeo D.	Roman G.	Carla S.
Oliver R.	Jenny D.	Alexia A.	Alexander C.	
Alex R.	Maria C.	Miquel B.	Xinyi Z.	
Zayd A.	Nyuma S.	Mireia G.	Ikram O.	

15min

Pre-task: Storyboard

The teacher will read a text describing the different types of mixtures out loud. Meanwhile, the students have to construct a mind-map using some labels the teacher will provide them with.

While listening to the text, the students might need to interact and negotiate where each label should be placed so we will provide them some language support :



I think this goes here.

Do you agree? **Yes, I do/No, I don't**

Ca you repeat the sentence, please?

- The surface on which they will display the labels and draw the lines (laminated):



SCIENCE MINDMAP

- Labels with the key words used in the mind map:

Mixture	Types of mixtures	Homogeneous mixtures	Heterogeneous mixtures
Visible components	Invisible components	Not visible components	Example of homogeneous mixture
Example of Heterogeneous mixture	Soup with pasta	Water with sugar	



		<p>- The text that will be read by the teacher:</p> <div data-bbox="452 319 1583 746" style="border: 1px solid black; padding: 10px;"><p>When we put two or more different components together and stir them it is called a mixture.</p><p>There are two different types of mixtures:</p><p>One type is the heterogeneous mixture. In heterogeneous mixtures you can see the different components easily because they don't mix completely. The different components are visible. An example of heterogeneous mixture is soup with pasta because you can see the soup and the pasta.</p><p>The other type of mixtures is called homogeneous mixture. In homogeneous mixtures you cannot see the different components in it. The different components are not visible. An example of homogeneous mixture is water and sugar because if you stir them you can't see the components.</p></div>	
	Activity 2	<p>- Each student will have the following worksheet in which, in the same groups of three, they will have to re-write the description of the different types of mixtures.</p>	20min



Name:

TYPES OF MIXTURES

There are

One type of.....

An example of.....

The other type of.....

An example of.....



	Activity 3	<p>Self-assessment check-list: It will be completed at the end of the task but they will be using it as a guide to know what they need to include in their texts.</p> <p>CHECK-LIST <i>for the writing of the types of mixtures</i></p> <table border="1" data-bbox="465 480 1234 943"><thead><tr><th></th><th></th><th></th></tr></thead><tbody><tr><td>Does it have a title?</td><td></td><td></td></tr><tr><td>Did I include all the key words in the mind map?</td><td></td><td></td></tr><tr><td>Did I use words like <i>and, because</i> or <i>but</i>?</td><td></td><td></td></tr><tr><td>It the writing clean?</td><td></td><td></td></tr><tr><td>Is the hand-writing comprehensible?</td><td></td><td></td></tr></tbody></table>				Does it have a title?			Did I include all the key words in the mind map?			Did I use words like <i>and, because</i> or <i>but</i> ?			It the writing clean?			Is the hand-writing comprehensible?			5 min
																					
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It the writing clean?																					
Is the hand-writing comprehensible?																					
S E S S	Activity 4	<p>After giving the students one minute to think about examples of both types of mixtures they will be asked to do a Rally Robin. It is a Kagan Structure consisting of a couple in which each of the members take turns to answer an item related to the topic proposed by the teacher; in this case, examples of heterogeneous and homogeneous mixtures.</p> <p>LANGUAGE SUPPORT: To help those students that might not remember what each type of mixture is, a projection with images of both types will be projected.</p>	5 min																		



I O N 2		<p data-bbox="651 312 891 392">Homogeneous mixtures</p>  	<p data-bbox="1115 320 1368 400">Heterogeneous mixtures</p>   	
	<p data-bbox="271 975 405 1007">Activity 5</p>	<p data-bbox="427 975 1861 1078">To make groups of 5 students the <i>Matching Objects</i> dynamic will be used. The objects they will have to match are all related to the materials we have been using so far so they know their names and can ask their classmates. For example, clothes pegs, keys, coins...</p> <p data-bbox="427 1174 1357 1206"><i>An interview</i> activity about the methods to separate heterogeneous mixtures.</p> <p data-bbox="427 1238 1872 1302">While the pupils that are going to be interviewed read through their different texts, the interviewer will think of one new question to pose to the interviewed kids.</p>	<p data-bbox="1928 975 2007 1007">5 min</p> <p data-bbox="1928 1110 2029 1142">30 min</p>	



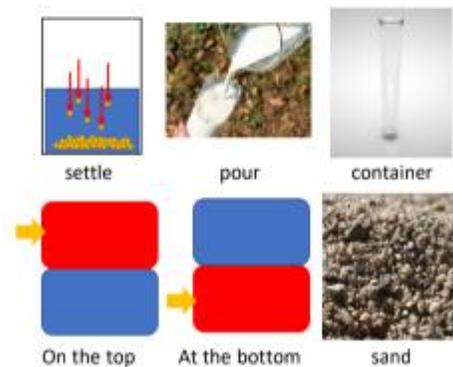
DECANTATION

Decantation is the most appropriate separation technique for heterogeneous mixtures when its components have different densities.

First, you have to let the mixture settle for some minutes. The densest components will move under the lightest components.

Then, you only have to slowly pour the liquid on the top into another container. Be careful not to pour the liquid at component at the bottom.

This technique is usually used to separate mixtures of two liquids like water and oil, or solid with liquid mixtures, for example sand and water.



SIEVING

Sieving is a separation technique for heterogeneous mixtures when its components have different sizes.

It consists of using a sieve with small holes that allows the smallest particles to pass through and the biggest particles are in the sieve. Depending the types of particles to be separated, sieves with different types of holes are used.

This technique is used to separate mixtures of two solids of different sizes like gravel and sand.





MAGNETIZATION

Magnetization **the most** appropriate separation technique for heterogeneous mixtures when only **one** of its components can be **attracted** by a **magnet**.

You only have to move the magnet **over** the mixture and the magnetic components of it will stick to the magnet.

This technique is usually used to separate mixtures of solid components like **sawdust** with **iron filings**. In this case, the magnet attracts the iron filings.



FILTRATION

Filtration is the separation technique used when **one** of the components of the mixture is able to **pass through** a **filter** and the other does not.

It consists of **passing** the mixture **through** a filter of paper. The filter allows the liquid substance to pass and retains the solid.

This technique is used to separate mixtures of solid and liquid, like a mixture of **soil** and water.





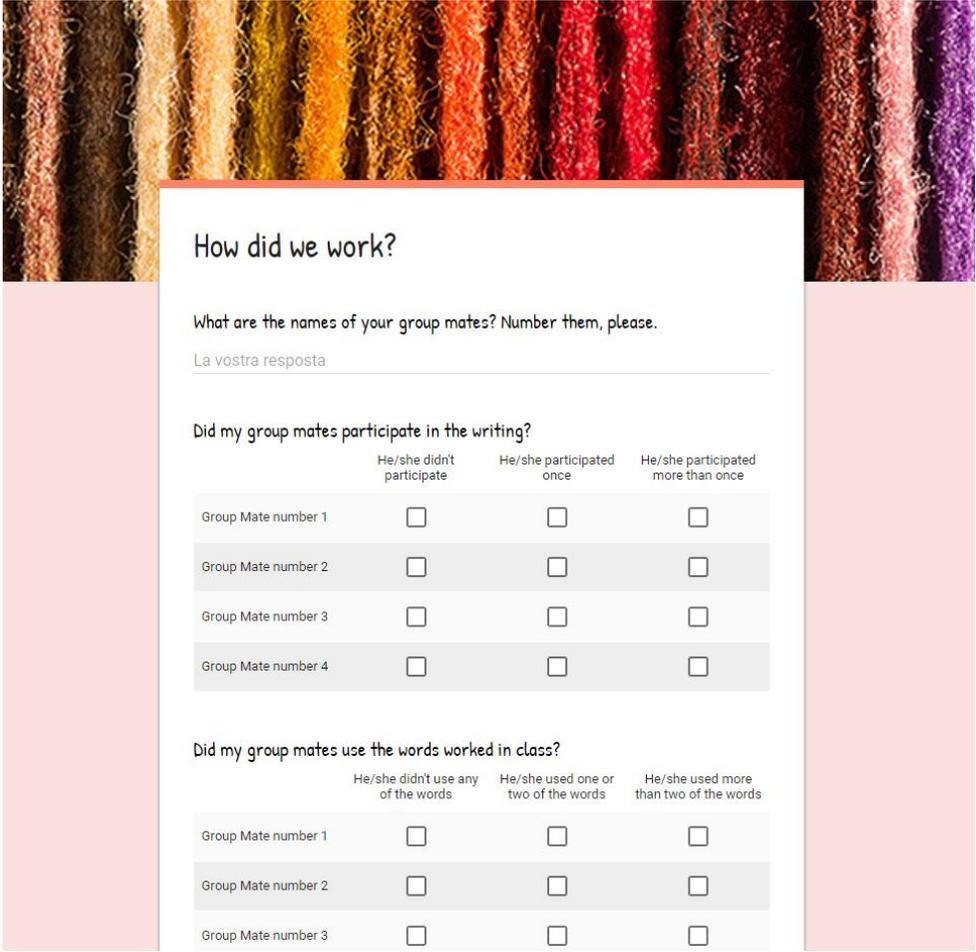
Name:

Methods to separate heterogeneous mixtures

- Ask your teammates questions to complete the grid:

	DECANTATION	MAGNETIZATION	FILTRATION	SIEVING
DIFFERENCE OF COMPONENTS				
PROCESS				
EXAMPLES OF MIXTURES				



	 <p>How did we work?</p> <p>What are the names of your group mates? Number them, please.</p> <p>La vostra resposta</p> <p>Did my group mates participate in the writing?</p> <table border="1"><thead><tr><th></th><th>He/she didn't participate</th><th>He/she participated once</th><th>He/she participated more than once</th></tr></thead><tbody><tr><td>Group Mate number 1</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>Group Mate number 2</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>Group Mate number 3</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>Group Mate number 4</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr></tbody></table> <p>Did my group mates use the words worked in class?</p> <table border="1"><thead><tr><th></th><th>He/she didn't use any of the words</th><th>He/she used one or two of the words</th><th>He/she used more than two of the words</th></tr></thead><tbody><tr><td>Group Mate number 1</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>Group Mate number 2</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>Group Mate number 3</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr></tbody></table>		He/she didn't participate	He/she participated once	He/she participated more than once	Group Mate number 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group Mate number 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group Mate number 3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group Mate number 4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		He/she didn't use any of the words	He/she used one or two of the words	He/she used more than two of the words	Group Mate number 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group Mate number 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group Mate number 3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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Activity 7.	With the help of their texts the students have to apply the techniques for separating heterogeneous mixtures. Every group has a previous template to fill with the materials that they need. When they finish the practice they	1 hour																																				



		<p>have to draw the process of the technique.</p> <p>Each of the groups will use all of the techniques using working stations. In each of the stations every group will complete the template.</p>	
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In terms of academic content, what are the students learning and what are they learning to do?	<p>In this lesson the students are learning about the different mixtures (homogeneous and heterogeneous). After that they will understand that everything we find in natural or artificial materials can be made up by different materials (heterogeneous mixture).</p> <p>In session two, and to continue with the unit they will learn about different techniques (decantation, magnetization, filtration and sieving) to separate heterogeneous mixtures.</p>	
In terms of language, what are the students practicing or learning to do?	<p>In session one, and in terms of language they will practise writing descriptive texts about the different types of mixture.</p> <p>In session two, they will read a scientific text and practise oral interaction to get information.</p>	
In what way is this lesson plan a good example of what we learnt in the GEP course session?	<p>This lesson includes: language support, dynamic strategies to make groups, visual support, two types of assessment, different ways of interaction and comprehensible input.</p>	
Other important information	<p><i>In sessions to come, the unit continues with the separation of homogenous mixtures.</i></p>	



ANNEXES (materials, handout, pictures... if not possible to include in the activity section.)		
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Self assessment checklist

Task 2 : Reading, writing in CLIL and Assessment	YES/NO
1. Support is provided to help students read and understand texts.	Yes
2. Before-, during- and after- reading activities are prepared.	Yes
3. The materials use visuals to support comprehension.	Yes



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4. The writing process takes place in joint collaboration with the teacher (modelling)	Yes
5. Support is provided to help students write (the students are provided with language patterns, language frames, vocabulary banks...)	Yes
6. The teacher uses different strategies to help students throughout the process of reading and writing	Yes
7. The teacher has previously predicted the language the students will need when carrying out the different tasks successfully and, therefore, is aware of the content-obligatory language .	Yes
8. At least the teacher uses 1 type of assessment (self-assessment, teacher assessment or co- assessment)	Yes
9. At least teacher used 1 type of designed assessment tool during the sessions (rubric, digital app, checklist, personal dossier...)	Yes