

# Universidad de Valladolid

Facultad de Educación y Trabajo Social

Trabajo de Fin de Grado

# **Didactic Unit**

"The Maddest Science"

Curso Académico 2021/2022
Presentado por Laura Ortega Ramos
Para optar al grado de

Educación Primaria

Por la Universidad de Valladolid

Tutelado por Ana Isabel Alario

	5ºA	
GENERAL OBJECTIVES	CONTENTS	ACTIVITIES
<ul> <li>To give visibility to female role models so that female students have figures to inspire them and feel they have the same possibilities to choose studies that, nowadays, are mostly accessed by men.</li> <li>Conjugate in the best possible way the learning of fundamental values for coexistence and work by creating situations that encourage it and, at the same time, work on the academic content in question. Without abandoning either of the two parts.</li> </ul>	- Important discoveries and inventions. Biographies of inventors and scientists	<ul> <li>Try everything song</li> <li>Diary</li> <li>Scape room</li> <li>Research work</li> <li>Expositions</li> <li>The Science's corners</li> <li>Kaboom</li> <li>Memory</li> <li>The great mural</li> <li>Interviews</li> <li>Gymkhana</li> <li>Science Fair</li> </ul>
EVALUATION CRITERIA	AIMS	DIVERSITY ATTENTION
Students Will be able to:  - To recognize inventions, researchers or scientists who have contributed to improving the quality of people's lives and have advanced humanity.	- Identify the topic	- all the adaptations that have been necessary so that all students could follow the class without problems and feel comfortable, have been carried out.

#### KEY COMPETENCES

- <u>Social and civic competence</u>: when working in groups we put into practice values such as respect, discipline, cooperation, and empathy. They see themselves in situations that simulate possible real-life environments, in which they will have to know how to manage in the future and, in this way, we are preparing them for it.
- Learning to learn:
- <u>Learning to learn</u>: At the end of each session, each one will independently elaborate a summary of what we are seeing each day, in this way, they learn to be responsible for their own notes and their work every day.
- -<u>Linguistic competence:</u> By using the foreign language, we develop communicative skills and abilities.
- <u>Digital competence</u>: At the beginning of the unit, students will be asked in groups to investigate about a content that the teacher will provide them, as well as the different aspects they have to look for and the sources where they can find the information, in this way the teacher ensures that they use safe pages for children and according to their age. These projects should be presented in the following session, so they can use digital resources for their respective presentations.
- Sense of initiative and entrepreneurial spirit: in most of the activities they will perform, they have a margin of free action to reinforce autonomous work and give rise to their own ideas. Also, as I explained earlier at the end of the session, they have some time to complete their daily notebook, which will depend on

#### **STANDARDS**

- knows and explains some of mankind's greatest discoveries and inventions
- Assesses and describes the influence of technological development on living and working conditions.
- Learn about and explain advances in science at home and in everyday life.

Session	Session 1 5ºA		
Time	Content	Aims	
60 min	<ul><li>Important discoveries and inventions.</li><li>Biographies of inventors and scientists</li></ul>	Students should be able to: - Classify and summarize the given information.	
	EVALUATION CRITERIA  Students will be able to: - Summarize the information provided	Activities  - Try everything song  - Scape room  - Diary	

Session	Session 2 5ºA		
Time	Content	Aims	
60 min	<ul> <li>Important discoveries and inventions.</li> <li>Biographies of inventors and scientists</li> </ul>	Students should be able to: - Share the information they have looked for - Discover new information about other scientists	
	EVALUATION CRITERIA  Students will be able to:  - Share data they have looked for  - clarifying and working with acquired information	Activities  - Try everything song  - Expositions  - The Science corners  - Diary	

Session 3		5ºA	
Time	Content	Aims	
60 min	<ul> <li>Important discoveries and inventions.</li> <li>Biographies of inventors and scientists</li> </ul>	Students should be able to: - Structure the knowledge - Detect the invention through gestures and mime	
	EVALUATION CRITERIA  Students will be able to:  - Structure the    knowledge and detect    the invention through    gestures and mime	Activities  - Try everything song  - Kaboom  - Mime game  - Diary	

Session 4 5ºA		
Time	Content	Aims
60 min	<ul> <li>Important discoveries and inventions.</li> <li>Biographies of inventors and scientists</li> </ul>	Students should be able to:  - Compose a big exposition with all the knowledge acquired - Contrast information with other classmates
	EVALUATION CRITERIA  Students will be able to:	Activities  - Try everything song  - The great mural  - Interviews  - Diary

Session	15	5ºA
Time	Content	Aims
60 min	<ul> <li>Important discoveries and inventions.</li> <li>Biographies of inventors and scientists</li> </ul>	Students should be able to: - Check what they have learnt about science
	EVALUATION CRITERIA	Activities
	Students will be able to:  - Be aware about what they know and reinforce what you don't quite remember	- Try everything song - Gymkhana - Diary

Session	n 6	5ºA	
Time	Content	Aims	
60 min	<ul> <li>Important discoveries and inventions.</li> <li>Biographies of inventors and scientists</li> </ul>	Students should be able to: - Design a model and a triptych of the invention they have made.	
	EVALUATION CRITERIA	Activities	
	Students will be able to:  - Express and share all knowledge they have learnt - Produce a model and a triptych	<ul> <li>Try everything song</li> <li>The science fair</li> <li>Diary</li> </ul>	

Activity/task: 1				Session: 1	
Title:	Type:			Timing:	
Try everything	Warm Up			5'	
Classroom manageme	ent:	Resource	es:		
• Whole class.	Digital blackboard				
		• Sc	ong´s sentenc	es	

• Identify the message of the song

### Linguistic Input:

Good morning students! How do you feel today?

I'm going to play you a very special song, first let's listen to it and then we'll comment on it.

(We listen to the song and then we start to share ideas about the message)

Do you know what the song is about? What is its message?

It wants to tell us that we are all capable of doing whatever we want, it doesn't matter if we don't succeed in the first attempt as we wanted, we must fight for our dreams.

I have in a little box some very nice and very important sentences that the song says, so let's dedicate a corner of the wall to put one of them every day, ok?

(The teacher takes one of the phrases and puts it in the corner)

So, every day that we enter the classroom, we will see them, and we will remind ourselves what we are worth, how important we are and that we should never give up.

Activity/task: 2			Session: 1
Title:	Type:		Timing:
Explanation of the research work			12′
Classroom manageme	ent:	Resources:	
• Whole class.		Not required	

• Collect different data about scientist

#### Linguistic *Input*:

I have the best news for you, we are going to work on a scientific program.

It's very famous, it's called "The maddest science"

We will have a point classifier.

In this sorter, there will be 25 envelopes, one per student. Each envelope has your name on it.

At my table I will always have a jar full of points. Every time you earn points in the activities we do, you must take them from the jar and put them in your envelopes.

The points are very important so you must keep them well. In the last program you will be able to buy things with these points, we will see that later.

This envelope will be placed on the back wall.

Before we start, let's see what activities we have planned for today:

First, you are going to work in groups of 5.

I'm going to show you a list of women scientists who created very important inventions. You will choose the one you like the most. What for?

We will be researchers for a day. You must search for information about these women in groups, for example: their biography, what they invented, curiosities, among others.

You will have to look for it at home, the pages that you can use are:

- https://eacnur.org/blog/mujeres-cientificas-tc\_alt45664n\_o\_pstn\_o\_pst/
- <a href="https://www.esquire.com/es/ciencia/a39365052/mujeres-cientificas-mas-importantes/">https://www.esquire.com/es/ciencia/a39365052/mujeres-cientificas-mas-importantes/</a>
- https://cognitaconecta.com/8-mujeres-cientificas-mas-importantes-en-la-ciencia/

Once you have the information, you can prepare an exhibition using the digital blackboard.

It will be the following Thursday when you will have to make a brief exposition of the scientist that you have looked for, to share it with your classmates.

do you have any doubts?

Activity/task: 3			Session: 1
Title:	Type:		Timing:
Scape Room	Reinforceme	ent	38′
Classroom manageme	ent:	Resources:	
<ul> <li>Groups of 5 intera</li> </ul>	acting with the	<ul> <li>Color cards</li> </ul>	

• Identify the topic.

whole class

#### Linguistic *Input*:

Well, now you have another mission. Are you ready? Come on!

You have scattered information from different scientists all over the classroom. We have Amelia Earhart, Rosalind Franklin, Sally Ride, Elizabeth Blackwell, and Donna Strickland.

Once from each group will be a scientist, and they will be at one of the tables that I have set up at the front of the class.

The spokesperson for your group will represent the scientist you have been assigned to represent.

Each spokesperson will have random clues from all the scientists, you must ask questions to guess if they have your scientist's clues, and, once you have all the clues you must give them to your group's spokesperson to check that the clues are correct.

Pay attention because you will see that there are tracks that have the same color, that's because they belong to the same scientist.

Let me give you an example:

If you find a card that says, she was born in 1845. You must go to the spokespersons of each group who will represent the different scientists and ask if they were born on that date, if not, you must ask another one until you find the correct one.

Once each group has all the clues to their scientist, they should make a brief report on it.

Afterwards we will have a science Olympics where we will vote for the best scientist, so you must make a good report.

once we vote for the best scientist, we all get 2 points. But the winners will get 4 points.

Have you understood everything?

Are there any doubts?

(Once the game is finished) Have you entered all of your points in the points classifier?

Activity/task: 4		Session: 1	
Title:	Type:		Timing:
Diary	Wrap Up		5'
Classroom management:		Resources:	
<ul> <li>Individually</li> </ul>		<ul> <li>Notebook</li> </ul>	

• Summarize the given information

#### Linguistic *Input*:

Finally, we will take our notebooks and write down today's learning to create a diary. It is a little bit of autonomous and personal work.

In this way, at the end you will have all the information we have worked on summarized.

Activity/task: 1		Session: 2	
Title:	Type:		Timing:
Try everything	Warm Up		5'
Classroom management:		Resources:	
• Whole class.		<ul> <li>Digital blackboard</li> </ul>	
A		<ul> <li>Song's sentences</li> </ul>	

Aims: Students should be able to...

• Identify the message of the song

# Linguistic Input:

Good morning, guys, are you ready?

Let's start with our song that you already know.

After listening to it we will paste one of the phrases from the box on the board.

(When we finish, we will start with the expositions)

Activity/task: 2			Session: 2
Title:	Type:		Timing:
Exposition	Reinforceme	ent	20′
Classroom management:		<b>Resources:</b>	
<ul> <li>Groups of 5 interacting with the whole class</li> </ul>		Digital blackb	oard

• Share the data they have looked for

# Linguistic *Input*:

Okay, let's start with your presentations.

I'm sure they're going to be great; we're looking forward to hearing you, come on guys, are you ready?

By the way guys, those of us who are listening must be very attentive, because the information from the other groups is very important to be able to do an activity afterwards.

(Once they have finished their presentations, the teacher tells them what the next activity will be about).

Activity/task: 3		Session: 2		
Title:	Type:		Timing:	
The science corners	Reinforcement		30′	
Classroom management:		Resources:		
Groups of 5 interacting with the whole class			s have brought to make (photos, cards, etc.).	
Aims: Students should be able to				

Discover new information about other scientists

Now that we have listened to all the presentations and we know the rest of the scientists better, we are going to play ...... Science Corners!

Each group will have its own corner in which they will put some data of the information they have exposed before, you can also use pictures, whatever you want.

All the groups have to go through each corner, not all the tests are the same, in some you will find a Pelmanism, how to play? it is very simple, you will find cards, in some you will find the name of the scientist and in others her photo, you have to try to get the card with the name and the respective photo at the same time.

The game ends once you have matched each photo with its respective name. If you manage to finish the game you will get 2 points, if you do it in less than 1 minute and 30 seconds, you will get 4 points.

Another game that you can find is the traffic light. It is a game in which every time you are asked a question, if you correctly answer the traffic light will turn green. If you fail, it will turn red. For every green you get, you will get one point, and if you get less than three red lights in total, you will get 2 more points.

The last game will consist of a broken telephone, several sentences will be said about the biography or inventions of a scientist and the members of the group have to get the sentence to the last partner as complete as possible.

Activity/task: 4		Session: 2	
Title:	Type:		Timing:
Diary	Wrap Up		5'
Classroom management:		Resources:	
<ul> <li>Individually</li> </ul>		<ul> <li>Notebook</li> </ul>	

**Aims:** Students should be able to...

• Summarize the given information

#### Linguistic *Input*:

Activity/task: 1		Session: 3
Title:	Type:	Timing:
Try everything	Warm Up	5'

# **Classroom management:**

#### **Resources:**

• Whole class.

- Digital blackboard
- Song's sentences

**Aims:** Students should be able to...

• Identify the message of the song

# Linguistic Input:

Good morning my favorite scientists, how are you today?

Well, what's next? It's time to...

(students) have fun with Try everything!

That's it, here we go!

(After having listened to the song)

Okay, let's put our third phrase of the song in our corner.

(We read the phrase and make some comments)

• Structure the knowledge

Activity/task: 2			Session: 3
Title:	Type:		Timing:
Kaboom	Reinforcement		30′
Classroom management:		Resources:	
• In the first 20 questions they		Digital blackboard	
would work individually.		Kaboom game	(sticks)
• In the last 5 in groups of 5			
Aims: Students should be able to			

Let's start with the third program of the maddest science. Do you want to know what we are going to do today?

Let me explain, first we will play Kaboom, do you know how to play? (students) Yes teacher!

Great, but just in case someone doesn't remember, we will explain it together.

I am going to put on the digital board a series of questions about everything we have seen about our beloved scientists. Inside a box we will have some sticks with numbers, there are only five sticks without numbers, in this case, they will have a circle.

I am going to say a random number (it will be your numbers from the list) and the chosen one will come to the board and take a stick with his eyes closed. If he gets a number, he will have to answer the question that contains that number and if he answers correctly, he will win a point and will keep the stick. On the other hand, if he gets a stick with a circle, he will be "kaboom", which means that he will not win any point.

We will ask 20 individual questions and 5 group questions. Everyone will be able to participate so it will be wonderful.

Something very important that you must do is to keep each point that you get, that is, each stick in the little bags that I have given you with your name.

When we finish the Kaboom, give me the bags, ok?

(Once the Kaboom is over, they take their points and put them in their respective envelopes).

Activity/task: 3			Session: 3
Title:	Type:		Timing:
Mime game	Reinforcement		20′
Classroom management:		Resources:	
• The Whole class		Not required	

**Aims:** Students should be able to...

• Detect the invention through gestures and mime

We continue with the program guys.

Now we have... who tells me what do you think we're going to do next?

I'll give you a hint, you can't talk.

(students) Let's play mime!!!

That's it, you got it right

In groups you are going to choose an invention and you will have to represent it to the others without speaking, getting other groups to guess it.

You are the best scientists, so you are going to do it great.

(Once the miming game is over, we continue with our wrap up)

Activity/task: 4		Session: 3	
Title:	Type:		Timing:
Diary	Wrap Up		5'
Classroom management:		Resources:	
<ul> <li>Individually</li> </ul>		<ul> <li>Notebook</li> </ul>	

**Aims:** Students should be able to...

• Summarize the given information

#### Linguistic *Input*:

<u>Activity/task</u> : 1				Session: 4
Title:	Type:			Timing:
Try everything	Warm Up			5'
Classroom management:		Resour	ces:	
• Whole class.			<ul> <li>Digital blackboard</li> </ul>	
A* C( 1 ( 1 11	Song's sentence		es	

• Identify the message of the song

# Linguistic Input:

Good morning my favorite scientists, how are you today?

Well, what's next? It's time to...

(students) have fun with Try everything!

That's it, here we go!

(After having listened to the song)

Okay, let's put our fourth phrase of the song in our corner.

(We read the phrase and make some comments)

Activity/task: 2		Session: 4		
Title:	Type:		Timing:	
The great mural	Reinforcement		´20´	
Classroom management:		Resources:		
Whole class interacting with		<ul> <li>a large exhibition panel</li> </ul>		
other classes		Data used in class to post on the mural		
Aims: Students should be able to				
<ul> <li>Compose a big exposition with all the knowledge acquired</li> </ul>				

Let's start with the next program of the maddest science. Do you want to know what we are going to do today?

today's program is called "The great mural".

What we are going to do is to expose everything we have worked on about our great scientists in a mural, so that the whole school can see it, so we share our learning.

The students in the other classes have been researching women in art, education, music, etc.

They will also display their information, that's why it is called the big mural.

We will do it in the school yard, in a corner that we will call: "The corner of the big mural".

The banners and poster boards will be decorated in the plastic arts class.

(The students will spend some time preparing the mural in the courtyard).

Activity/task: 3			Session: 4	
Title:	Type:		Timing:	
Interviews	Reinforcement		′30′	
Classroom management:		Resources:		
Whole class interacting with other classes		a large exhibition panel		
		<ul> <li>Data used in class to post on the mural</li> </ul>		

Aims: Students should be able to...

• Contrast information with other classmates

#### Linguistic *Input*:

Now, what we are going to do are interviews.

I tell you, we are going to prepare a series of questions, we are 5 groups of 5 people, so each one will be assigned a question.

Each question will have a color, the person in charge of each question has to wear a sticker of the color of his question, so that the students of the other classes, know who they have to ask each question.

These are questions that we have seen in class, so you are going to do great!

The students from the other classes will do the same with their questions, so you can ask them whatever you want.

It's going to be a super nice experience because you are going to teach each other so many new things.

(Once the interviews are over) You all have 3 points, you have worked phenomenally hard and I am sure you have learned many new and interesting things that you didn't know.

Did you enjoy working with your classmates from other classes?

(students) Yes, it was great!

Well, now we are going to go to class, we will leave this mural for everyone who wants to see it.

(In class) Put your points in the dot sorter, be careful not to lose them.

Activity/task: 4		Session: 4	
Title:	Type:		Timing:
Diary	Wrap Up		5'
Classroom management:		Resources:	
<ul> <li>Individually</li> </ul>		Notebook	

**Aims:** Students should be able to...

• Summarize the given information

#### Linguistic *Input*:

Activity/task: 1		Session: 5	
Title:	Type:		Timing:
Try everything	Warm Up		5'
Classroom management:		Resources:	
• Whole class.		<ul> <li>Digital blackboard</li> </ul>	
		• Song's sentence	es
Aims: Students should be able to			
<ul> <li>Identify the message of the song</li> </ul>			

Good morning my favorite scientists, how are you today?

Well, what's next? It's time to...

(students) have fun with Try everything!

That's it, here we go!

(After having listened to the song)

Okay, let's put our fifth phrase of the song in our corner.

(We read the phrase and make some comments)

Activity/task: 2		2	Sessio	on: 5
Title:	Type:		Timing:	
Gymkhana	Reinforcement		-	Gymkhana: 40 min´
			-	review of points: 10′
Classroom manageme	ent:	<b>Resources:</b>		
• Groups of 5		<ul><li>Paper</li></ul>		
		<ul><li>Pencil</li></ul>		
		• String		
		<ul> <li>Glasses</li> </ul>		
		<ul> <li>Spoons</li> </ul>		
		<ul> <li>Bandanna</li> </ul>		
		• Ball		
		• Cards		
Aims: Students should	be able to			
Check what they have learnt about science				

Let's start with the next program of the maddest science. Do you want to know what we are going to do today?

In today's program we must complete a gymkhana full of scientific missions.

I will give you some cards with the order that each group must follow, all the groups will be doing missions all the time that the gymkhana lasts, so that you do not get too many groups together in the same test and must wait a long time, it is important that you follow the order of the cards, ok? There will be tests in which there will be a person in charge of the test, who will explain what each one consists of.

You will have a scientific meter, what does that mean?

Very simple, once you complete the mission, if you have done it correctly, it will put a green sticker and, if you have failed the mission, it will put a yellow sticker.

There are 5 missions, and you all have to pass them all.

The most important thing is that you work as a group, that you help each other and do your best. I always tell you the same thing, you are the best scientists, you are going to do great.

Any problem or doubt you have; I am here to help you.

At the end of the gymkhana, the points will be obtained as follows:

- 5 missions passed: 10 points

- 4 missions passed: 8 points

3 missions passed: 6 points

- 2 missions completed: 4 points

- 1 mission passed: 2 points

(After the gymkhana) Come on guys, it's time for the final count.

Take all the envelopes from the point sorter.

Each of you at your desk will count the points you have obtained.

It is very important that you count your points well, do you know why?

Because the points will serve you as money, be careful.

Next week's program will be called "scientists for a day".

You have to create your own invention, you can be inspired by the scientists we have met during the programs, as well as by their discoveries. You can bring a model that simulates the invention you have created. You must also make a triptych in which you expose the usefulness of the invention, curiosities, who or what inspired you, among other data.

You will work in the groups that we have formed during all the programs, okay?

What you have to do is to try to sell it, the first one who manages to sell his invention will win.

(students) Teacher, what can we buy with?

Good question, the money will be the points that you have been getting during the programs of "The maddest science".

Then the inventions will cost the points you decide.

Any questions?

Is everything clear?

Activity/task: 3		Session: 5	
Title:	Type:		Timing:
Diary	Wrap Up		5'
Classroom management:		Resources:	-
• Individually		<ul> <li>Notebook</li> </ul>	

**Aims:** Students should be able to...

• Summarize the given information

# Linguistic Input:

Activity/task: 1		Session: 6	
Title:	Type:		Timing:
Try everything	Warm Up		5'
Classroom management:		Resources:	
• Whole class.		Digital blackboard	
		• Song's sentence	es
Aims: Students should be able to			
<ul> <li>Identify the message of the song</li> </ul>			

Good morning my favorite scientists, how are you today?

Well, what's next? It's time to...

(students) have fun with Try everything!

That's it, here we go!

(After having listened to the song)

Okay, let's put our sixth phrase of the song in our corner.

(We read the phrase and make some comments)

Activity/task: 2		Session: 6	
Title:	Type:		Timing:
The science fair	Reinforcement		50′
Classroom management:		<b>Resources:</b>	
<ul> <li>Groups of 5 interacting with the Whole class</li> </ul>		• Models	
Whole class		<ul><li>triptych</li></ul>	

Aims: Students should be able to...

• Design a model and a triptych of the invention they have made.

#### Linguistic *Input*:

Let's start with the final program of the maddest science. Do you want to know what we are going to do today?

Well guys, today is the big day.

We are going to set up our science fair with all the inventions that each group has made.

We will do it in the courtyard, so everyone who wants to visit our fair and ask questions can do it.

(We all go down to the playground together to set up the fair.)

The fair opens its doors in 3, 2, 1.... The fair is now open!

(Purchases and sales are made, once it is over)

Well guys, now it's time to hand out the diplomas.

You will all receive a medal and the three groups that have sold their inventions first will receive diplomas.

(The teacher has previously set up a podium)

The group that has sold its invention in the shortest time gets the diploma of... Great scientist!

The second group will get the diploma of .... Top scientist!

The third group... The most original scientist!

Activity/task: 3		Session: 6	
Title:	Туре:		Timing:
Sharing our feelings	Wrap Up		5'
Classroom management:		Resources:	
Whole class		Not required	

Aims: Students should be able to...

• Share our thoughts and feelings

# Linguistic Input:

Finally, we will all sit in a circle on the lawn and share what we liked most about the programs, what things we would change, how we felt, etc.