



# **TRABAJO DE FIN DE GRADO**

## **Doble grado en Educación Primaria y Educación Infantil**

Programación didáctica anual de  
Aprendizaje Integrado de Contenido y  
Lengua (AICLE)

4º de Educación Primaria

***Science has always had women***

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Last but not least, I want to say thank you to Atlético de Madrid for remembering me to never stop believing and for showing me that with heart and courage, everything is possible.

## **Declaration of the Use of Artificial Intelligence**

The use of Artificial Intelligence (AI) tools in this Final Degree Project has been carried out in accordance with the educational objectives of the CLIL subject taken in the fourth year of the Degree in Early Childhood and Primary Education. Within this subject, the professional and pedagogical use of AI forms part of the development of student teachers' digital, linguistic, and methodological competences.

Specifically, AI tools have been used as support for the analysis of the linguistic demands of curricular content in a CLIL context, as well as for the design and refinement of scaffolding strategies aimed at facilitating students' reception, transformation, and production of knowledge in the foreign language. This includes support in identifying key language functions, vocabulary, and discourse features, and in developing strategies that promote meaningful content learning and language development.

At all times, AI has been used as an assistive resource to support reflection and decision-making, while the final pedagogical choices, interpretations, and designs presented in this project are the result of the author's own academic work and professional judgment.

## ABSTRACT

The annual syllabus “*Science has always had women*” is designed as a proposal for the 4th grade of Primary Education, integrated into the bilingual program of the Community of Madrid. Its aim is to offer students a learning experience in which English and natural sciences are intertwined through the CLIL approach. Thus, this Final Degree Project aims to use both English as a foreign language and English as the language of instruction.

The project is structured around the central idea that science has also been built by women. Through 15 teaching units, each dedicated to a relevant woman scientist, students discover through challenges how these women changed our way of seeing the world. This journey allows students to approach science from a human and relatable perspective, facilitating accessibility within the framework of Universal Design for Learning (UDL). Each unit starts with reference to a woman scientist that introduces the different natural science content from the curriculum. In this way, the biographies become bridges to scientific learning, allowing the content to be presented in a contextualized manner. In particular, challenge 10 has been fully developed, including the tasks and materials, to show how this proposal can be implemented at school.

The project also incorporates an important social and emotional dimension. Giving visibility to female role models in science helps to build a more equal and fair school culture. Presenting students with real examples of women scientists challenges stereotypes and broadens the possibilities for identification, especially for girls. In this way, this syllabus not only conveys scientific knowledge but also fosters values and promotes attitudes of respect and equality.

**Keywords:** CLIL, Natural Science, Primary Education, Gender Equality.

## RESUMEN

La programación didáctica “*Science has always had women*” se plantea como una propuesta anual para el curso de 4º de Educación Primaria, integrada en el programa bilingüe de la Comunidad de Madrid. Su finalidad es ofrecer al alumnado una experiencia de aprendizaje en la que el inglés y las ciencias naturales se entrelazan mediante un enfoque CLIL. Este Trabajo de Fin de Grado tiene como objetivo utilizar el inglés como lengua extranjera y como medio de instrucción.

El proyecto se articula en torno a la idea central de que la ciencia también ha sido construida por mujeres. A través de 15 unidades didácticas llamadas *challenges*, cada una dedicada a una mujer relevante, el alumnado descubre cómo estas mujeres cambiaron nuestra forma de ver el mundo. Este recorrido permite a los alumnos acercarse a la ciencia desde una perspectiva humana y cercana facilitando la accesibilidad desde el marco del Diseño Universal para el Aprendizaje (DUA). Cada unidad parte de la figura de una científica para introducir un contenido científico adaptado a la etapa. De esta manera, las biografías se convierten en puentes hacia el aprendizaje científico, permitiendo que los contenidos se presenten de una manera contextualizada. En particular, el *challenge* 10 ha sido desarrollado incluyendo tareas y materiales, para mostrar como esta propuesta puede ser implementada en colegios.

El proyecto también incorpora una dimensión social y emocional importante. Dar visibilidad a referentes femeninos en la ciencia contribuye a formar una cultura escolar más igualitaria y justa. El hecho de presentar al alumnado modelos reales de mujeres científicas rompe los estereotipos ampliando las posibilidades de identificación, especialmente entre las niñas. De este modo, la programación no solo transmite conocimientos científicos, sino que educa en valores y promueve actitudes de respeto y equidad.

**Palabras clave:** CLIL, Ciencias Naturales, Educación Primaria, Igualdad de género.

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## 1. INTRODUCTION

### 1.1 Justification

The increasing implementation of bilingual education in the Community of Madrid makes it necessary to adequate teacher training in Content and Language Integrated Learning (CLIL). Currently, more than 50% of schools in the Community of Madrid provide bilingual education through the Bilingual Schools Program of the Community of Madrid, where subjects such as Natural Science are taught in English.

The present didactic proposal, based on the design of fifteen didactic units focused on highlighting relevant women in the field of Natural Science is based in the current regulatory framework established by Organic Law 2/2006 on education, modified by Organic Law 3/2020 (LOMLOE), Royal Decree 157/2022, which establishes the organization and minimum requirements for Primary Education, and Decree 61/2022, which regulates the Primary Education curriculum in the corresponding autonomous community.

From a personal point of view, the reason that led me to introduce myself in this adventure of doing a CLIL TFG is because in these past years, during my student teaching experience, I have realized that some women are passionate about science, but they end up choosing some other thing to study just because they do not have that many women references in science. In that way, if I can put my bit to start changing this aspect, I will do it.

Moreover, I have a little sister, so I am always looking for what is best for her. In this way, I empathize with those girls as if they were my sister and I would love for them to be free to choose what they want and to break the stereotype that there are only men in science.

Choosing to use the CLIL approach with this topic was something that I was afraid of because of its difficulty, but it is something that will be worth it at the end of it. As I have loved English since I can remember, CLIL was a challenge that I wanted to accept. I also know the importance of bilingualism in education, so I found the perfect opportunity for me to deepen in all of its advantages.

Furthermore, as I imagine myself as an English teacher and CLIL approach is something that I am really looking for so I think that for my future, this is the best decision I could have made.

### 1.2 Objectives

This proposal is designed in accordance with both general and personal objectives.

#### *1.2.1 General objectives*

- a) Present a didactic proposal consisting of fifteen didactic units for the subject of Natural Science in 4<sup>o</sup> grade of Primary Education focusing on the contributions of the women to science.
- b) To promote meaningful and competence-based learning, based on observation and experimentation in line with the methodological principles established by the LOMLOE.

- c) To integrate cross-curricular values such as environmental awareness, medical science, or astronomy within Natural Science’s curriculum.
- d) To contribute to the development of critical thinking and scientific curiosity.
- e) To integrate CLIL methodologies by teaching Natural Science content through English, promoting both scientific and foreign language competences.
- f) To reduce the gender gap in Natural Science jobs.

*1.2.2 Personal objectives*

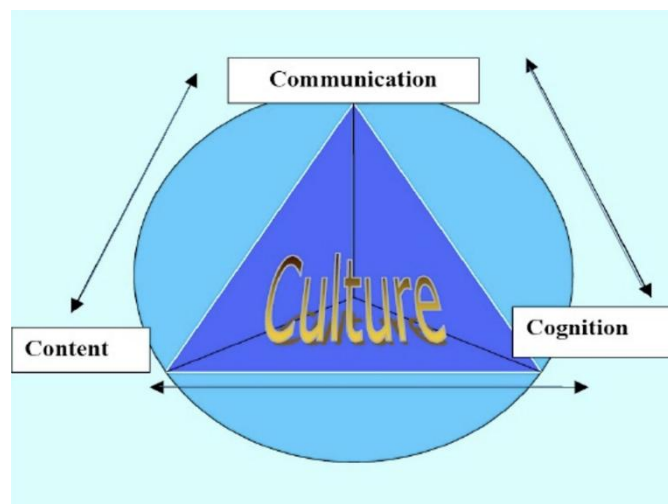
- g) To promote teamwork and collaboration through group methodologies to help students grow both in social and cognitive skills.
- h) To boost students’ motivation for science, especially for those women who feel that science is not their place.
- i) To improve my capacity to create motivating and meaningful learning experiences.
- j) To increase my awareness of the importance of role models in education.

**2. THEORETICAL FOUNDATION**

**2.1 CLIL approach**

Content and Language Integrated Learning (CLIL) is an approach in which curricular content is taught through a foreign language, English in this case. Its aim is to promote both subject knowledge and language development. Instead of teaching language as a separate subject, CLIL allows students to learn and use the foreign language naturally while working with meaningful and real content.

According to Coyle, Hood and Marsh (2010), CLIL is based on the 4 C’s framework, which integrates four elements: content, communication, culture and cognition.



**Figure 1:** The 4 C’s framework.

Coyle (1999, 2005)

- Content: content is not just about gaining knowledge and skills; it also involves learners constructing their own understanding and developing abilities in a personal way Meyer, Oliver (2010).
- Communication: learners need language that fits in their learning context. This language must be clear and accessible. Interaction within the learning environment is essential Myer, Oliver (2010).
- Culture: intercultural awareness is a key element in CLIL Meyer, Oliver (2010).
- Cognition: content is related to learning and thinking processes. Cognition focuses on both Lower Order Thinking Skills (LOTS) and Higher Order Thinking Skills (HOTS)

Furthermore, the Basic Interpersonal Communicative Skills (BICS) are the skills that we use in social interactions and casual conversations. On the other hand, the Cognitive Academic Language Proficiency (CALP) refers to those skills that need to be understood for academic language Cummins (1979).

Teachers play an essential role in CLIL in order to create a creative, communicative and supportive environment.

## **2.2 Roles of student and teacher in CLIL**

According to Dale and Tanner (2012), in a CLIL classroom, teachers rather than teaching a subject in another language in the same way as if it was a monolingual class, it is suggested to teach the subject through another language. Because of this, teacher will act more as a facilitator guiding students through the content.

At the same time, students take a more active role when it comes to learning in CLIL. As the classes are more collaborative, students will develop language skills through interacting with others. Furthermore, students will boost their communicative skills. Those skills will be evaluated with the cooperative groups and oral presentations.

## **2.3 Natural Science**

According to Decree 61/2022, the main goal of the area of Natural Science in Primary education is to help students develop respectful attitudes towards the world they live in. The subject promotes the understanding of global challenges and encourages students to get skills and attitudes related to the environmental care.

The curriculum promotes the development of a scientific based on inquiry, where students formulate hypothesis and search for explanations about the natural world. In this way, students will understand in a better way their environment and it will make them a more responsible citizens capable of making decisions in different situations.

The curriculum is organized around the progressive development of specific competences, each associated with an evaluation criteria and content for each cycle. Regarding the content, the curriculum is structured into two main blocks: scientific culture and technology and digitalization. The first one focuses on scientific inquiry such as health, human body and living beings while the second one focuses on basic digital skills and introduces students to computational thinking.

## 2.4 Natural Science CLIL

In the context of Natural Science, CLIL approach offers significant benefits for teaching Natural Science. By learning scientific content through a foreign language, students develop both subject knowledge and linguistic competence. CLIL also provides meaningful learning as students use language as a tool to explore concepts. Moreover, this methodology encourages the development of critical thinking and communication skills.

What is more is that integrating CLIL into the teaching of Natural Science contributes to a more dynamic and interactive learning environment. In this way, students participate in a more active way while improving their language skills and developing a more meaningful understanding of the natural world.

## 2.5 The presence of women in science

Promoting the visibility of women in science is an important step towards achieving gender equality in education. Historically, women have been underrated in terms of science. Because of this, schools play a key role in presenting diverse scientific role models that inspire all students and challenge traditional perceptions about who can become a scientist.

In the context of Primary Education, integrating the contributions of women scientists into the Natural Science helps students develop a more inclusive understanding of scientific knowledge. In the second cycle of Primary Education, where students begin to explore ecosystems, living beings and the environment, learning about female scientists allows students to link those discoveries with female scientists.

Moreover, including the achievements of women in science contributes to the promotion of gender equality and equal opportunities, encouraging both girls and boys to develop interest in science.

This perspective is also supported by current Spanish educational framework established by the Royal Decree 157/2022, which emphasizes the importance of promoting equality between men and women and eliminating gender stereotypes in the curriculum.

# 3. ANNUAL SYLLABUS

## 3.1 Contextualization

### 3.1.1 School context

This syllabus has been designed for *Colegio Villaeuropa*, a bilingual semiprivate school located in Móstoles, in the Community of Madrid, offering education from early childhood through primary and secondary education. The school has two groups per grade level. The school has some projects such as the bilingual one.

Therefore, English instruction is integrated into more than one third of the school day through CLIL. Moreover, there are some classes which are facilitated by two qualified teachers per classroom, one of whom is a native English speaker. This organization promotes language immersion and communicative competence in real academic context.

In primary education, the curriculum is designed to encourage students' comprehensive development while also attending to individual learning needs and diversity. The school also encourages systematic assessment of students' English language levels as it is an authorized center for ESOL examinations.

The school has various facilities in which school activities can be done. It has a huge indoor gym where lots of different activities take place such as sports competitions, music events or external activities like conferences. Outside, the school has two soccer fields and four basketball courts. The school also has a library, computer rooms, a nursing service and a laboratory. It also has a nursery inside the school for those students who feel sick.

### *3.1.2 Classroom context*

The didactic proposal is designed for a 4<sup>th</sup> grade Primary Education classroom consisting of 28 students with diverse learning needs. The group is heterogenous, which requires the implementation of inclusive strategies to ensure equal learning and opportunities for every student. There is one student with visual difficulties, one with high cognitive abilities and another one with dyslexia.

The classroom is organized in a flexible way in order to support different teaching and learning situations. Students are placed in small cooperative groups, which encourages interaction and communication between students. The classroom space allows for the possibility of some changes in seating arrangements depending on the type of activity being carried out.

A science corner is available for experiments and visual resources related to the Natural Science curriculum. In addition, walls and boards are displayed as visual supports, such as key vocabulary in English with posters and students' projects to help reinforce both content and language learning. Digital resources are also included in the classroom. It is equipped with a digital whiteboard, used to present visual content and interactive activities.

Attention to diversity is addressed using adapted activities which includes different learning paces and interests. Visual support with materials and cooperative learning strategies are incorporated to facilitate understanding and engagement. The classroom environment promotes respect, collaboration and positive interactions among students.

What we can highlight about the characteristic of the students is that most of the students began their academic life in this school, when they were three years old. That is why teachers know most of the students and there are strong relationships between the students and the teachers.

## **3.2 Objectives**

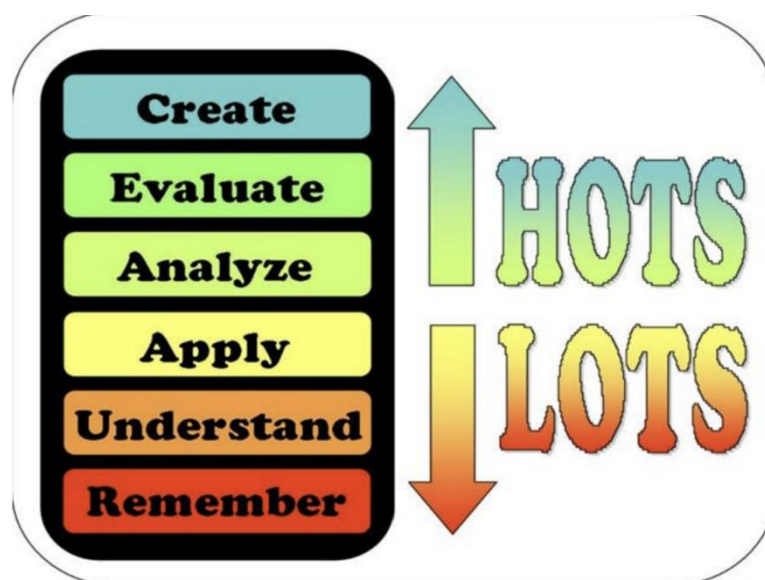
### *3.1.1 Stage objectives*

Decree 61/2022, based on the Royal Decree 157/2022, sets out the stage objectives. Students are expected to achieve by the end of Primary Education. These stage objectives of Primary Education are in **Annex 1**.

### 3.2.2 Syllabus learning goals

Operational objectives have been designed to ensure that students progress in a coherent, measurable and competency-based way, in accordance with the principles established in Royal Decree 157/2022. This regulation emphasizes the development of key competences, the integration of learning situations connected to real contexts, and the promotion of inclusive, meaningful learning. Therefore, the operational objectives in this unit are written in a clear and simple way so they can be easily seen, evaluated and connected to the competences and criteria of the stage. This helps ensure that all students can access the activities, take part in them and make progress in their learning.

Furthermore, it is crucial to develop lower order thinking skills (LOTS) such as remembering, understanding and applying. Furthermore, it is also essential to develop and higher-order thinking skills (HOTS) such as analyzing, evaluating and creating (Bloom, 1956).



**Figure 2.** Classification of cognitive skills

**Source:** <https://category5tcinquirylearning.files.wordpress.com/>

### 3.3 Contents

The curriculum is regulated by the Royal Decree 157/2022, which establishes the organization and minimum teachings of Primary Education in Spain. This decree defines the basic curricular elements, including the key competences, specific competences and evaluation criteria. According to this regulation, Primary Education is organized into three cycles: the first cycle (1st and 2nd grade), the second cycle (3rd and 4th grade), and the third cycle (5th and 6th grade).

The national curriculum is adapted to the specific educational context of the region through the Decree 61/2022, which regulates the curriculum of Primary Education in the Community of Madrid. Within this framework, the present didactic proposal focuses on

the Natural Science area in the second cycle of Primary Education. The selected content is related to different thematic areas of Natural Sciences, such as living beings, ecosystems, matter, energy, health and environmental protection.

Finally, a detailed distribution of the content for the cycle, organized through the fifteen learning situations proposed in this project, is presented in **Annex 2**.

### **3.4 Competences**

#### *3.4.1 Key competences*

Firstly, the key competences are established at a national level in the Royal Decree 157/2022, where the descriptors are defined. These competences represent the essential learning that all students must acquire during compulsory education in order to successfully face personal, academic and social challenges. The Royal Decree and the Decree include the following key competences: linguistic competence, multilingual competence, mathematical competence and competence in science, technology and engineering (STEM), digital competence, personal, social and learning to learn competence, civic competence, entrepreneurship competence, and cultural awareness and expression competence.

With this syllabus, these competences will be done through three lesson plans on which students will develop many competences doing experiments, oral presentation, cooperative work and organized activities.

#### *3.4.2 Specific competences and assessment criteria*

Secondly, the specific competences are defined at the regional level in the Decree 61/2022, which regulates the curriculum of Primary Education in the Community of Madrid. These competences are directly linked to each curricular area and are connected to the corresponding evaluation criteria and knowledge for each educational cycle. In the area of Natural Sciences, the specific competences aim to help students understand the natural world, develop scientific thinking, and apply inquiry processes to explore and explain natural phenomena.

Finally, a detailed distribution of the specific competences and their assessment criteria addressed throughout the cycle, organized according to the fifteen learning situations proposed in this project, is presented in **Annex 3**

### **3.5 Methodology**

My didactic unit will use different methodologies. The main methodology that I will use is cooperative learning. In this way, students will be able to work in small groups to reach a common goal (Johnson and Johnson, 1994). By working in groups, students will be able to improve their communication as well as their critical thinking. Furthermore, students will boost their academic performance. This methodology allows students to help the ones that need help and to learn from each other.

Another methodology used in this syllabus is thinking-based learning (TBL), as the aim is to allow students to think carefully and creatively more than just memorizing something. As argued by Perkins (2008), thinking was often treated as a “black box”.

Teachers see the answers, but not the reasoning behind them. He insisted on making thinking something visible.

Finally, project-based learning (PBL) will also play an important role. This methodology allows students to learn by designing and completing a meaningful project Chillón (2013). In this syllabus, every learning situation has its own project so the students can take advantage of the many benefits of this methodology. These benefits go from deeper understanding because students apply their knowledge to meaningful tasks to boosting students' creativity and communication.

### **3.6 Evaluation**

Evaluation plays a key role in the teaching-learning process, especially in a competency-based approach and in methodologies such as CLIL. It allows teachers to observe students' progress, identify difficulties and adjust their instruction according to the student's needs. Assessment is understood as part of the teaching process, providing continuous information to improve teaching as well as learning.

In this didactic unit, evaluation is conceived as a continuous, formative and summative process, with the objective of providing meaningful feedback to support students' development in language and competences.

For the assessment of the scientific content, the reference framework is the specific competences and evaluation criteria established in Decree 61/2022. Regarding language assessment, this didactic unit follows the principles of the CEFR (2018), ensuring that linguistic demands are appropriate to the student's level (A2).

A variety of assessment tools are used to ensure an integrated evaluation of content, language and learning process, in line with CLIL principles.

Formative assessment: it is implemented throughout the entire learning process in order to monitor students' development and offer continuous guidance. It includes:

- Assessment for interaction: oral questioning, guided discussions and cooperative tasks are used to observe how students participate, share ideas and use language in meaningful contexts.
- Assessment for active observation: teacher uses observation checklists to follow students' performance during group work and task completion, focusing on participation and the use of vocabulary and understanding key concepts.
- Peer assessment: students provide simple feedback to their classmates during group tasks, helping them reflect on their work and improve their learning.

Summative assessment: it is used at the end of the unit to evaluate students' achievement of the learning objectives.

- Final product: assessment through a rubric that evaluates both content and language.
- Quiz: a short in-class quiz used to evaluate students' understanding of key concepts and vocabulary.

### **3.7 Attention to diversity**

Attention to diversity is a key pillar in education to ensure that every student have access to quality education. It does not matter their learning abilities or specific needs; every student will be part of the classroom. In this case, as there are three students with special needs, inclusive strategies and supportive materials are needed to make every student feel comfortable. Furthermore, when talking of CLIL learning, it is essential to design inclusive strategies to facilitate the understanding of scientific contents in English.

To achieve all of this, Universal Design for Learning (UDL) takes a very important role to make it real. UDL is an educational framework designed to create inclusive learning environments. It is based in three principles:

- ❖ *UDL provides multiple means of engagement (the “why” of learning).* The aim of this principle is to motivate and engage students, recognizing their interests and emotional responses. These are some examples of strategies:
  - Using collaborative activities.
  - Providing different levels of learning.
  - Connecting learning with students’ interests.
  
- ❖ *UDL provides multiple means of representation (the “what” of learning).* This principle focuses on how the information is presented as students understand information in a different way. These are some examples of strategies:
  - Presenting content through text, images or videos.
  - Using visual organizers such as mind maps.
  - Providing simplified explanations.
  
- ❖ *UDL provides multiple means of action and expression (the “how” of learning).* The main objective of this principle is how students demonstrate what they know. These are some examples of strategies:
  - Providing scaffolding and continue support.
  - Offering different ways of completing assessments.
  - Using different ways of evaluation such as written work, presentations or videos.

According to Dale and Tanner (2012), scaffolding is critical for students’ success, supporting them as they develop the skills they need to become independent. Scaffolding also help students to build their confidence. In general, it challenges students to challenge them at the right level (gradually). There are three types of scaffolding:

- **Reception scaffolding:** it helps students to understand and process information from input.
- **Transformation scaffolding:** it helps learners select, change and organize information into a different form.
- **Production scaffolding;** it help learners produce or create something new with the information they have.

### **3.8 Contribution of the CLIL syllabus to the development of other school plans**

The CLIL syllabus designed for this school contributes to the development of several institutional plans at Colegio Villaeuropa. Because the proposal combines science learning, English and gender equality, it boosts the school’s main educational goals.

The syllabus contributes to the following school plans:

- *Contribution to the school's Bilingual Program*

As a CLIL-based proposal, the syllabus raises the school bilingual program by integrating content learning in a meaningful way and encouraging the use of English as the main language for experimentation and project work.

- *Contribution to the Reading promotion Plan*

The project includes biographical narratives and scientific explanations that require reading comprehension in English. This contributes to the school's reading plan by encouraging reading for learning and developing strategies such as skimming and scanning.

- *Contribution to the Digital Plan*

Colegio Villaeuropa's digital plan arises the need to address de digitalization of the school, as the spread of technology is unstoppable. A series of resources and tools have been consolidated, allowing teachers to develop students' digital competences. This process is linked to the implementation of active methodologies such as gamification which rely on digital devices and software applications.

#### 4. LEARNING SITUATIONS

The entire syllabus is built around the biographies and scientific contributions of fifteen women who have had a huge impact in history, and they do not have the value they deserve. Throughout this project, students will learn the importance of women in science, and they will realize that science is not just for men but also for women. Science is for everyone.

The syllabus is organized in three learning situations. Table 1 describes their distribution in the three terms of the academic year 2026/27.

**Table 1.** *Temporalization of the learning situations and their challenges*

First term		
Learning situation	Dates	Sessions
Metrodora	Sept 9–Sept 18	4 sessions
Hildegard of Bingen	Sept 21–Oct 2	5 sessions
Maria Sibylla Merian	Oct 5–Oct 16	4 sessions
Jeanne Baret	Oct 19–Oct 30	4 sessions
Mary Anning	Nov 2–Dec 11	5 sessions
Second term		
Learning situation	Dates	Sessions
Florence Nightingale	Jan 8–Jan 22	4 sessions
Beatrix Potter	Jan 25–Feb 5	4 sessions
Marie Curie	Feb 8–Feb 19	5 sessions
Lise Meitner	Feb 22–Mar 5	4 sessions
Barbara McClintock	Mar 8–Mar 24	5 sessions
Third term		

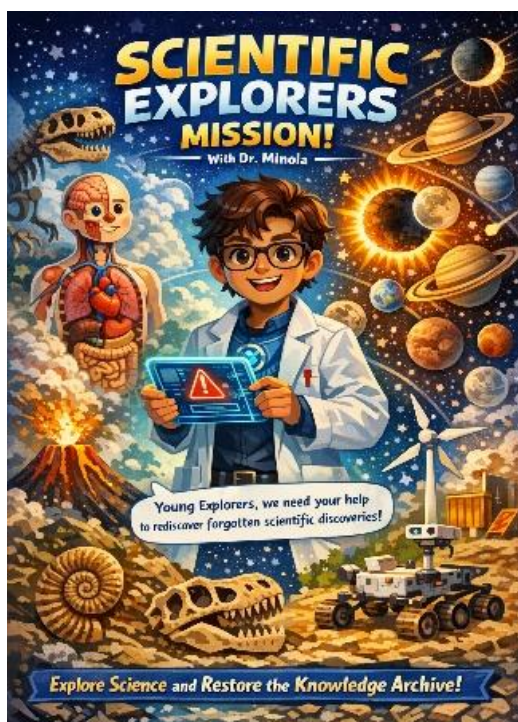
Learning situation	Dates	Sessions
Rachel Carson	Apr 5–Apr 16	4 sessions
Rosalind Franklin	Apr 19–May 3	4 sessions
Jane Goodall	May 4–May 17	4 sessions
Margarita Salas	May 18–May 31	4 sessions
Sylvia Earle	Jun 1–Jun 22	6 sessions

The first day of class a letter will be sent to students (**Appendix 1**).

## 4.1 Learning situation 1: Scientific explorers mission

### LEARNING SITUATION I SCIENTIFIC EXPLORERS MISSION

In this learning situation, students will begin their mission as young scientific explorers. Dr. Minola, a scientist from the future, has sent them a very important message: many important scientific discoveries made by woman are being forgotten. To solve this problem, students must learn different scientific fields and rediscover them. By completing these missions, they will help rebuild the science knowledge archive including these women scientist.



Dr. Minola's poster 1

**Source:** own creation made with "Copilot". <https://copilot.microsoft.com/>

<b>Content area</b>	Natural Science/ English (CLIL)
<b>Cycle/level</b>	Second cycle Level 4 Primary Education
<b>Timing</b>	September-December
<b>Place</b>	It will take place in the main classroom, using the science corner. Also, the school yard for healthy habits such as exercise and movement. The school gym will also be used as the main place for the final fair.
<b>Final product</b>	A young scientist discovery fair to allow students to present their experiments to other students.
<b>Genres</b>	Explanatory texts, biography.
<b>Challenges</b>	<b>Challenge 1:</b> Metrodora <b>Challenge 2:</b> Hildegard of Bingen <b>Challenge 3:</b> Maria Sibylla Merian <b>Challenge 4:</b> Jeanne Baret <b>Challenge 5:</b> Mary Anning

#### 4.1.1 Challenge 1: Metrodora

LS I CHALLENGE 1: Taking care of our bodies		
<p><b>Timing:</b> Sept 9–Sept 18, 4 sessions.</p> <p><b>Description (aim):</b> this learning challenge introduces students to the basic systems of the human body through the figure of Metrodora, one of the first known female physicians in Ancient Greece. Through practical activities, students will identify main body systems and understand basic healthy habits. At the same time, they will develop scientific vocabulary, oral communication skills, and literacy skills about explanatory texts in English.</p> <p><b>Final product:</b> a group poster about the human body systems and a short oral explanation of one system and a healthy habit related to it.</p>		
CONTENT		
Curricular content (Decree 61/2022)		
A. Cultura científica	La vida en nuestro planeta	<ul style="list-style-type: none"> <li>- Las funciones vitales del ser humano: características generales de los sistemas del cuerpo humano.</li> <li>- Hábitos de vida saludables.</li> </ul>
B. Tecnología y digitalización	Proyectos de diseño y pensamiento computacional	<ul style="list-style-type: none"> <li>- Materiales, herramientas y objetos adecuados a la consecución de un proyecto de diseño.</li> <li>- Técnicas sencillas de trabajo en equipo.</li> </ul>
<b>Contribution to key competences (RD 157/2022):</b> CCL, CPSAA		<b>Operational descriptors (RD 157/2022):</b> CCL1, CCL5, CPSAA1, CPSAA3, CPSAA5
<b>Contribution to specific competences (Decree 61/2022):</b> 2, 3		<b>Evaluation criteria (Decree 61/2022):</b> 2.1, 2.4, 3.1, 3.2
Language content		
<p>Key language for explaining how body systems function and describing healthy habits.</p> <p>Genre type: Explanation.</p>		
COGNITION		
<b>Learning goals</b>		<b>Learning outcomes (standards)</b>
<p>1. To <b>remember</b> the main parts of the human body and to <b>understand</b> their simple functions.</p> <p>2. To <b>apply</b> this knowledge by relating body systems to everyday actions and to <b>analyze</b> the relationship between habits and body health.</p> <p>To <b>evaluate</b> different daily habits identifying which ones are healthy and unhealthy and explaining how they affect the human body.</p> <p>3. <b>Metacognition:</b> to reflect on their own habits using a simple KWL chart.</p>		<p>1.1 Students name the main parts of human body.</p> <p>1.2 Students describe the basic functions of the main body systems.</p> <p>2.1 Students use their knowledge to relate body systems to everyday actions.</p> <p>2.2 Students examine the relationship between daily habits and human health.</p> <p>2.3 Students judge how different habits affect human health.</p> <p>3.1 Students identify what they know about the human body.</p>

4. <b>Language:</b> to describe body systems and explain healthy habits using simple sentences and basic scientific vocabulary.	4.1 Students explain healthy habits orally using simple structures and key vocabulary.
<b>CULTURE</b>	
<u><b>Learning goals</b></u> To recognize how different ancient cultures, such as Ancient Greece, contributed to early medical knowledge and healthcare practices.	<u><b>Learning outcomes (standards)</b></u> Students compare basic health practices from Ancient Greece with modern healthy habits.
<b>COMMUNICATION</b> Coyle, Hood and Marsh (2010)	
<p><b>LANGUAGE OF LEARNING</b></p> <ul style="list-style-type: none"> <li>- <b>Key language:</b> human body, system, organ, function, health, habit, hygiene, digest.</li> <li>- <b>Language content (genre):</b> explanatory texts (explaining the human body systems and healthy habits)           <ul style="list-style-type: none"> <li>o <b>Structure:</b> title, introduction, description of body system, explanation of function, example of healthy habit, short conclusion.</li> <li>o <b>Language input:</b> use of present simple to describe functions and simple sentences to explain habits</li> </ul> </li> <li>- <b>Academic language:</b> <ul style="list-style-type: none"> <li>o <b>To sequence information:</b> First, then, next, finally.</li> <li>o <b>To explain cause and effect:</b> because, so.</li> <li>o <b>To describe functions:</b> it helps, it is used for.</li> <li>o <b>To give simple explanations:</b> it is important because, we need this to.</li> </ul> </li> </ul> <p><b>LANGUAGE FOR LEARNING</b></p> <ul style="list-style-type: none"> <li>- <b>Language for describing</b> body systems and functions: “The digestive system helps us get nutrients”.</li> <li>- <b>Language for giving</b> health advice: “We should wash our hands”.</li> <li>- <b>Language for explaining</b> cause and effect: “If we exercise, our heart becomes stronger”.</li> <li>- <b>Classroom language</b> <ul style="list-style-type: none"> <li>o <b>Group work:</b> Can you explain this part?</li> <li>o <b>Activities:</b> match the system with its function.</li> <li>o <b>Classroom interaction:</b> What did you learn today?</li> </ul> </li> </ul> <p><b>LANGUAGE THROUGH LEARNING</b></p> <ul style="list-style-type: none"> <li>o Learning through personal experiences.</li> <li>o Learning through peer interaction during the group poster creation.</li> <li>o Learning through visual materials.</li> </ul>	
<b>EVALUATION</b>	
<p style="text-align: center;"><b>Natural Science content evaluation (Decree 61/2022)</b></p> <p>2.1 Formulate questions and make reasoned predictions, showing curiosity about the immediate environment.</p> <p>2.4 Propose possible answers to the questions by interpreting the information and results obtained.</p>	

3.1 Work as a team to build a simple final product that provides a solution to a problem of need, use, or design, proposing possible solutions, testing different prototypes, and using appropriate tools, techniques, and materials safely.  
 3.2 Present the final product of the design projects in different formats, explaining the steps followed.

**Language evaluation criteria (CEFR, 2018)**

**ADDRESSING AUDIENCES (A2):**

Can give a short, rehearsed, basic presentation on a familiar subject.

Can answer straightforward follow up questions if he/she can ask for repetition and if some help with the formulation of his/her reply is possible.

**Assessment tools**

- **For interaction:** oral questioning in class and group discussions during cooperative tasks.
- **For active observation:** observation checklist for the assessment of active participation and cooperative work.
- **For peer/self-evaluation:** peer feedback and KWL chart.
- **For summative assessment:** rubric for the final poster and for the oral presentation.

**Grading criteria**

**FORMATIVE ASSESSMENT**

Cooperative work (20 %)

KWL chart (10%) (metacognition)

Active participation (10%)

**SUMMATIVE ASSESSMENT**

Final product and oral presentation rubric (60 %)

**ATTENTION TO DIVERSITY**

**DUA - General measures**

The use of different resources: videos, images or tactile diagrams to explain the human body systems. Images with high-contrasted materials or pictograms to facilitate understanding.

- **The why of learning**

Collaborative activities, providing different levels of difficulty.

- **The what of learning**

Use of texts and videos to explain the human body and visual organizers.

- **The how of learning**

Providing scaffolding and offering different ways of completing tasks.

**LOTS to HOTS**

Ask students identify and put basic organs on a body diagram. Adapt by asking students to draw body diagrams and their organs.

**HOTS to LOTS**

Ask students to analyze a daily routine and classify habits as healthy or unhealthy. Adapt by asking students to sort daily routines and habits on a table with two columns: healthy/unhealthy.

*4.1.2 Challenge 2: Hildegard of Bingen*

**LS I CHALLENGE 2: Healing plants from nature**

**Timing:** Sept 21–Oct 2, 5 sessions.

**Description (aim):** this learning challenge introduces students to the study of plants through the figure of Hildegard of Bingen, a medieval scientist known for her knowledge of medicinal plants and nature. Through practical and inquiry-based

activities, students will identify the main parts of plants, understand their basic functions and explore simple uses of plants in everyday life. At the same time, they will develop scientific vocabulary, oral communication skills and literacy skills related to descriptive and explanatory texts in English.

**Final product:** “My Plant Book” mini-lapbook including plant parts, life cycle and one medicinal use, followed by a short oral presentation.

### CONTENT

#### Curricular content (Decree 61/2022)

A. Cultura científica	Iniciación en la actividad científica	- El ensayo y error como parte de los inicios de la actividad científica. -Vocabulario científico básico y adecuado a su edad -Fomento de la curiosidad
	La vida en nuestro planeta	- Características propias de las plantas que permiten su clasificación en relación con su capacidad adaptativa al medio. - Ejemplos de buenos y malos usos de los recursos naturales de nuestro planeta y sus consecuencias.
B. Tecnología y digitalización	Proyectos de diseño y pensamiento computacional	- Materiales, herramientas y objetos adecuados a la consecución de un proyecto de diseño. - Fases de los proyectos de diseño: diseño, prototipado, prueba y comunicación. - Técnicas sencillas de trabajo en equipo.

<b><u>Contribution to key competences (RD 157/2022):</u></b> CCL, CC	<b><u>Operational descriptors (RD 157/2022):</u></b> CCL1, CCL2, CC4
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<b><u>Contribution to specific competences (Decree 61/2022):</u></b> 2, 3, 6	<b><u>Evaluation criteria (Decree 61/2022):</u></b> 2.1, 3.2, 6.1
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**Language content**  
Key language for explaining plant parts, functions and simple uses.  
Genre type: Explanation.

### COGNITION

<b><u>Learning goals</u></b> 1.To <b>remember</b> the main parts of the plant and to <b>understand</b> their basic functions. 2. To <b>apply</b> this knowledge by identifying plants in their environment and to <b>analyze</b> the relationship between plants and human use. To <b>evaluate</b> simple uses of plants and explain their importance in daily life.	<b><u>Learning outcomes (standards)</u></b> 1.1 Students name the main parts of a plant. 1.2 Students describe the basic functions of each part. 2.1 Students use their knowledge to identify plants in real or visual contexts. 2.2 Students examine what plants need to grow.
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<p>3. <b>Metacognition:</b> to reflect on their own learning by completing a simple “I used to think and now I know...” routine.</p> <p>4. <b>Language:</b> to describe plant parts and explain their functions and uses using simple sentences and basic scientific vocabulary.</p>	<p>2.3 Students judge the importance of plants for living beings.</p> <p>3.1 Students express how their ideas about plants have changed.</p> <p>4.1 Students describe plant parts and explain their uses orally using simple vocabulary.</p>
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### CULTURE

<p><b>Learning goals</b> To <b>understand</b> how people in the past, such as Hildegard of Bingen, observed nature and used plants to take care of health.</p>	<p><b>Learning outcomes (standards)</b> Students identify simple examples of how plants were used in the past and explain their importance in everyday life.</p>
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### COMMUNICATION Coyle, Hood and Marsh (2010)

#### LANGUAGE OF LEARNING

- **Key language:** plant, root, stem, leaf, flower, grow, water, soil, sunlight.
- **Language content (genre):** explanatory texts (explaining plant parts and uses)
  - o **Structure:** title, introduction, description of plant parts, explanation of function, example of use, conclusion
  - o **Language input:** present simple (plants need water) and simple descriptive sentences.
- **Academic language:**
  - o **To sequence information:** to start with, after that, later, in the end.
  - o **To explain cause and effect:** if... then, that’s why.
  - o **To describe functions:** it is responsible for, it allows.
  - o **To give simple explanations:** plants need, this help for...

#### LANGUAGE FOR LEARNING

- **Language for expressing** needs and conditions: “If a plant has no water, it dies”.
- **Language for relating** plants to daily life: “This plant is important in our life because”.
- **Classroom language**
  - o **Group work:** Let’s check together.
  - o **Activities:** label the plant.
  - o **Classroom interaction:** What can you see? What happens if?

#### LANGUAGE THROUGH LEARNING

- o Learning through observation of real plants.
- o Learning through visual materials.
- o Learning through cooperative work.

### EVALUATION

#### Natural Science content evaluation (Decree 61/2022)

- 2.1 Formulate questions and make reasoned predictions, showing curiosity about the immediate environment.
- 3.2 Present the final product of the design projects in different formats, explaining the steps followed.
- 6.1 To value the importance of respect, care, and the protection of the planet’s

elements and living beings, identifying how people’s lives are connected to their actions on environmental elements and resources such as soil and water.	
<b>Language evaluation criteria (CEFR, 2018)</b>	
<b>SPOKEN FLUENCY (A2):</b> Can construct phrases on familiar topics with sufficient ease to handle short exchanges, despite very noticeable hesitation and false starts.	
<b>Assessment tools</b>	
<ul style="list-style-type: none"> <li>• <b>For interaction:</b> oral questioning in class and group discussions during cooperative tasks.</li> <li>• <b>For active observation:</b> observation checklist for the assessment of active participation and cooperative work.</li> <li>• <b>For peer/self-evaluation:</b> self- evaluation checklist + exit ticket.</li> <li>• <b>For summative assessment:</b> rubric for the “Mi plant book” and for the oral presentation.</li> </ul>	
<b>Grading criteria</b>	
<b>FORMATIVE ASSESSMENT</b>	
Class quiz (30%)	
Active participation (10%)	
<b>SUMMATIVE ASSESSMENT</b>	
Final product and oral presentation rubric (60 %)	
<b>ATTENTION TO DIVERSITY</b>	
<b>DUA - General measures</b>	
The use of different resources such as real plants, images, videos or tactile diagrams to explain plant parts and their functions. Use of visual supports like life cycle representations, as well as high-contrast images or pictograms to facilitate understanding.	
<ul style="list-style-type: none"> <li>○ <b>The why of learning</b></li> </ul>	
Collaborative activities and real- life connection providing different levels of difficulty.	
<ul style="list-style-type: none"> <li>○ <b>The what of learning</b></li> </ul>	
Use of visuals, real plants and diagrams.	
<ul style="list-style-type: none"> <li>○ <b>The how of learning</b></li> </ul>	
Different ways to express their learning, such as drawing, speaking or writing, together with appropriate scaffolding strategies to support all learners.	
<b>LOTS to HOTS</b>	<b>HOTS to LOTS</b>
Ask students identify and label the parts of a plant. Adapt by asking students to explain how each part works and why it is important for the plant.	Ask students to analyze plant uses and classify them. Adapt by asking students to match each plant with its use using images and simple words.

#### 4.1.3 Challenge 3: Maria Sibylla Merian

<b>LS I CHALLENGE 3: From caterpillar to butterfly</b>
<b>Timing:</b> Oct 5–Oct 16, 4 sessions.
<b>Description (aim):</b> this learning challenge introduces students to animal life cycles through the figure of Maria Sibylla Merian, a naturalist who carefully observed and illustrated the metamorphosis of insects. Through hands-on and visual activities, students will identify the different stages of animal life cycles and understand how living beings grow and change over time. At the same time, they will develop scientific vocabulary, oral communication skills, and literacy skills related to explanatory texts in English.

<b>Final product:</b> a life cycle wheel of an animal.		
<b>CONTENT</b>		
<b>Curricular content (Decree 61/2022)</b>		
A. Cultura científica	La vida en nuestro planeta	- Los reinos de la naturaleza desde un punto de vista general. - Características propias de los animales que permiten su clasificación y diferenciación en subgrupos.
B. Tecnología y digitalización	Proyectos de diseño y pensamiento computacional	- Materiales, herramientas y objetos adecuados a la consecución de un proyecto de diseño.
<b>Contribution to key competences (RD 157/2022):</b> CCL, CE		<b>Operational descriptors (RD 157/2022):</b> CCL1, CCL2, CE1, CE3
<b>Contribution to specific competences (Decree 61/2022):</b> 2, 3		<b>Evaluation criteria (Decree 61/2022):</b> 2.1, 3.2
<b>Language content</b> Key language for describing stages of life cycles and explaining changes in animals. Genre type: Explanatory texts.		
<b>COGNITION</b>		
<b>Learning goals</b> 1. To <b>remember</b> the stages of animal life cycles and to <b>understand</b> how animals grow and change. 2. To <b>apply</b> this knowledge by identifying and ordering the stages of different life cycles and to <b>analyze</b> similarities between them. To <b>evaluate</b> how each stage is important for the survival of the animal. 3. <b>Metacognition:</b> To reflect on their understanding by completing a traffic light self-assessment. 4. <b>Language:</b> to explain life cycles using simple sentences and sequencing connectors.		<b>Learning outcomes (standards)</b> 1.1 Students name the stages of a life cycle. 1.2 Students describe the main characteristics of each stage. 2.1 Students organize life cycle stages in the correct order. 2.2 Students compare two simple life cycles. 2.3 Students explain why each stage is important. 3.1 Students identify what they know about animal life cycles. 4.1 Students explain a life cycle in a wheel using sequencing language and simple sentences.
<b>CULTURE</b>		
<b>Learning goals</b> To understand the historical and cultural context of scientific discovery in the 17th century and understand how Maria Sibylla Merian's work challenged traditional beliefs about insects and nature.		<b>Learning outcomes (standards)</b> Students describe how scientific knowledge about life cycles has evolved over time and recognize the cultural importance of observation and illustration in early scientific studies.
<b>COMMUNICATION</b> Coyle, Hood and Marsh (2010)		
<b>LANGUAGE OF LEARNING</b>		

<ul style="list-style-type: none"> <li>- <b>Key language:</b> life cycle, egg, larva, pupa, adult, grow, change, stage, insect.</li> <li>- <b>Language content (genre):</b> explanatory texts (explaining the human body systems and healthy habits) <ul style="list-style-type: none"> <li>o <b>Structure:</b> : title, introduction, stages description, sequence, short conclusion.</li> <li>o <b>Language input:</b> present simple and sequencing connectors.</li> </ul> </li> <li>- <b>Academic language:</b> <ul style="list-style-type: none"> <li>o <b>To give simple explanations:</b> it is important because...</li> <li>o <b>Sequencing connectors:</b> first, next, after that, finally.</li> </ul> </li> </ul> <p><b>LANGUAGE FOR LEARNING</b></p> <ul style="list-style-type: none"> <li>- <b>Language for sequencing processes:</b> “First, the egg hatches, then, it becomes a larva”</li> <li>- <b>Language for describing changes:</b> “It changes into”.</li> <li>- <b>Language for comparing stages:</b> “Both stages have”.</li> <li>- <b>Classroom language</b> <ul style="list-style-type: none"> <li>o <b>Group work:</b> Can you organize the stages?</li> <li>o <b>Activities:</b> put the stages in order</li> <li>o <b>Classroom interaction:</b> What happens next?</li> </ul> </li> </ul> <p><b>LANGUAGE THROUGH LEARNING</b></p> <ul style="list-style-type: none"> <li>o Learning through observation.</li> <li>o Learning through manipulation.</li> <li>o Learning through cooperative work.</li> </ul>
<b>EVALUATION</b>
<p style="text-align: center;"><b>Natural Science content evaluation (Decree 61/2022)</b></p> <p>2.1 Formulate questions and make reasoned predictions, demonstrating curiosity about the immediate environment.</p> <p>3.2 Present the final product of the design projects in different formats, explaining the steps followed.</p>
<p style="text-align: center;"><b>Language evaluation criteria (CEFR, 2018)</b></p> <p><b>PRODUCTION/ WRITTEN PRODUCTION (A2):</b> I can write a series of simple phrases and sentences linked with simple connectors like “and”, “but” and “because”.</p>
<p style="text-align: center;"><b>Assessment tools</b></p> <ul style="list-style-type: none"> <li>• <b>For interaction:</b> oral questions and sequencing discussions.</li> <li>• <b>For active observation:</b> checklist.</li> <li>• <b>For peer/self-evaluation:</b> peer feedback + traffic light self-assessment.</li> <li>• <b>For summative assessment:</b> rubric for the life cycle wheel.</li> </ul>
<p style="text-align: center;"><b>Grading criteria</b></p> <p><b>FORMATIVE ASSESSMENT</b></p> <p>Cooperative work (20 %)</p> <p>Learning reflection (10%)</p> <p>Active participation (10%)</p> <p><b>SUMMATIVE ASSESSMENT</b></p> <p>Final product rubric (60 %)</p>
<b>ATTENTION TO DIVERSITY</b>
<p><b>DUA - General measures</b></p> <p>Use of visual sequences, videos and diagrams to represent life cycles. Use of step-by-step visual supports and high-contrast images to facilitate understanding.</p> <ul style="list-style-type: none"> <li>o <b>The why of learning</b></li> </ul>

<p>Cooperative work and practical activities about animals and life cycles, with different levels of difficulty to involve all students.</p> <ul style="list-style-type: none"> <li>○ <b>The what of learning</b></li> </ul> <p>Use of visual sequences, diagrams and videos to represent life cycles and changes in living beings.</p> <ul style="list-style-type: none"> <li>○ <b>The how of learning</b></li> </ul> <p>Different ways to express their learning, such as ordering sequences, drawing life cycles or explaining processes orally, together with appropriate scaffolding strategies to support all learners.</p>	
<p><b>LOTS to HOTS</b></p> <p>Ask students to identify and order the stages of a life cycle. Adapt by asking students to compare two life cycles trying to guess what animal that is.</p>	<p><b>HOTS to LOTS</b></p> <p>Ask students to compare two life cycles and explain differences. Adapt by asking them to match stages with images in order.</p>

#### 4.1.4 Challenge 4: Jeanne Baret

LS I CHALLENGE 4: Why is nature so diverse?		
<p><b>Timing:</b> Oct 19–Oct 30, 4 sessions.</p> <p><b>Description (aim):</b> this learning situation introduces pupils to biodiversity and ecosystems through the figure of Jeanne Baret, the first woman known to have circumnavigated the globe while collecting and classifying plants. Pupils will explore different ecosystems, understand how plants adapt to their environments and recognize the importance of biodiversity. At the same time, they will develop scientific vocabulary, oral communication skills and literacy skills related to descriptive and explanatory texts in English.</p> <p><b>Final product:</b> a group ecosystem diorama and a short oral presentation explaining plants and their adaptations.</p>		
CONTENT		
Curricular content (Decree 61/2022)		
A. Cultura científica	La vida en nuestro planeta	<ul style="list-style-type: none"> <li>- Los reinos de la naturaleza desde un punto de vista general.</li> <li>- Las funciones y servicios de los ecosistemas.</li> <li>- Ejemplos de buenos y malos usos de los recursos naturales de nuestro planeta y sus consecuencias.</li> <li>- Las formas del relieve más relevantes.</li> </ul>
B. Tecnología y digitalización	Proyectos de diseño y pensamiento computacional	<ul style="list-style-type: none"> <li>- Materiales, herramientas y objetos adecuados a la consecución de un proyecto de diseño.</li> <li>- Técnicas sencillas de trabajo en equipo.</li> <li>- Fases de los proyectos de diseño: diseño, prototipado, prueba y comunicación.</li> </ul>
<b>Contribution to key competences (RD 157/2022):</b>		<b>Operational descriptors (RD 157/2022):</b>

CCL, CPSAA	CCL1, CCL2, CCL5, CPSAA1, CPSAA3, CPSAA4, CPSAA5
<b><u>Contribution to specific competences (Decree 61/2022):</u></b> 2, 3, 5	<b><u>Evaluation criteria (Decree 61/2022):</u></b> 2.1, 2.4, 3.1, 3.2, 5.1
<b>Language content</b> Key language for describing ecosystems and plant diversity. Genre type: Explanation.	
<b>COGNITION</b>	
<b><u>Learning goals</u></b> 1. To <b>remember</b> different types of ecosystems and their basic characteristics and to <b>understand</b> how plants live in different environments. 2. To <b>apply</b> this knowledge by identifying plants in different ecosystems and to <b>analyze</b> how they adapt to their environment. To <b>evaluate</b> the importance of ecosystems for living beings. 3. <b>Metacognition:</b> to reflect on their learning through a simple self-assessment scale. 4. <b>Language:</b> to classify, relate and describe ecosystems using simple scientific language.	<b><u>Learning outcomes (standards)</u></b> 1.1 Students name different ecosystems (forest, desert, ocean). 1.2 Students recognize their main characteristics. 2.1 Students explain how plants live in different environments. 2.2 Students identify plants in specific ecosystems. 2.3 Students represent ecosystems through a diorama. 3.1 Students evaluate their understanding using a self-assessment checklist. 4.1 Students explain ecosystems and plant adaptations orally using academic vocabulary.
<b>CULTURE</b>	
<b><u>Learning goals</u></b> Students analyze how exploring different environments helps us learn about cultural and natural diversity.	<b><u>Learning outcomes (standards)</u></b> Students identify examples of plants from different parts of the world and explain how they are linked to different environments and ways of life.
<b>COMMUNICATION</b> Coyle, Hood and Marsh (2010)	
<b>LANGUAGE OF LEARNING</b> <ul style="list-style-type: none"> <li>- <b>Key language:</b> ecosystem, environment, forest, desert, ocean, plant, adapt, survive, climate, habitat.</li> <li>- <b>Language content (genre):</b> descriptive/explanatory texts. <ul style="list-style-type: none"> <li>o <b>Structure:</b> title, introduction, description of ecosystem, plant characteristics, explanation of adaptations, conclusion</li> <li>o <b>Language input:</b> use of present simple to describe general facts and use of conditionals.</li> </ul> </li> <li>- <b>Academic language:</b> <ul style="list-style-type: none"> <li>o <b>To explain</b> adaptation: this helps the plant to, it survives because, this allows it to.</li> <li>o <b>To express</b> conditions: if, when.</li> </ul> </li> </ul>	
<b>LANGUAGE FOR LEARNING</b> <ul style="list-style-type: none"> <li>- <b>Language for classifying</b> environments: “We can find these plants in”.</li> <li>- <b>Language for expressing</b> relationships: “Plants need water to survive”.</li> <li>- <b>Language for describing</b> adaptations: “It can live in hot places”.</li> </ul>	

<ul style="list-style-type: none"> <li>- <b>Classroom language</b> <ul style="list-style-type: none"> <li>○ <b>Group work:</b> “Let’s build the diorama”</li> <li>○ <b>Activities:</b> create your ecosystem model.</li> <li>○ <b>Classroom interaction:</b> “Why does this plant live here?”</li> </ul> </li> </ul> <p><b>LANGUAGE THROUGH LEARNING</b></p> <ul style="list-style-type: none"> <li>○ Learning through cooperative work.</li> <li>○ Learning through visual representation.</li> <li>○ Learning through classification activities.</li> </ul>
<b>EVALUATION</b>
<p style="text-align: center;"><b>Natural Science content evaluation (Decree 61/2022)</b></p> <p>2.1 Formulate questions and make reasoned predictions, demonstrating curiosity about the immediate environment, based on systematic observation and the formulation of hypotheses characteristic of the experimental method.</p> <p>2.4 Propose possible answers to the questions posed by interpreting the information and the results obtained.</p> <p>3.1 Collaboratively build a simple final product that addresses a need, use, or design-based problem by proposing possible solutions, testing different prototypes, and safely using appropriate tools, techniques, and materials.</p> <p>3.2 Present the final product of the design projects orally, explaining the steps followed.</p> <p>5.1 Identify the characteristics, organization, and properties of elements in the natural environment through inquiry, using appropriate tools and processes.</p>
<p style="text-align: center;"><b>Language evaluation criteria (CEFR, 2018)</b></p> <p><b>LEADING GROUP WORK/ MANAGING INTERACTION (A2):</b> Can give very simple instructions to a cooperative group who help with formulation when necessary.</p>
<p style="text-align: center;"><b>Assessment tools</b></p> <ul style="list-style-type: none"> <li>● <b>For interaction:</b> oral questions and group discussion</li> <li>● <b>For active observation:</b> checklist.</li> <li>● <b>For peer/self-evaluation:</b> peer feedback + self-assessment checklist.</li> <li>● <b>For summative assessment:</b> rubric for the group ecosystem diorama and for the oral presentation + quiz.</li> </ul>
<p style="text-align: center;"><b>Grading criteria</b></p> <p><b>FORMATIVE ASSESSMENT</b></p> <p>Cooperative work (20 %)</p> <p>Classroom tasks and activities (10%)</p> <p>Active participation (10%)</p> <p><b>SUMMATIVE ASSESSMENT</b></p> <ul style="list-style-type: none"> <li>- Final product and oral presentation rubric (40 %) (content and language integrated assessment)</li> <li>- Class quiz (20%)</li> </ul>
<b>ATTENTION TO DIVERSITY</b>
<p><b>DUA - General measures</b></p> <p>Use of manipulative materials together with images and diagrams to represent ecosystems. Use of visual supports and tactile resources to facilitate understanding.</p> <ul style="list-style-type: none"> <li>○ <b>The why of learning</b></li> </ul> <p>Group work and practical activities, with different levels of difficulty so all students can participate and stay engaged.</p> <ul style="list-style-type: none"> <li>○ <b>The what of learning</b></li> </ul>

Use of visual resources such as models, diagrams and real examples of ecosystems to present information in different ways.

○ **The how of learning**

Different ways to express learning, such as building, describing and presenting a diorama, together with appropriate scaffolding strategies.

**LOTS to HOTS**

Ask students to identify and name different ecosystems. Adapt by asking students to adapt this knowledge by explaining how plants live in each ecosystem and why they have certain characteristics to survive.

**HOTS to LOTS**

Ask students to analyze how plants adapt to different environments when creating the diorama. Adapt by asking them to match plants with ecosystems using images.

*4.1.5 Challenge 5: Mary Anning*

**LS I CHALLENGE 5: Secrets hidden in fossils**

**Timing:** Nov 2–Dec 11, 5 sessions.

**Description (aim):** This learning situation introduces students to fossils and prehistoric life through the figure of Mary Anning, a pioneering paleontologist who discovered important marine fossils. Students will learn how fossils are formed, what they tell us about the past, and how scientists study them. At the same time, they will develop scientific vocabulary, oral communication skills and literacy skills related to explanatory texts and biographies in English.

**Final product:** a “mini fossil museum” exhibition including a clay fossil model

**CONTENT**

**Curricular content (Decree 61/2022)**

A. Cultura científica	Iniciación en la actividad científica	- La importancia del uso de la ciencia. -Procedimientos de indagación y formulación de hipótesis adecuados a las necesidades de la investigación -Vocabulario científico básico y adecuado a su edad -Fomento de la curiosidad
	La vida en nuestro planeta	- Características propias de los animales que permiten su clasificación y diferenciación en subgrupos. - Las funciones y servicios de los ecosistemas.
	Materia, fuerzas y energía	- Los cambios reversibles e irreversibles que experimenta la materia desde un estado inicial a uno final.
B. Tecnología y digitalización	Proyectos de diseño y pensamiento	- Materiales, herramientas y objetos adecuados a la consecución de un proyecto

	computacional	de diseño.
<b><u>Contribution to key competences (RD 157/2022):</u></b> CCL, CC, CCEC	<b><u>Operational descriptors (RD 157/2022):</u></b> CCL1, CCL2, CC1, CCEC1, CCEC3	
<b><u>Contribution to specific competences (Decree 61/2022):</u></b> 2, 3, 5, 6	<b><u>Evaluation criteria (Decree 61/2022):</u></b> 2.1, 2.3, 3.2, 5.3, 6.2	
<b>Language content</b> Key language for describing fossils and presenting simple biographical information about a scientist. Genre type: Explanation and biography.		
<b>COGNITION</b>		
<b><u>Learning goals</u></b> 1. To <b>remember</b> what fossils are and how they are formed and to <b>understand</b> how fossils provide information about the past. 2. To <b>apply</b> this knowledge by identifying different types of fossils and to <b>analyze</b> what they show about living beings. To <b>evaluate</b> the importance of fossils as evidence of past life. 3. <b>Metacognition:</b> to reflect on their learning through a simple two stars and a wish activity. 4. <b>Language:</b> to describe past processes and explain simple ideas using scientific vocabulary.	<b><u>Learning outcomes (standards)</u></b> 1.1 Students define fossils using simple language. 1.2 Students identify how fossils are formed. 2.1 Students explain what fossils tell us about the past. 2.2 Students examine what fossils show about living beings. 2.3 Students express why fossils are important. 3.1 Students reflect on their learning using feedback to promote future learning. 4.1 Students explain fossil formation by their own creation using scientific vocabulary.	
<b>CULTURE</b>		
<b><u>Learning goals</u></b> To analyze how scientific discoveries help us understand the past and society.	<b><u>Learning outcomes (standards)</u></b> Students identify how fossil discoveries have helped people understand life in the past and explain their importance.	
<b>COMMUNICATION</b> Coyle, Hood and Marsh (2010)		
<b>LANGUAGE OF LEARNING</b> <ul style="list-style-type: none"> <li>- <b>Key language:</b> fossil, past, bone, shell, rock, imprint, extinct, dinosaur, buried, layer.</li> <li>- <b>Language content (genre):</b> <ul style="list-style-type: none"> <li>o <b>Structure:</b> introduction, process, result, explanation, conclusion.</li> <li>o <b>Language input:</b> present simple (fossils are underground), past simple (animals lived long ago) and passive (fossils are formed).</li> </ul> </li> <li>- <b>Academic language:</b> <ul style="list-style-type: none"> <li>o <b>To describe processes:</b> it is formed when, it becomes.</li> <li>o <b>To sequence:</b> first, then, later, finally.</li> <li>o <b>To refer to the past:</b> long ago, in the past.</li> </ul> </li> </ul>		
<b>LANGUAGE FOR LEARNING</b>		

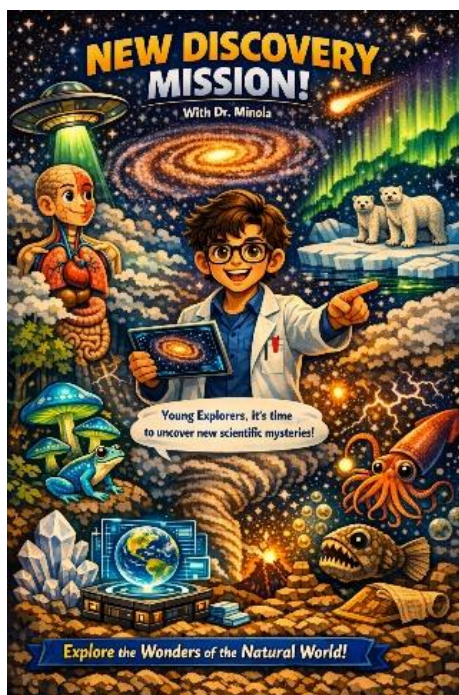
<ul style="list-style-type: none"> <li>- <b>Language for describing</b> processes: “First, the animal dies. Then, it is covered by sand”.</li> <li>- <b>Language for explaining</b> past events: “This happened a long time ago”.</li> <li>- <b>Language for interpreting</b> evidence: “This fossil shows that”.</li> <li>- <b>Classroom language</b> <ul style="list-style-type: none"> <li>o <b>Group work:</b> “Let’s create the fossil model”.</li> <li>o <b>Activities:</b> order the fossil formation steps.</li> <li>o <b>Classroom interaction:</b> “What does this fossil show?”.</li> </ul> </li> </ul> <p><b>LANGUAGE THROUGH LEARNING</b></p> <ul style="list-style-type: none"> <li>o Learning through hands-on fossil creation.</li> <li>o Learning through sequencing activities.</li> <li>o Learning through observation of images.</li> </ul>
<b>EVALUATION</b>
<p style="text-align: center;"><b>Natural Science content evaluation (Decree 61/2022)</b></p> <p>2.1 Show curiosity about nearby objects, facts, and phenomena by asking questions based on guided observations and making predictions.</p> <p>2.3 Participate in structured or guided experiments, when required by the investigation, using simple inquiry techniques.</p> <p>3.2 Present the final product of design projects orally or graphically, explaining the steps followed with the help of a script.</p> <p>5.3 Protect and value natural heritage by adopting respectful behaviors for its enjoyment and proposing actions for its conservation and improvement.</p> <p>6.2 Understand and demonstrate healthy lifestyle habits that show respect, care, and protection for the planet.</p>
<p style="text-align: center;"><b>Language evaluation criteria (CEFR, 2018)</b></p> <p><b>STRATEGIES TO EXPLAIN A NEW CONCEPT/ ADAPTING LANGUAGE (A2):</b> Can repeat the main point of a simple message on an everyday subject, using different words to help someone else understand it.</p>
<p style="text-align: center;"><b>Assessment tools</b></p> <ul style="list-style-type: none"> <li>• <b>For interaction:</b> oral questioning and discussion.</li> <li>• <b>For active observation:</b> observation checklist to monitor students’ participation, engagement and understanding during the activities.</li> <li>• <b>For peer/self-evaluation:</b> peer feedback and the two stars and a wish activity.</li> <li>• <b>For summative assessment:</b> rubric for the final product</li> </ul>
<p style="text-align: center;"><b>Grading criteria</b></p> <p><b>FORMATIVE ASSESSMENT</b></p> <p>Cooperative work (20 %)</p> <p>Two stars and a wish activity (10%)</p> <p>Active participation (10%)</p> <p><b>SUMMATIVE ASSESSMENT</b></p> <ul style="list-style-type: none"> <li>- Mini fossil museum rubric (60 %)</li> </ul>
<b>ATTENTION TO DIVERSITY</b>
<p><b>DUA - General measures</b></p> <p>Use of images, videos and fossil models to explain fossil formation. Use of visual sequences and high-contrast materials to support understanding.</p> <ul style="list-style-type: none"> <li>o <b>The why of learning</b></li> </ul> <p>Group activities and practical tasks about fossils, with different levels of difficulty to ensure all students can participate.</p> <ul style="list-style-type: none"> <li>o <b>The what of learning</b></li> </ul>

<p>Use of visual supports such as diagrams, images and models to represent fossil formation.</p> <ul style="list-style-type: none"> <li>○ <b>The how of learning</b></li> </ul> <p>Different ways to express learning, such as building models, explaining processes or ordering sequences, with appropriate scaffolding.</p>	
<p><b>LOTS to HOTS</b></p> <p>Ask students to identify and name different types of fossils. Adapt by asking students to explain how fossils are formed and what they tell us about life in the past.</p>	<p><b>HOTS to LOTS</b></p> <p>Ask students to analyze how fossils provide information about living beings. Adapt by asking them to match fossils with simple descriptions using images.</p>

## 4.2 Learning situation 2: The Great Discovery Quest

### LEARNING SITUATION II THE GREAT DISCOVERY QUEST

After completing the first exploration mission, Dr. Minola sends a new message to the young explorers. He explains that there are still many scientific mysteries waiting to be discovered. For their next mission, students will continue their journey by investigating new phenomena of the natural world. Each new discovery will help them add more knowledge to the science knowledge archive.



Dr. Minola's poster 2

Source: own creation made with Copilot <https://copilot.microsoft.com/>

<b>Content area</b>	Natural Science/ English (CLIL)
<b>Cycle/level</b>	Second cycle Level 4 Primary Education
<b>Timing</b>	January-March
<b>Where?</b>	It will take place in the main classroom, using the science corner. The IT room will be used for some activities. Also, the school laboratory for simple experiments.
<b>Final product</b>	The great book of life, which shows everything they have learnt in the different challenges.
<b>Genres</b>	Explanation, report, instruction, persuasion, biography.
<b>Challenges</b>	
<b>Challenge 6:</b> Florence Nightingale	
<b>Challenge 7:</b> Beatrix Potter	
<b>Challenge 8:</b> Marie Curie	
<b>Challenge 9:</b> Lise Meitner	
<b>Challenge 10:</b> Barbara McClintock	

#### 4.2.1 Challenge 6: Florence Nightingale

<b>LS II CHALLENGE 6: Our body, our well-being</b>		
<p><b>Timing:</b> Jan 8–Jan 22, 4 sessions.</p> <p><b>Description (aim):</b> This learning situation introduces students to the importance of hygiene and healthy habits through the figure of Florence Nightingale, pioneer of modern nursing. Students will learn how the human body needs care to stay healthy and how simple hygiene routines prevent illness. At the same time, they will develop scientific vocabulary, oral communication skills and literacy skills through persuasion texts in English.</p> <p><b>Final product:</b> A “healthy habits poster” campaign and a short oral presentation.</p>		
<b>CONTENT</b>		
<b>Curricular content (Decree 61/2022)</b>		
A. Cultura científica	La vida en nuestro planeta	<ul style="list-style-type: none"> <li>- Hábitos de vida saludables.</li> <li>- Las funciones vitales del ser humano.</li> <li>- La relación entre las emociones y los principales sistemas del cuerpo.</li> </ul>
B. Tecnología y digitalización	Proyectos de diseño y pensamiento computacional	<ul style="list-style-type: none"> <li>- Materiales, herramientas y objetos adecuados a la consecución de un proyecto de diseño.</li> <li>- Técnicas sencillas de trabajo en equipo.</li> <li>- Iniciación en la programación a través de recursos analógicos o digitales.</li> </ul>
	Uso de los recursos digitales con responsabilidad	<ul style="list-style-type: none"> <li>- Estrategias para fomentar un buen uso digital.</li> </ul>
<b><u>Contribution to key competences (RD 157/2022):</u></b> CCL, CPSAA, CD		<b><u>Operational descriptors (RD 157/2022):</u></b> CCL1, CCL5, CPSAA1, CPSAA2, CPSAA3, CD3
<b><u>Contribution to specific competences (Decree 61/2022):</u></b> 2, 3, 4		<b><u>Evaluation criteria (Decree 61/2022):</u></b> 2.1, 2.4, 3.2, 4.3
<p><b>Language content</b></p> <p>Key language for giving advice and persuading others to be healthy.</p> <p>Genre type: Persuasion</p>		
<b>COGNITION</b>		
<b><u>Learning goals</u></b>		<b><u>Learning outcomes (standards)</u></b>
1. To <b>remember</b> basic healthy habits and hygiene practices and to <b>understand</b> how daily habits affect health.		1.1 Students identify basic healthy habits.
2. To <b>apply</b> this knowledge by identifying healthy and unhealthy behaviors and to <b>analyze</b> their consequences.		1.2 Students explain how habits affect health.
		2.1 Students classify behaviors as healthy or unhealthy.
		2.2 Students examine consequences of daily habits.
		2.3 Students justify which habits are better for health.

<p>To <b>evaluate</b> different habits and justify which ones are better for maintaining health.</p> <p>3. <b>Metacognition</b>: to reflect on personal habits.</p> <p>4. <b>Language</b>: to give advice and persuade others to be healthy.</p>	<p>3.1 Students reflect on their habits using a “my healthy habits checklist” checklist.</p> <p>4.1 Students give advice orally using simple structures.</p>
<b>CULTURE</b>	
<p><b><u>Learning goals</u></b> To analyze how caring for health has changed over time in different cultures and communities.</p>	<p><b><u>Learning outcomes (standards)</u></b> Students identify simple differences between past and present health practices and explain their importance in daily life.</p>
<b>COMMUNICATION</b> Coyle, Hood and Marsh (2010)	
<p><b>LANGUAGE OF LEARNING</b></p> <ul style="list-style-type: none"> <li>- <b>Key language</b>: health, hygiene, clean, germs, illness, prevent, wash, safe, hospital, care.</li> <li>- <b>Language content (genre)</b>: persuasion texts. <ul style="list-style-type: none"> <li>o <b>Structure</b>: title, introduction (importance of health), different opinions, arguments, conclusion.</li> <li>o <b>Language input</b>: present simple (we wash our hands), imperative (wash your hands) and conditionals (if we don’t wash our hands, we will get sick).</li> </ul> </li> <li>- <b>Academic language</b>: <ul style="list-style-type: none"> <li>o <b>To give advice</b>: you should, you shouldn’t.</li> <li>o <b>To persuade</b>: it is important to, we need to.</li> <li>o <b>To explain</b>: this helps, this prevents.</li> <li>o <b>To express cause</b>: because, so.</li> </ul> </li> </ul> <p><b>LANGUAGE FOR LEARNING</b></p> <ul style="list-style-type: none"> <li>- <b>Language for giving</b> recommendations: “You shouldn’t eat too much sugar”.</li> <li>- <b>Language for persuading</b> others: “We should wash our hands”.</li> <li>- <b>Language for explaining</b> cause and effect: “It is important to stay clean”.</li> <li>- <b>Language for explaining</b> results: “This can prevent illness”.</li> <li>- <b>Classroom language</b> <ul style="list-style-type: none"> <li>o <b>Group work</b>: “Let’s create our health poster”.</li> <li>o <b>Activities</b>: choose the best advice.</li> <li>o <b>Classroom interaction</b>: “Why is this a good habit?”.</li> </ul> </li> </ul> <p><b>LANGUAGE THROUGH LEARNING</b></p> <ul style="list-style-type: none"> <li>o Learning through discussion of daily habits.</li> <li>o Learning through poster creation.</li> <li>o Learning through real-life connections.</li> </ul>	
<b>EVALUATION</b>	
<p style="text-align: center;"><b>Natural Science content evaluation (Decree 61/2022)</b></p> <p>2.1 Show curiosity about nearby objects, facts, and phenomena by asking questions based on guided observations and making predictions.</p> <p>2.4 Propose possible answers to the questions posed by interpreting the information and the results obtained, comparing them with the predictions made.</p> <p>3.2 Present the final product of design projects orally or graphically, explaining the steps followed with the help of a script.</p>	

4.3 Identify healthy lifestyle habits by assessing the importance of hygiene, a varied and balanced diet, physical exercise, active leisure, and rest.	
<b>Language evaluation criteria (CEFR, 2018)</b>	
<b>SPOKEN FLUENCY (A2):</b> Can make him/herself understood in short contributions, even though pauses, false starts and reformulation are very evident.	
<b>Assessment tools</b>	
<ul style="list-style-type: none"> <li>• <b>For interaction:</b> guided oral questioning, class discussions and group conversations.</li> <li>• <b>For active observation:</b> observation checklist for the assessment of active participation.</li> <li>• <b>For peer/self-evaluation:</b> peer feedback and my healthy habits checklist.</li> <li>• <b>For summative assessment:</b> rubric to evaluate the final poster.</li> </ul>	
<b>Grading criteria</b>	
<b>FORMATIVE ASSESSMENT</b>	
My healthy habits checklist (10%)	
Active participation (10%)	
Kahoot about healthy habits (20%)	
<b>SUMMATIVE ASSESSMENT</b>	
Final product and oral presentation rubric (60 %)	
<b>ATTENTION TO DIVERSITY</b>	
<b>DUA - General measures</b>	
Use of visual supports, charts and real-life examples to explain healthy habits. Use of clear images and icons to facilitate understanding.	
<ul style="list-style-type: none"> <li>○ <b>The why of learning</b></li> </ul>	
Group activities and real-life tasks related to health and hygiene, with different levels of difficulty so all students can participate.	
<ul style="list-style-type: none"> <li>○ <b>The what of learning</b></li> </ul>	
Use of visual supports such as charts, images and examples of daily habits to present information clearly.	
<ul style="list-style-type: none"> <li>○ <b>The how of learning</b></li> </ul>	
Different ways to express learning, such as giving advice, classifying habits or presenting ideas, together with appropriate scaffolding strategies.	
<b>LOTS to HOTS</b>	<b>HOTS to LOTS</b>
Ask students to identify and classify healthy and unhealthy habits. Adapt by asking students to explain the consequences of these habits and justify why some habits are better for staying healthy.	Ask students to evaluate daily habits and explain their impact on health. Adapt by asking students to match habits with simple consequences using images.

#### 4.2.2 Challenge 7: Beatrix Potter

<b>LS II CHALLENGE 7: The important job of mushrooms</b>
<p><b>Timing:</b> Jan 25–Feb 5, 4 sessions.</p> <p><b>Description (aim):</b> this learning situation introduces students to fungi and their role in ecosystems through the figure of Beatrix Potter, known not only as a writer but also as a scientific illustrator. Students will explore what fungi are, how they differ from plants, and why decomposers are essential for nature. At the same time, they will develop scientific vocabulary, oral communication skills and literacy skills through instructional texts in English.</p>

<b>Final product:</b> Fungi world in a glass. Students create a small ecosystem inside a transparent glass including fungi to simulate how the live.		
<b>CONTENT</b>		
<b>Curricular content (Decree 61/2022)</b>		
A. Cultura científica	La vida en nuestro planeta	- Los reinos de la naturaleza desde un punto de vista general. - Las funciones y servicios de los ecosistemas.
B. Tecnología y digitalización	Proyectos de diseño y pensamiento computacional	- Materiales, herramientas y objetos adecuados a la consecución de un proyecto de diseño. - Fases de los proyectos de diseño: diseño, prototipado, prueba y comunicación.
<b>Contribution to key competences (RD 157/2022):</b> CCL, CE		<b>Operational descriptors (RD 157/2022):</b> CCL1, CCL2, CCL5, CE3
<b>Contribution to specific competences (Decree 61/2022):</b> 2, 3, 5		<b>Evaluation criteria (Decree 61/2022):</b> 2.4, 3.2, 5.2
<b>Language content</b> Key language for giving instructions and describing fungi needs. Genre type: Instruction		
<b>COGNITION</b>		
<b>Learning goals</b> 1. To <b>remember</b> what fungi are and where they grow and to <b>understand</b> the role of fungi in nature. 2. To <b>apply</b> this knowledge by identifying fungi in different environments and to <b>analyze</b> their characteristics. To <b>evaluate</b> how to interact with fungi safely and responsibly. 3. <b>Metacognition:</b> to reflect on learning through a simple “Now I know” sentence. 4. <b>Language:</b> to give instructions and explain ideas using simple scientific vocabulary.		<b>Learning outcomes (standards)</b> 1.1 Students identify fungi as living organisms. 1.2 Students recognize where fungi grow. 2.1 Students explain the role of fungi in ecosystems. 2.2 Students identify fungi in different environments. 2.3 Students explain how to observe fungi safely. 3.1 Students reflect on their learning using simple sentences. 4.1 Students give instructions to use fungi correctly.
<b>CULTURE</b>		
<b>Learning goals</b> To understand how different cultures use fungi.		<b>Learning outcomes (standards)</b> Students identify simple uses of fungi in daily life and explain their importance.
<b>COMMUNICATION</b> Coyle, Hood and Marsh (2010)		
<b>LANGUAGE OF LEARNING</b> - <b>Key language:</b> fungi, mushroom, grow, forest, wet, soil, nature, safe, touch, observe.		

- **Language content (genre):** instruction texts.
  - o **Structure:** title, introduction, steps, advice (what to do and what not to do), conclusion.
  - o **Language input:** imperatives (do not touch), present simple and modals (should).
- **Academic language:**
  - o **To give instructions:** First, then, next, finally.
  - o **To give advice:** you should, you shouldn't.
  - o **To warn:** be careful, do not.
  - o **To give simple explanations:** this is important because.

#### LANGUAGE FOR LEARNING

- **Language for giving instructions:** "First, look carefully"
- **Language for giving advice:** "You shouldn't pick mushrooms".
- **Language for explaining safety:** "It is important to be careful".
- **Classroom language**
  - o **Group work:** "Let's create our fungi world"
  - o **Activities:** identify where fungi grow.
  - o **Classroom interaction:** "Why is this important?"

#### LANGUAGE THROUGH LEARNING

- o Learning through observation activities.
- o Learning through real-life connections.
- o Learning through guided inquiry and questioning.

### EVALUATION

#### Natural Science content evaluation (Decree 61/2022)

- 2.4 Propose possible answers to the questions posed by interpreting the information and the results obtained and comparing them with the predictions made.
- 3.2 Present the final product of design projects orally and explain the steps followed.
- 5.2 Identify simple connections between different elements of the natural environment, demonstrating an understanding of the relationships established among them.

#### Language evaluation criteria (CEFR, 2018)

**LISTENING TO ANNOUNCEMENTS AND INSTRUCTIONS (A2):** Can catch the main point in short, clear, simple messages and announcements.

#### Assessment tools

- **For interaction:** oral questioning about fungi and safety.
- **For active observation:** checklist focused on participation, understanding and correct use of vocabulary.
- **For peer/self-evaluation:** now I know activity.
- **For summative assessment:** rubric for the fungi world + quiz.

#### Grading criteria

##### FORMATIVE ASSESSMENT

Now I know activity (10%)

Active participation (20%)

##### SUMMATIVE ASSESSMENT

Final product and oral presentation RUBRIC (60 %) (content and language integrated assessment)

Fungi quiz (10%)

### ATTENTION TO DIVERSITY

**DUA - General measures**

<p>Use of images, real examples and visual supports to explain fungi. Use of clear icons and simple explanations to facilitate understanding.</p> <ul style="list-style-type: none"> <li>○ <b>The why of learning</b> Group activities and exploration tasks about fungi, with different levels of difficulty so all students can participate.</li> <li>○ <b>The what of learning</b> Presentation of content through images, diagrams and concrete examples to facilitate understanding of some concepts.</li> <li>○ <b>The how of learning</b> Opportunities to demonstrate learning in different formats, such as explaining ideas, organizing information or following instructions, with structured support when needed.</li> </ul>	
<p><b>LOTS to HOTS</b> Ask students to identify fungi and where they grow. Adapt by asking students to explain how to observe fungi safely and justify their instructions.</p>	<p><b>HOTS to LOTS</b> Ask students to evaluate how fungi interact with their environment. Adapt by asking them to match fungi with simple characteristics using images.</p>

#### 4.2.3 Challenge 8: Marie Curie

LS II CHALLENGE 8: Invisible science that helps people		
<p><b>Timing:</b> Feb 8–Feb 19, 5 sessions.</p> <p><b>Description (aim):</b> this learning challenge introduces students to basic concepts of matter and energy through the figure of Marie Curie, a pioneering scientist in the study of radioactivity. Through simple experiments and guided inquiry, students will explore properties of materials and observe changes in matter. They will also begin to think like young scientists by recording and explaining their findings. At the same time, they will develop scientific vocabulary, oral communication skills and literacy skills through report texts and biographies in English.</p> <p><b>Final product:</b> Invisible energy experiment book where they record simple classroom experiments related to energy.</p>		
CONTENT		
Curricular content (Decree 61/2022)		
A. Cultura científica	Iniciación en la actividad científica	- Avances en el pasado relacionados con la ciencia mostrando modelos que incorporen la igualdad entre hombres y mujeres.
	La vida en nuestro planeta	- Ejemplos de buenos y malos usos de los recursos naturales de nuestro planeta
	Materia, fuerzas y energía	- Los cambios reversibles e irreversibles que experimenta la materia desde un estado inicial a uno final. - Herramientas, máquinas e instrumentos.

B. Tecnología y digitalización	Uso de los recursos digitales con responsabilidad	- Dispositivos y recursos digitales. - - - Estrategias de búsqueda guiada de información segura y eficiente en internet. - Reglas básicas de seguridad y privacidad para navegar por internet.
	Proyectos de diseño y pensamiento computacional	- Materiales, herramientas y objetos adecuados a la consecución de un proyecto de diseño.
<b><u>Contribution to key competences (RD 157/2022):</u></b> CCL, CD1		<b><u>Operational descriptors (RD 157/2022):</u></b> CCL1, CCL2, CD1
<b><u>Contribution to specific competences (Decree 61/2022):</u></b> 1, 2, 3		<b><u>Evaluation criteria (Decree 61/2022):</u></b> 1.1, 2.1, 2.3, 3.2
<b>Language content</b> Key language for describing experiments and reporting results and describing key facts about a scientist's life and discoveries. Genre type: Report and biography.		
<b>COGNITION</b>		
<b><u>Learning goals</u></b> 1. To <b>remember</b> basic properties of materials and to <b>understand</b> simple changes in matter. 2. To <b>apply</b> this knowledge by carrying out simple experiments and recording them systematically, and to <b>analyze</b> results. To <b>evaluate</b> observations and explain what happened. 3. <b>Metacognition:</b> to reflect on learning through a simple "What did I discover?" activity. 4. <b>Language:</b> to describe experiments and report results using simple scientific language.		<b><u>Learning outcomes (standards)</u></b> 1.1 Students identify basic properties of materials. 1.2 Students recognize simple changes. 2.1 Students explain what happens during an experiment. 2.2 Students record observations in a structured format. 2.3 Students explain results using simple reasoning. 3.1 Students reflect on their discoveries. 4.1 Students present a simple experiment report orally.
<b>CULTURE</b>		
<b><u>Learning goals</u></b> To analyze how science helps improve people's lives.		<b><u>Learning outcomes (standards)</u></b> Students identify how scientific discoveries contribute to society and explain their importance.
<b>COMMUNICATION</b> Coyle, Hood and Marsh (2010)		
<b>LANGUAGE OF LEARNING</b> - <b>Key language:</b> material, change, experiment, energy, heat, light, result, observe, test. - <b>Language content (genre):</b> o <b>Structure:</b> title, aim, materials, procedure (steps), results, conclusion.		

<ul style="list-style-type: none"> <li>○ <b>Language input:</b> present simple (the material changes), past simple (we mixed water).</li> <li>- <b>Academic language:</b> <ul style="list-style-type: none"> <li>○ <b>To describe:</b> it is, it becomes.</li> <li>○ <b>To report:</b> we saw, we observed.</li> <li>○ <b>To explain cause:</b> because.</li> <li>○ <b>To sequence:</b> first, next, then, finally.</li> </ul> </li> </ul> <p><b>LANGUAGE FOR LEARNING</b></p> <ul style="list-style-type: none"> <li>- <b>Language for describing</b> experiments: “First we mix”.</li> <li>- <b>Language for recording</b> procedures: “We used, we followed these steps”.</li> <li>- <b>Language for explaining</b> results: “This happened because”.</li> <li>- <b>Classroom language</b> <ul style="list-style-type: none"> <li>○ <b>Group work:</b> “Let’s do the experiment”.</li> <li>○ <b>Activities:</b> write what happened.</li> <li>○ <b>Classroom interaction:</b> “What did you observe?”.</li> </ul> </li> </ul> <p><b>LANGUAGE THROUGH LEARNING</b></p> <ul style="list-style-type: none"> <li>○ Through recording and organizing information.</li> <li>○ Learning through practical experiments.</li> <li>○ Learning through guided questioning.</li> </ul>
<b>EVALUATION</b>
<p style="text-align: center;"><b>Natural Science content evaluation (Decree 61/2022)</b></p> <p>1.1 Use digital devices and resources safely and responsibly, according to the needs of the educational context.</p> <p>2.1 Formulate questions and make well-reasoned predictions, demonstrating curiosity about the immediate environment, based on systematic observation and the formulation of hypotheses characteristic of the experimental method.</p> <p>2.3 Carry out guided experiments, when required by the investigation, using different inquiry techniques, induction, and models, while safely using instruments and devices.</p> <p>3.2 Present the final product of design projects, explaining the steps followed.</p>
<p style="text-align: center;"><b>Language evaluation criteria (CEFR, 2018)</b></p> <p><b>LISTENING AS A MEMBER OF A LIVE AUDIENCE(A2):</b> Can follow the general outline of a demonstration or presentation on a familiar or predictable topic, where the message is expressed slowly and clearly in simple language and there is visual support.</p>
<p style="text-align: center;"><b>Assessment tools</b></p> <ul style="list-style-type: none"> <li>● <b>For interaction:</b> guided questioning during experiments.</li> <li>● <b>For active observation:</b> checklist focused on participation, experimentation and use of language.</li> <li>● <b>For peer/self-evaluation:</b> peer feedback and “What did I discover” activity.</li> <li>● <b>For summative assessment:</b> rubric for the final book.</li> </ul>
<p style="text-align: center;"><b>Grading criteria</b></p> <p><b>FORMATIVE ASSESSMENT</b>  What did I discover activity (10%)  Active participation (20%)</p> <p><b>SUMMATIVE ASSESSMENT</b>  - Final book rubric (70%)</p>
<b>ATTENTION TO DIVERSITY</b>
<b>DUA - General measures</b>

Use of demonstrations, visual sequences and hands-on materials to explain changes in matter. Use of structured guidance and adapted explanations to support understanding.

- **The why of learning**

Use of practical and inquiry-based activities related to experiments, with varied levels of complexity to engage all learners.

- **The what of learning**

Presentation of content through demonstrations, visuals and concrete examples.

- **The how of learning**

Opportunities to show learning through experimentation, recording results or explaining ideas, with appropriate scaffolding.

**LOTS to HOTS**

Ask students to identify basic properties of materials. Adapt by asking students to explain what happens during an experiment and justify their observations.

**HOTS to LOTS**

Ask students to analyze the results of an experiment and explain them. Adapt by asking them to match materials with simple properties using images.

*4.2.4 Challenge 9: Lise Meitner*

**LS II CHALLENGE 9: Understanding energy around us**

**Timing:** Feb 22–Mar 5, 4 sessions.

**Description (aim):** this learning challenge introduces students to the concept of energy and how it can change from one form to another through the figure of Lise Meitner, a key scientist in the study of nuclear physics. Through simple experiments and guided activities, students will explore how energy is present in everyday situations and how it can be transformed. They will also develop their ability to explain scientific processes in a clear and structured way. At the same time, they will develop scientific vocabulary, oral communication skills and literacy skills through explanatory texts in English.

**Final product:** a group poster explaining a simple energy transformation and a short oral explanation describing the process.

**CONTENT**

**Curricular content (Decree 61/2022)**

A. Cultura científica	Iniciación en la actividad científica	- Avances en el pasado relacionados con la ciencia mostrando modelos que incorporen la igualdad entre hombres y mujeres. - La importancia del uso de la ciencia. -Vocabulario científico básico y adecuado a su edad -Fomento de la curiosidad
	Materia, fuerzas y energía	- Fuerzas de contacto y a distancia. - Herramientas, máquinas e instrumentos. - Las sustancias puras y las mezclas.
B. Tecnología y digitalización	Proyectos de diseño y pensamiento computacional	- Materiales, herramientas y objetos adecuados a la consecución de un proyecto de diseño.

		- Técnicas sencillas de trabajo en equipo.
<b><u>Contribution to key competences (RD 157/2022):</u></b> CCL, CPSAA, CC	<b><u>Operational descriptors (RD 157/2022):</u></b> CCL1, CCL5, CPSAA1, CPSAA3, CC2	
<b><u>Contribution to specific competences (Decree 61/2022):</u></b> 2, 3, 5	<b><u>Evaluation criteria (Decree 61/2022):</u></b> 2.3, 2.5, 3.2, 5.2	
<b>Language content</b> Key language for explaining processes and describing energy transformations. Genre type: Explanation.		
<b>COGNITION</b>		
<b><u>Learning goals</u></b> 1. To <b>remember</b> basic forms of energy and to <b>understand</b> that energy can change from one form to another. 2. To <b>apply</b> this knowledge by identifying energy transformations in everyday situations and to <b>analyze</b> simple processes. To <b>evaluate</b> how energy transformations affect daily life and explain their importance. 3. <b>Metacognition:</b> to reflect on their own habits using a KWL chart. 4. <b>Language:</b> to explain processes clearly using appropriate vocabulary and simple cause-effect structures.	<b><u>Learning outcomes (standards)</u></b> 1.1 Students identify basic forms of energy. 1.2 Students recognize energy in everyday situations. 2.1 Students identify energy transformations. 2.2 Students examine simple processes involving energy. 2.3 Students explain the importance of energy in daily life. 3.1 Students reflect on their learning using simple sentences. 4.1 Students explain an energy transformation orally.	
<b>CULTURE</b>		
<b><u>Learning goals</u></b> To analyze how scientific knowledge about energy impacts society.	<b><u>Learning outcomes (standards)</u></b> Students identify the role of scientific discoveries in understanding energy and explaining their importance in everyday life.	
<b>COMMUNICATION</b> Coyle, Hood and Marsh (2010)		
<b>LANGUAGE OF LEARNING</b> <ul style="list-style-type: none"> <li>- <b>Key language:</b> energy, change, light, heat, move, transform, source, use, power.</li> <li>- <b>Language content (genre):</b> explanatory texts <ul style="list-style-type: none"> <li>o <b>Structure:</b> title, introduction, explanation of the process, example, conclusion.</li> <li>o <b>Language input:</b> use of present simple and passive (it is transformed into).</li> </ul> </li> <li>- <b>Academic language:</b> <ul style="list-style-type: none"> <li>o <b>To express cause and consequence:</b> due to this, for this reason.</li> <li>o <b>To describe changes:</b> it becomes, it changes from to.</li> <li>o <b>To add information:</b> in addition, furthermore.</li> <li>o <b>To give examples:</b> such as, one example of this.</li> </ul> </li> </ul>		
<b>LANGUAGE FOR LEARNING</b>		

<ul style="list-style-type: none"> <li>- <b>Language for explaining</b> processes: “Energy changes into”.</li> <li>- <b>Language for describing</b> transformations: “Light becomes heat”.</li> <li>- <b>Language for explaining</b> cause and effect: “This happens because”.</li> <li>- <b>Classroom language</b> <ul style="list-style-type: none"> <li>o <b>Group work:</b> “Let’s explain the process together”.</li> <li>o <b>Activities:</b> identify the energy change.</li> <li>o <b>Classroom interaction:</b> “What happens next?”</li> </ul> </li> </ul> <p><b>LANGUAGE THROUGH LEARNING</b></p> <ul style="list-style-type: none"> <li>o Learning through practical exploration of energy changes.</li> <li>o Learning through organizing and explaining processes.</li> <li>o Learning through responding to guided questions and examples.</li> </ul>
<b>EVALUATION</b>
<p style="text-align: center;"><b>Natural Science content evaluation (Decree 61/2022)</b></p> <p>2.3 Carry out guided experiments, when required by the research, using different inquiry techniques, induction methods, and models, while safely handling instruments.</p> <p>2.5 Present the results of the research in different formats, using basic or applied scientific language, and explaining the general steps followed.</p> <p>3.2 Present the final product of the design projects.</p> <p>5.2 Identify simple connections between different elements of the natural environment, demonstrating an understanding of the relationships established among them.</p>
<p style="text-align: center;"><b>Language evaluation criteria (CEFR, 2018)</b></p> <p><b>ADDRESSING AUDIENCES (A2):</b> Can give a short, rehearsed, basic presentation on a familiar subject.</p> <p>Can answer straightforward follow up questions if he/she can ask for repetition and if some help with the formulation of his/her reply is possible</p>
<p style="text-align: center;"><b>Assessment tools</b></p> <ul style="list-style-type: none"> <li>• <b>For interaction:</b> guided questioning and group discussions focused on explaining processes.</li> <li>• <b>For active observation:</b> checklist focused on participation, understanding of concepts and clarity of explanations.</li> <li>• <b>For peer/self-evaluation:</b> peer feedback and KWL chart.</li> <li>• <b>For summative assessment:</b> rubric for the final poster and for the oral presentation.</li> </ul>
<p style="text-align: center;"><b>Grading criteria</b></p> <p><b>FORMATIVE ASSESSMENT</b></p> <p>Cooperative work (20 %)</p> <p>Classroom activities (10%)</p> <p>Active participation (10%)</p> <p><b>SUMMATIVE ASSESSMENT</b></p> <p>Final poster and oral presentation rubric (60%)</p>
<b>ATTENTION TO DIVERSITY</b>
<p><b>DUA - General measures</b></p> <p>Use of demonstrations, visual diagrams and everyday examples to present energy concepts. Use of clear explanations and guided support to facilitate understanding.</p> <ul style="list-style-type: none"> <li>o <b>The why of learning</b></li> </ul> <p>Use of meaningful tasks connected to real-life energy situations, with different levels of complexity to support all learners.</p> <ul style="list-style-type: none"> <li>o <b>The what of learning</b></li> </ul>

<p>Presentation of content through diagrams, examples and guided explanations to clarify abstract concepts.</p> <ul style="list-style-type: none"> <li>○ <b>The how of learning</b></li> </ul> <p>Different ways to express learning, such as explaining processes, identifying changes or organizing ideas, supported by scaffolding strategies.</p>	
<p><b>LOTS to HOTS</b></p> <p>Ask students to identify different forms of energy. Adapt by asking students to identify different forms of energy.</p>	<p><b>HOTS to LOTS</b></p> <p>Ask students to analyze an energy transformation and explain it. Adapt by asking to analyze an energy transformation and explain it.</p>

4.2.5 Challenge 10: Barbara McClintock

LS II CHALLENGE 10: Why we look like our family.		
<p><b>Timing:</b> Mar 8–Mar 24, 5 sessions.</p> <p><b>Description (aim):</b> this learning situation introduces pupils to the basic concept of heredity through the figure of Barbara McClintock, a geneticist who studied how traits are inherited. At an age-appropriate level, students will explore how physical characteristics can be passed from parents to children. At the same time, they will develop scientific vocabulary, oral communication skills and literacy skills through explanatory texts in English.</p> <p><b>Final product:</b> a family tree showing inherited traits and a short oral explanation.</p>		
CONTENT		
Curricular content (Decree 61/2022)		
A. Cultura científica	Iniciación en la actividad científica	<ul style="list-style-type: none"> <li>- Instrumentos y apropiados para realizar observaciones y mediciones precisas, usados con seguridad, de acuerdo con las necesidades de la investigación.</li> <li>-Procedimientos de indagación y formulación de hipótesis adecuados a las necesidades de la investigación.</li> </ul>
	La vida en nuestro planeta	<ul style="list-style-type: none"> <li>- La relación entre las emociones y los principales sistemas del cuerpo.</li> </ul>
B. Tecnología y digitalización	Proyectos de diseño y pensamiento computacional	<ul style="list-style-type: none"> <li>- Materiales, herramientas y objetos adecuados a la consecución de un proyecto de diseño.</li> </ul>
<p><b><u>Contribution to key competences (RD 157/2022):</u></b> CCL, CPSAA</p>		<p><b><u>Operational descriptors (RD 157/2022):</u></b> CCL1, CCL5, CPSAA1</p>
<p><b><u>Contribution to specific competences (Decree 61/2022):</u></b> 2, 3, 5</p>		<p><b><u>Evaluation criteria (Decree 61/2022):</u></b> 2.1, 2.3, 3.2, 5.2</p>
<p><b>Language content</b></p> <p>Key language for describing inherited traits and explaining similarities and differences.</p> <p>Genre type: Explanation.</p>		
COGNITION		
<p><b><u>Learning goals</u></b></p>		<p><b><u>Learning outcomes (standards)</u></b></p>

<p>1. To <b>remember</b> different physical characteristics in living beings and to <b>understand</b> that some traits are inherited from parents.</p> <p>2. To <b>apply</b> this knowledge by identifying similarities and differences and to <b>analyze</b> simple patterns. To <b>evaluate</b> how inherited traits make individuals similar and different.</p> <p>3. <b>Metacognition</b>: to reflect on learning through a simple “Something I learnt about myself” activity.</p> <p>4. <b>Language</b>: to describe traits and compare individuals using simple scientific vocabulary.</p>	<p>1.1 Students identify different physical traits.</p> <p>1.2 Students explain that traits can be inherited.</p> <p>2.1 Students identify similarities and differences.</p> <p>2.2 Students examine simple patterns.</p> <p>2.3 Students explain how traits are shared between individuals.</p> <p>3.1 Students reflect on their own characteristics.</p> <p>4.1 Students describe traits orally using simple structures.</p>
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**CULTURE**

<p><b><u>Learning goals</u></b> To understand how scientific research on genetics developed over time and to apply this knowledge to recognize the importance of studying inheritance in living beings.</p>	<p><b><u>Learning outcomes (standards)</u></b> Students explain how the study of genetics has helped us understand similarities and differences between living beings and within families.</p>
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**COMMUNICATION**

Coyle, Hood and Marsh (2010)

<p><b>LANGUAGE OF LEARNING</b></p> <ul style="list-style-type: none"> <li>- <b>Key language</b>: trait, inherit, parent, different, similar, same, change, characteristic, grandparent, DNA, size</li> <li>- <b>Language content (genre)</b>: explanatory texts. <ul style="list-style-type: none"> <li>o <b>Structure</b>: title, introduction, description, comparison, explanation, conclusion.</li> <li>o <b>Language input</b>: present simple, comparatives (same as), basic connectors.</li> </ul> </li> <li>- <b>Academic language</b>: <ul style="list-style-type: none"> <li>o <b>To compare</b>: similar to, different from.</li> <li>o <b>To describe</b>: it has, it shows.</li> <li>o <b>To give explanation</b>: this happens because.</li> <li>o <b>To conclude</b>: overall.</li> </ul> </li> </ul> <p><b>LANGUAGE FOR LEARNING</b></p> <ul style="list-style-type: none"> <li>- <b>Language for describing</b> family members: “This is my mother, se has.”.</li> <li>- <b>Language for expressing</b> relationships: “This person belongs to my family”.</li> <li>- <b>Language for comparing</b> traits: “We have the same, this is different from”.</li> <li>- <b>Classroom language</b> <ul style="list-style-type: none"> <li>o <b>Group work</b>: “Let’s compare our traits”.</li> <li>o <b>Activities</b>: find similarities and differences.</li> <li>o <b>Classroom interaction</b>: “What is the same? What is different?”</li> </ul> </li> </ul> <p><b>LANGUAGE THROUGH LEARNING</b></p> <ul style="list-style-type: none"> <li>o Learning through comparing personal characteristics and examples.</li> <li>o Learning through organizing and explaining similarities and differences.</li> </ul>
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<ul style="list-style-type: none"> <li>○ Learning through responding to guided questions about traits.</li> </ul>	
<b>EVALUATION</b>	
<b>Natural Science content evaluation (Decree 61/2022)</b>	
<p>2.1 Formulate questions and make reasoned predictions, demonstrating curiosity about the nearby environment.</p> <p>2.3 Carry out guided experiments, when required by the research, using different inquiry, induction, and modeling techniques, employing instruments and devices safely.</p> <p>3.2 Present the final product of design projects orally and explaining the steps followed.</p> <p>5.2 Identify simple connections between different elements of the natural environment, showing an understanding of the relationships established among them.</p>	
<b>Language evaluation criteria (CEFR, 2018)</b>	
<p><b>SPOKEN FLUENCY (A2):</b> Can make him/herself understood in short contributions, even though pauses, false starts and reformulation are very evident. Can construct phrases on familiar topics with sufficient ease to handle short exchanges, despite very noticeable hesitation and false starts.</p>	
<b>Assessment tools</b>	
<ul style="list-style-type: none"> <li>● <b>For interaction:</b> guided questioning, pair discussions comparing traits, random selection tool, thumbs up thumbs down.</li> <li>● <b>For active observation:</b> checklist focused on participation, comparison skills and use of vocabulary and exit ticket.</li> <li>● <b>For peer/self-evaluation:</b> peer feedback and “Something I learnt about myself” activity.</li> <li>● <b>For summative assessment:</b> rubric for the family tree and for the oral presentation.</li> </ul>	
<b>Grading criteria</b>	
<p><b>FORMATIVE ASSESSMENT</b> Cooperative work during class activities and attitude in those activities (20%) Active participation observation checklist (10%)</p> <p><b>SUMMATIVE ASSESSMENT</b> Family tree and oral presentation rubric (70%)</p>	
<b>ATTENTION TO DIVERSITY</b>	
<p><b>DUA - General measures</b> Use of visual examples, images and real-life comparisons to explain traits. Use of clear explanations and guided support to facilitate understanding.</p> <ul style="list-style-type: none"> <li>○ <b>The why of learning</b> Use of meaningful activities related to students’ own characteristics, with different levels of complexity to engage all learners.</li> <li>○ <b>The what of learning</b> Presentation of content through visual examples and comparisons to support understanding.</li> <li>○ <b>The how of learning</b> Different ways to express learning, such as describing, comparing or explaining, supported by scaffolding strategies.</li> </ul>	
<p><b>LOTS to HOTS</b> Ask students to observe a set of pictures showing different people and identify visible traits. Adapt by asking students to create hypotheses about which traits</p>	<p><b>HOTS to LOTS</b> Ask students to analyze similarities and differences between two family trees and explain patterns of inherited traits. Adapt</p>

could be shared within a family and justify their ideas using their family tree.	by asking to group simple traits into categories using visual support.
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### MATERIALS

**Human resources:**

- Natural science teacher
- Language assistant

**Physical resources:**

- Digital board
- Classroom materials (pencils, colors, paper, scissors, glue)
- Family photos (brought by students)
- Trait flashcards (eyes, hair, height, etc.)
- Printed worksheets (checklists, charts, sentence frames)
- Mini whiteboards (optional for quick responses)
- Sticky notes
- Colored stickers
- Tape (for floor activities like the Venn diagram)
- Card sets for games (Guess Who, genetic puzzle)
- Sentence strips (sentence starters and endings for language input)
- Printed family tree templates

**Digital resources:**

- Canva (used for flashcards, checklist, etc) (students can use it to create their own materials for some activities)
- Chatgpt (used for creating pictures) (students can use it to find information, and as a support to guide their learning)
- Copilot (used for creating pictures) (students can use it to find information, and as a support to guide their learning)

**Other resources:**

- Genetics song (audio or video)
- Images of people for comparison activities
- Images of Barbara McClintock
- Example/model family tree (teacher’s version)
- Assessment tools:  
Rubric for oral presentation  
Self-assessment checklist

### PROCEDURES

#### SESSION 1: Why do we look like our family? (50 minutes)

<b>Cognition</b>	1.1	
<b>Culture</b>	Introduction to Barbara McClintock and the importance of genetics over time.	
<b>Timing</b>	<b>Activities</b>	<b>Grouping</b>
5 mins	<p><b>Brainstorm.</b> The teacher shows pictures of different people. Students will have to guess which of them are family. The language assistant will support students’ interactions.</p> <p><b>Appendix 2</b> <u>Reception scaffolding:</u> visual support (zoom) and sentences written on the blackboard such as “They are different because” to promote interaction.</p>	Big group

10 mins	<b>Who was Barbara McClintock?</b> The teacher shows a picture of Barbara McClintock with a simple explanation of what she did. “She was a scientist. She studied how traits pass from parents to children.” Students answer simple questions about her and the LA provides pronunciation feedback when necessary. <b><u>Appendix 3</u></b> <u>Reception scaffolding:</u> sentence support (she was a...)	Big group
10 mins	<b>Vocabulary introduction.</b> Using flashcards, students will have to match the image with the word. Then listen and repeat for pronunciation with the help of the language assistant. <b><u>Appendix 4</u></b>	Big group
10 mins	<b>Observation activity.</b> Students describe and compare different people in a picture using the vocabulary previously learnt. <b><u>Appendix 5</u></b>	Pairs
10 mins	<b>Mini explanation.</b> Teacher connects new terms to the previous activity. Teacher introduces “traits” and “inherit”.	Big group
5 mins	<b>Exit ticket.</b> Students say, “One trait I share with my parents is...”. One trait I have inherit is...	Individual
<b>SESSION 2: Similar or different? (50 minutes)</b>		
<b>Cognition</b>		2.1, 2.2
<b>Timing</b>	<b>Activities</b>	<b>Grouping</b>
5 mins	<b>Genetics song.</b> Students listen to a short song about genetics and physical traits and identify key vocabulary through repetition. <b><u>Appendix 6</u></b> <u>Reception scaffolding:</u> multimodal input.	Big group
3 mins	<b>Spot the difference.</b> The teacher projects two similar images of people. Students observe them quietly and then, discuss in pairs: What is different? <b><u>Appendix 7</u></b> <u>Reception scaffolding:</u> multimodal input.	Pairs
10 mins	<b>Guess who?</b> Students play in pairs an adapted version of the game “Guess who?” Each student will receive a set of character cards, and they will have to formulate questions trying to guess who the character of their pair is.	Pairs

	<b>Appendix 8</b> <u>Reception scaffolding</u> : vocabulary support on the blackboard such as eyes, hair, curly, straight. Sentence structure (from the language of learning analysis)	
14 mins	<b>Human Venn Diagram.</b> The teacher draws a big Venn Diagram on the floor with tape. On the left square there will be the trait A (brown hair) and in the right square, trait B (blue eyes). Students should go to the square of the trait they have or to the middle. Teacher can use a picture of famous people in some rounds. The teacher will change the traits in turns. <b>Appendix 9</b> <u>Transformation scaffolding</u> : sentence frames (I am in the middle because)	Big group
10 mins	<b>Find your twin.</b> Students walk around the classroom observing their classmates. When the teacher says a sentence, students should find a twin with the same trait said by the teacher. For example: find a twin with the same hair type.	Big group
3 mins	<b>Reflection.</b> Students complete a simple sentence: I am similar to _____ because... <u>Production scaffolding</u> : academic language for explanations: connector “because”	Big group
<b>SESSION 3: My family, my traits. (50 minutes)</b>		
<b>Cognition</b>		1.2, 2.3
<b>Timing</b>	<b>Activities</b>	<b>Grouping</b>
5 mins	<b>Guess the person.</b> The teacher will describe a person of the class and students will have to guess by raising their hand.	Big group
10 mins	<b>Family photos analysis.</b> Students bring family photos. They will have to write connections, similar traits or differences on a checklist. <b>Appendix 10</b> <u>Reception scaffolding</u> : highlighting traits with circles or colors on the images. Checklist for language scaffolding of the traits and differences they have to identify.	Individual
15 mins	<b>Trait interview.</b> Students interview a partner about their family. They will have to write their partner’s answers on a chart. For example, who has your hair? Do you have your mother’s eyes? <u>Transformation scaffolding</u> : question prompts.	Pairs

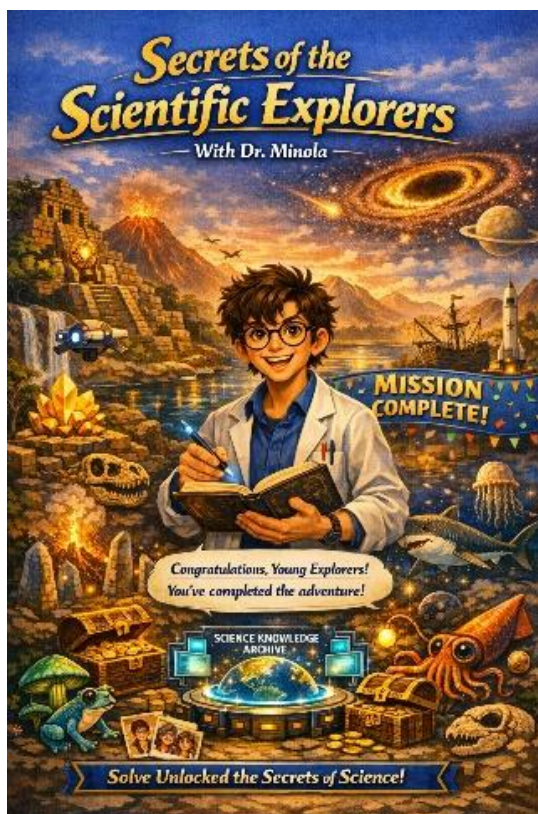
	<b><u>Appendix 11</u></b>	
10 mins	<b>Build sentences.</b> Students will use their notes taken in the previous activity to write three sentences about their pair. Take the case of “Juan has his father’s nose”.	Individual
10 mins	<b>Mini oral sharing.</b> Students explain their pair’s traits to the rest of the classroom. They can use pictures as well. <u>Production scaffolding</u>	Big group
<b>SESSION 4: Create your family tree. (50 minutes)</b>		
<b>Cognition</b>		3.1
<b>Timing</b>	<b>Activities</b>	<b>Grouping</b>
5 mins	<b>Introduction.</b> The teacher presents his own family tree to the classroom explaining traits and the members of his family. <b><u>Appendix 12</u></b>	Big group
10 mins	<b>Genetic puzzle.</b> Students work in small groups with a mixed set of cards representing a family. Students will have to match family members, decide who belongs to which family and create the family tree based on the traits’ analysis. <b><u>Appendix 13</u></b> <u>Transformation scaffolding:</u> guided questions on the boards such as “Who is similar?” “What is shared?”	Small groups
20 mins	<b>Family tree creation.</b> Students create their family tree. They will use the photos used in the last session or draw family members adding traits using colors. <u>Transformation scaffolding:</u> family tree diagram <b><u>Appendix 14</u></b>	Individual
10 mins	<b>Explanations.</b> Once the family tree is created, students will have to write at the bottom of the tree, the explanation to some traits. For example: “My mother has”, “I share the hair color with my uncle”.	Individual
5 mins	<b>Find the trait match.</b> Students place their family trees on their desks. Students walk around the classroom trying to find one classmate’s family member that shares a trait with them.	Big group
<b>SESSION 5: Present your family tree (50 minutes)</b>		
<b>Cognition</b>		4.1
<b>Timing</b>	<b>Activities</b>	<b>Grouping</b>

5 mins	<p><b>Stand up if activity.</b> The teacher says sentences about traits and students must stand up if the sentence is true for them. For example: “Stand up if your eyes are brown”, “Stand up if you have the same hair as your mother”.</p> <p><u>Reception scaffolding:</u> modelling and genre awareness scaffolding.</p>	Big group
10 mins	<p><b>Dynamic language.</b> The teacher places sentence starters and endings around the classroom (He has, we have the same). Students move around the classroom, match the parts, and say the complete sentences aloud.</p> <p>After that, they briefly practice in pairs, creating their own sentences using a writing model.</p> <p><u>Reception and transformation scaffolding:</u> Language input scaffolding.</p> <p><b>Appendix 15</b></p>	Big group
30 mins	<p><b>Individual presentations.</b> Students come one by one to the board and present their family tree. The teacher reflects their job on a rubric for summative assessment of the content and the language of the challenge. The LA supports the assessment of the language criteria.</p> <p><u>Production scaffolding:</u> the structure of the presentation will be on the board as a reference including the language input students have practiced before.</p> <p><b>Appendix 16</b></p>	Individual
5 mins	<p><b>Conclusions and reflections.</b> Students reflect about their learning by doing a self-assessment checklist (metacognition).</p> <p><b>Appendix 17</b></p>	Individual

### 4.3 Learning situation 3: Secrets of the Scientific Explorers

## LEARNING SITUATION III SECRETS OF THE SCIENTIFIC EXPLORERS

Dr. Minola congratulates students for the discoveries and experiments they have made during these months. However, he informs that the exploration is not finished yet. They will have to continue investigating but this time as real scientists. They are not young scientists anymore.



Dr. Minola's poster 3

**Source:** own creation made with  
"Copilot". <https://copilot.microsoft.com/>

<b>Content area</b>	Natural Science/ English (CLIL)
<b>Cycle/level</b>	Second cycle Level 4 Primary Education
<b>Timing</b>	April-June
<b>Where?</b>	This will take place in the main classroom, using the science corner. It will also take place in the laboratory for some challenges.
<b>Final product</b>	Guardians of the planet exhibition where students present solutions to protect the planet.
<b>Genres</b>	Explanation, report, persuasion.
<b>Challenges</b>	
<p><b>Challenge 11:</b> Rachel Carson  <b>Challenge 12:</b> Rosalind Franklin  <b>Challenge 13:</b> Jane Goodall  <b>Challenge 14:</b> Margarita Salas  <b>Challenge 15:</b> Sylvia Earle</p>	

### 4.3.1 Challenge 11: Rachel Carson

<b>LS III CHALLENGE 11: Protecting nature from pollution</b>		
<p><b>Timing:</b> Apr 5–Apr 16, 4 sessions.</p> <p><b>Description (aim):</b> this learning situation introduces students to environmental pollution and conservation through the figure of Rachel Carson, a marine biologist and environmentalist who warned about the dangers of pollution. Students will explore different types of pollution (air, water and land), understand their consequences and propose simple solutions to protect nature. At the same time, they will develop scientific vocabulary, oral communication skills and critical thinking through persuasion-based activities in English.</p> <p><b>Final product:</b> a group poster proposing solutions to reduce pollution.</p>		
CONTENT		
Curricular content (Decree 61/2022)		
A. Cultura científica	La vida en nuestro planeta	<ul style="list-style-type: none"> <li>- Las funciones y servicios de los ecosistemas.</li> <li>- Ejemplos de buenos y malos usos de los recursos naturales de nuestro planeta y sus consecuencias.</li> </ul>
B. Tecnología y digitalización	Proyectos de diseño y pensamiento computacional	<ul style="list-style-type: none"> <li>- Fases de los proyectos de diseño: diseño, prototipado, prueba y comunicación.</li> <li>- Técnicas sencillas de trabajo en equipo y estrategias para la gestión de conflictos.</li> </ul>
<b>Contribution to key competences (RD 157/2022):</b> CCL, CPSAA, CC		<b>Operational descriptors (RD 157/2022):</b> CCL1, CCL5, CPSAA1, CPSAA3, CPSAA4, CC4.
<b>Contribution to specific competences (Decree 61/2022):</b> 2, 3, 5, 6		<b>Evaluation criteria (Decree 61/2022):</b> 2.4, 3.1, 3.2, 5.1, 5.3, 6.1
Language content		
Key language for identifying problems and proposing solutions. Genre type: Persuasion.		
COGNITION		
<b>Learning goals</b>		<b>Learning outcomes (standards)</b>
<ol style="list-style-type: none"> <li>1. To <b>remember</b> different types of pollution and to <b>understand</b> how pollution affects living beings and the environment.</li> <li>2. To <b>apply</b> this knowledge by identifying real-life examples and to <b>analyze</b> their consequences. To <b>evaluate</b> different solutions and justify which ones are more effective.</li> <li>3. <b>Metacognition:</b> to reflect on personal habits through a simple “One change I can make to reduce pollution” activity.</li> </ol>		<ol style="list-style-type: none"> <li>1.1 Students identify types of pollution.</li> <li>1.2 Students explain the effects of pollution.</li> <li>2.1 Students recognize pollution in everyday situations.</li> <li>2.2 Students examine its consequences.</li> <li>2.3 Students justify solutions to reduce pollution.</li> <li>3.1 Students reflect on their habits.</li> <li>4.1 Students express ideas and solutions orally.</li> </ol>

4. <b>Language:</b> to express opinions and suggest solutions using appropriate vocabulary.	
<b>CULTURE</b>	
<b><u>Learning goals</u></b> To analyze how human actions can negatively or positively affect the planet.	<b><u>Learning outcomes (standards)</u></b> Students explain how awareness about pollution has contributed to protecting the environment.
<b>COMMUNICATION</b> Coyle, Hood and Marsh (2010)	
<p><b>LANGUAGE OF LEARNING</b></p> <ul style="list-style-type: none"> <li>- <b>Key language:</b> pollution, air, water, land, environment, damage, protect, reduce, reuse, recycle.</li> <li>- <b>Language content (genre):</b> persuasion. <ul style="list-style-type: none"> <li>o <b>Structure:</b> topic, problem, consequence, solution, conclusion.</li> <li>o <b>Language input:</b> present simple, modal verbs (should, shouldn't)</li> </ul> </li> <li>- <b>Academic language:</b> <ul style="list-style-type: none"> <li>o <b>To describe problems:</b> this affects.</li> <li>o <b>To explain consequences:</b> as a result.</li> <li>o <b>To suggest solutions:</b> we should, one solution is.</li> <li>o <b>To justify:</b> this is important because.</li> </ul> </li> </ul> <p><b>LANGUAGE FOR LEARNING</b></p> <ul style="list-style-type: none"> <li>- <b>Language for identifying problems:</b> "This affects".</li> <li>- <b>Language for proposing solutions:</b> "One thing that we can do is".</li> <li>- <b>Language for expressing opinions</b> "I think this is a good idea".</li> <li>- <b>Classroom language</b> <ul style="list-style-type: none"> <li>o <b>Group work:</b> "Let's choose the best solution".</li> <li>o <b>Activities:</b> identify the problem and the solution.</li> <li>o <b>Classroom interaction:</b> "Why is this important?"</li> </ul> </li> </ul> <p><b>LANGUAGE THROUGH LEARNING</b></p> <ul style="list-style-type: none"> <li>o Learning through discussing environmental problems and their impact.</li> <li>o Learning through proposing and selecting solutions collaboratively.</li> <li>o Learning through linking real-life situations with scientific concepts.</li> </ul>	
<b>EVALUATION</b>	
<p style="text-align: center;"><b>Natural Science content evaluation (Decree 61/2022)</b></p> <p>2.4 Propose possible answers to the questions made by interpreting the information and the results obtained and comparing them with the predictions made.</p> <p>3.1 Work as a team to build a simple final product that provides a solution to a problem of need, use, and design, proposing possible solutions.</p> <p>3.2 Present the final product of the design projects orally and explain the steps followed.</p> <p>5.1 Identify the characteristics, organization, and properties of the elements of the natural environment.</p> <p>5.3 Protect and value natural heritage by adopting respectful behaviors for its enjoyment and proposing actions for its conservation and improvement.</p> <p>6.1 Identify social and environmental problems, the interrelationships between health and the care of the planet, propose possible solutions, and put appropriate lifestyles into practice.</p>	
<b>Language evaluation criteria (CEFR, 2018)</b>	

<b>LEADING GROUP WORK/ ENCOURAGING CONCEPTUAL TALK (A2):</b> Can ask what somebody thinks of a certain idea.	
<b>Assessment tools</b>	
<ul style="list-style-type: none"> <li>• <b>For interaction:</b> group discussions focused on identifying problems and proposing solutions.</li> <li>• <b>For active observation:</b> checklist focused on participation, understanding of pollution and ability to suggest ideas.</li> <li>• <b>For peer/self-evaluation:</b> peer feedback and “One change I can make to reduce pollution” activity.</li> <li>• <b>For summative assessment:</b> rubric for the final poster and for the oral presentation.</li> </ul>	
<b>Grading criteria</b>	
<b>FORMATIVE ASSESSMENT</b> Cooperative work (20 %) Active participation (20%)	
<b>SUMMATIVE ASSESSMENT</b> Final product and oral presentation rubric (30%) Exam to review pollution (30%)	
<b>ATTENTION TO DIVERSITY</b>	
<b>DUA - General measures</b> Use of images, real-life examples and simple case studies to explain pollution. Use of clear instructions and guided support to ensure understanding. <ul style="list-style-type: none"> <li>○ <b>The why of learning</b> Use of meaningful tasks connected to environmental problems, offering different levels of difficulty to engage all learners.</li> <li>○ <b>The what of learning</b> Presentation of content through visuals, examples and simple explanations to support understanding.</li> <li>○ <b>The how of learning</b> Different ways to express learning, such as identifying problems, proposing solutions or explaining ideas, supported by scaffolding strategies.</li> </ul>	
<b>LOTS to HOTS</b> Ask students to identify types of pollution in images (air, water, land). Adapt by asking students to analyze their consequences and propose solutions to reduce them.	<b>HOTS to LOTS</b> Ask students to evaluate different solutions to reduce pollution and justify their choices. Adapt by asking to evaluate different solutions to reduce pollution and justify their choices.

#### 4.3.2 Challenge 12: Rosalind Franklin

<b>LS III CHALLENGE 12: The instructions of life</b>
<p><b>Timing:</b> Apr 19–May 3, 4 sessions.</p> <p><b>Description (aim):</b> this learning situation introduces students to the basic concept of cells and DNA as the “instructions of life” through the figure of Rosalind Franklin. At an age-appropriate level, students will learn that all living beings are made of cells and that inside cells there is information that determines how living beings grow and function. At the same time, they will develop scientific vocabulary, oral communication skills and literacy skills through explanatory texts in English.</p> <p><b>Final product:</b> a 3D DNA model in groups.</p>
<b>CONTENT</b>

<b>Curricular content (Decree 61/2022)</b>		
A. Cultura científica	Iniciación en la actividad científica	- Instrumentos y apropiados para realizar observaciones y mediciones precisas, usados con seguridad, de acuerdo con las necesidades de la investigación. -Procedimientos de indagación y formulación de hipótesis adecuados a las necesidades de la investigación -Vocabulario científico básico y adecuado a su edad.
	La vida en nuestro planeta	- Las funciones vitales del ser humano. - La relación entre las emociones y los principales sistemas del cuerpo.
B. Tecnología y digitalización	Uso de los recursos digitales con responsabilidad	- Dispositivos y recursos digitales. Estrategias de búsqueda guiada de información segura y eficiente en internet. - Reglas básicas de seguridad y privacidad para navegar por internet. - Recursos y plataformas digitales restringidas y seguras para comunicarse con otras personas. - Estrategias para fomentar un buen uso digital.
	Proyectos de diseño y pensamiento computacional	- Fases de los proyectos de diseño: diseño, prototipado, prueba y comunicación. - Técnicas sencillas de trabajo en equipo y estrategias para la gestión de conflictos.
<b><u>Contribution to key competences (RD 157/2022):</u></b> CCL, CD, CPSAA		<b><u>Operational descriptors (RD 157/2022):</u></b> CCL1, CCL5, CD1, CD3, CD4, CPSAA1, CPSAA3, CPSAA5
<b><u>Contribution to specific competences (Decree 61/2022):</u></b> 1, 2, 3		<b><u>Evaluation criteria (Decree 61/2022):</u></b> 1.1, 2.4, 3.1, 3.2
<b>Language content</b> Key language for describing structures and explaining basic scientific ideas. Genre type: Explanation.		
<b>COGNITION</b>		
<b><u>Learning goals</u></b> 1. To <b>remember</b> basic characteristics of living things and to <b>understand</b> that living beings are made of small structures that contain information. 2. To <b>apply</b> this knowledge by designing and building a 3D DNA	<b><u>Learning outcomes (standards)</u></b> 1.1 Students identify basic characteristics of living beings. 1.2 Students explain that living things have internal structures. 2.1 Students create a collaborative 3D model representing DNA structure.	

<p>model in groups, and to <b>analyze</b> its structure.</p> <p>To <b>evaluate</b> the importance of scientific discoveries in understanding life.</p> <p>3. <b>Metacognition:</b> to reflect on learning through a simple “Something new I discovered about life” activity.</p> <p>4. <b>Language:</b> to describe structures and explain ideas using simple scientific vocabulary.</p>	<p>2.2 Students explain the importance of scientific discoveries.</p> <p>2.3 Students describe their own DNA structure.</p> <p>3.1 Students reflect on their learning.</p> <p>4.1 Students explain their model orally.</p>
<b>CULTURE</b>	
<p><b><u>Learning goals</u></b></p> <p>To analyze how the recognition of scientists, especially women in science, has changed over time and why their contributions are important today.</p>	<p><b><u>Learning outcomes (standards)</u></b></p> <p>Students explain the importance of scientific collaboration and recognize the contribution of different scientists, including women, in important discoveries such as DNA.</p>
<b>COMMUNICATION</b>	
Coyle, Hood and Marsh (2010)	
<b>LANGUAGE OF LEARNING</b>	
<ul style="list-style-type: none"> <li>- <b>Key language:</b> DNA, structure, cell, information, living, part, inside, model, build.</li> <li>- <b>Language content (genre):</b> explanatory texts. <ul style="list-style-type: none"> <li>o <b>Structure:</b> title, introduction, description of the DNA structure, explanation, conclusion.</li> <li>o <b>Language input:</b> present simple, passive (it is made of), connectors (because, and, so).</li> </ul> </li> <li>- <b>Academic language:</b> <ul style="list-style-type: none"> <li>o <b>To describe:</b> it has, is made of.</li> <li>o <b>To explain:</b> this means, this shows.</li> <li>o <b>To connect ideas:</b> because, so.</li> <li>o <b>To conclude:</b> overall, in conclusion.</li> </ul> </li> </ul>	
<b>LANGUAGE FOR LEARNING</b>	
<ul style="list-style-type: none"> <li>- <b>Language for presenting</b> the model: “This is our DNA model”.</li> <li>- <b>Language for describing</b> structure and parts: “It is made of different parts”.</li> <li>- <b>Language for explaining</b> meaning and function: “This part represents”.</li> <li>- <b>Classroom language</b> <ul style="list-style-type: none"> <li>o <b>Group work:</b> “Let’s build the model together”.</li> <li>o <b>Activities:</b> describe your model explaining its parts.</li> <li>o <b>Classroom interaction:</b> “What does this part represent?”</li> </ul> </li> </ul>	
<b>LANGUAGE THROUGH LEARNING</b>	
<ul style="list-style-type: none"> <li>o Learning through building and manipulating models.</li> <li>o Learning through explaining ideas using visual support.</li> <li>o Learning through connecting previous knowledge with new concepts.</li> </ul>	
<b>EVALUATION</b>	
<b>Natural Science content evaluation (Decree 61/2022)</b>	
<p>1.1 Use digital devices and resources safely.</p> <p>2.4 Propose answers to the questions posed, comparing the information and the results obtained with the predictions made.</p>	

<p>3.1 Create, with guidance, a simple final product that provides a solution to a need-based problem.</p> <p>3.2 Present the final product of the design projects orally or graphically.</p>	
<p><b>Language evaluation criteria (CEFR, 2018)</b></p>	
<p><b>INFORMAL DISCUSSION WITH FRIENDS (A2):</b> Can exchange opinions and compare things and people using simple language. Can make and respond to suggestions. Can agree and disagree with others.</p>	
<p><b>Assessment tools</b></p>	
<ul style="list-style-type: none"> <li>• <b>For interaction:</b> group discussions during model construction and explanation.</li> <li>• <b>For active observation:</b> checklist focused on participation, collaboration and understanding.</li> <li>• <b>For peer/self-evaluation:</b> peer feedback and “Something new I discovered about life” activity.</li> <li>• <b>For summative assessment:</b> rubric for the 3D model and for the oral presentation.</li> </ul>	
<p><b>Grading criteria</b></p>	
<p><b>FORMATIVE ASSESSMENT</b> Cooperative work (20 %) Use of technologies (10%) Active participation (10%)</p> <p><b>SUMMATIVE ASSESSMENT</b> 3D Model and oral presentation rubric (60%)</p>	
<p><b>ATTENTION TO DIVERSITY</b></p>	
<p><b>DUA - General measures</b> Use of models, visual supports and guided demonstrations to explain abstract concepts. Use of clear explanations and structured support to facilitate understanding.</p> <ul style="list-style-type: none"> <li>○ <b>The why of learning</b> Use of engaging hands-on activities that allow students to explore scientific ideas, offering different levels of complexity.</li> <li>○ <b>The what of learning</b> Presentation of content through models, visuals and simple explanations.</li> <li>○ <b>The how of learning</b> Different ways to express learning, such as building, describing or explaining, supported by scaffolding strategies.</li> </ul>	
<p><b>LOTS to HOTS</b> Ask students to complete a simple visual puzzle of a DNA structure by matching parts and shapes. Adapt by asking students to complete a simple visual puzzle of a DNA structure by matching parts and shapes.</p>	<p><b>HOTS to LOTS</b> Ask students to justify why a model is useful to understand something we cannot see. Adapt by asking to justify why a model is useful to understand something we cannot see.</p>

*4.3.3 Challenge 13: Jane Goodall*

<p><b>LS III CHALLENGE 13: How animals live and learn</b></p>
<p><b>Timing:</b> May 4–May 17, 4 sessions. <b>Description (aim):</b> this learning situation introduces students to animal behavior and adaptation through the figure of Jane Goodall, a primatologist who studied</p>

chimpanzees in their natural habitat. Students will explore how animals behave, communicate, use tools and adapt to their environment. At the same time, they will improve their scientific vocabulary, oral communication skills and literacy skills through observation reports and biographies in English.

**Final product:** An “Animal behavior report” and a short oral presentation about how a chosen animal behaves and adapts.

**CONTENT**

**Curricular content (Decree 61/2022)**

A. Cultura científica	La vida en nuestro planeta	- Características propias de los animales que permiten su clasificación y diferenciación en subgrupos. - Las funciones y servicios de los ecosistemas.
B. Tecnología y digitalización	Proyectos de diseño y pensamiento computacional	- Materiales, herramientas y objetos adecuados a la consecución de un proyecto de diseño.

<b><u>Contribution to key competences (RD 157/2022):</u></b> CCL, CC	<b><u>Operational descriptors (RD 157/2022):</u></b> CCL1, CCL5, CC4
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<b><u>Contribution to specific competences (Decree 61/2022):</u></b> 2, 3	<b><u>Evaluation criteria (Decree 61/2022):</u></b> 2.1, 2.4, 3.2
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**Language content**  
Key language for describing behavior, reporting observations and summarizing key aspects of a scientist’s life and work.  
Genre type: Report and biography.

**COGNITION**

<b><u>Learning goals</u></b> 1. To <b>remember</b> characteristics of animals and to <b>understand</b> that animals show different behaviors depending on their environment. 2. To <b>apply</b> this knowledge by observing and recording behaviors and to <b>analyze</b> simple patterns. To <b>evaluate</b> the importance of respecting animals and their habitats. 3. <b>Metacognition:</b> to reflect using a simple KWL chart. 4. <b>Language:</b> to describe and report observations using simple structures.	<b><u>Learning outcomes (standards)</u></b> 1.1 Students identify basic characteristics of animals. 1.2 Students explain simple animal behaviors. 2.1 Students observe and record behaviors. 2.2 Students organize information in a simple report. 2.3 Students explain why animals should be respected. 3.1 Students reflect on their learning by doing a KWL chart. 4.1 Students describe observations orally.
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**CULTURE**

<b><u>Learning goals</u></b> To apply this knowledge to recognize the importance of protecting animals and their habitats.	<b><u>Learning outcomes (standards)</u></b> Students explain how the observation of animals helps us understand and protect them.
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**COMMUNICATION**  
Coyle, Hood and Marsh (2010)

<p><b>LANGUAGE OF LEARNING</b></p> <ul style="list-style-type: none"> <li>- <b>Key language:</b> animal, behavior, observe, habitat, interact, eat, move, live, protect.</li> <li>- <b>Language content (genre):</b> <ul style="list-style-type: none"> <li>o <b>Structure:</b> title, introduction, observation, description, interpretation, conclusion.</li> <li>o <b>Language input:</b> present simple, present continuous (is moving).</li> </ul> </li> <li>- <b>Academic language:</b> <ul style="list-style-type: none"> <li>o <b>To describe behavior:</b> it is doing.</li> <li>o <b>To report:</b> I can see.</li> <li>o <b>To interpret:</b> this could mean.</li> <li>o <b>To sequence:</b> first, then, after that.</li> </ul> </li> </ul> <p><b>LANGUAGE FOR LEARNING</b></p> <ul style="list-style-type: none"> <li>- <b>Language for recording</b> information: “This happens when”.</li> <li>- <b>Language for expressing</b> care and respect: “We should protect”.</li> <li>- <b>Language for describing</b> actions: “It is moving”.</li> <li>- <b>Classroom language</b> <ul style="list-style-type: none"> <li>o <b>Group work:</b> “Let’s observe carefully”.</li> <li>o <b>Activities:</b> write what you see.</li> <li>o <b>Classroom interaction:</b> “What is the animal doing?”.</li> </ul> </li> </ul> <p><b>LANGUAGE THROUGH LEARNING</b></p> <ul style="list-style-type: none"> <li>o Learning through direct observation and recording.</li> <li>o Learning through interpreting behaviors.</li> <li>o Learning through sharing findings with others.</li> </ul>
<b>EVALUATION</b>
<p style="text-align: center;"><b>Natural Science content evaluation (Decree 61/2022)</b></p> <p>2.1 Formulate questions and make reasoned predictions, showing curiosity about the immediate environment, based on systematic observation and the formulation of hypotheses characteristic of the experimental method.</p> <p>2.4 Propose possible answers to the questions posed by interpreting the information and the results obtained, comparing them with the predictions made.</p> <p>3.2 Present the final product of design projects orally and explaining the steps followed.</p>
<p style="text-align: center;"><b>Language evaluation criteria (CEFR, 2018)</b></p> <p><b>PROCESSING TEXT IN SPEECH (A2):</b> Can report in simple sentences the information contained in clearly structured, short, simple texts that have illustrations or tables.</p>
<p style="text-align: center;"><b>Assessment tools</b></p> <ul style="list-style-type: none"> <li>• <b>For interaction:</b> guided discussions during observation activities.</li> <li>• <b>For active observation:</b> checklist focused on observation skills and participation.</li> <li>• <b>For peer/self-evaluation:</b> peer feedback and KWL chart.</li> <li>• <b>For summative assessment:</b> rubric for the final report and for the oral presentation.</li> </ul>
<p style="text-align: center;"><b>Grading criteria</b></p> <p><b>FORMATIVE ASSESSMENT</b>  Classroom activities (15%)  Active participation (15%)</p> <p><b>SUMMATIVE ASSESSMENT</b>  Final report and oral presentation rubric (70%)</p>

<b>ATTENTION TO DIVERSITY</b>	
<p><b>DUA - General measures</b>            Use of images, videos and guided observation activities to support understanding.            Use of clear instructions and structured recording templates.</p> <ul style="list-style-type: none"> <li>○ <b>The why of learning</b>              Use of engaging observation tasks related to animals, offering different levels of challenge to involve all learners.</li> <li>○ <b>The what of learning</b>              Presentation of content through real examples, videos and guided observation.</li> <li>○ <b>The how of learning</b>              Different ways to express learning, such as describing, recording or explaining observations, supported by scaffolding strategies.</li> </ul>	
<p><b>LOTS to HOTS</b>            Ask students to watch a short video and identify simple animal actions. Adapt by asking students to interpret the behavior and explain what it means.</p>	<p><b>HOTS to LOTS</b>            Ask students to analyze an animal behavior and explain why it happens. Adapt by asking them to match actions with images showing behaviors.</p>

#### 4.3.4 Challenge 14: Margarita Salas

<b>LS III CHALLENGE 14: The invisible living beings</b>		
<p><b>Timing:</b> May 18–May 31, 4 sessions.</p> <p><b>Description (aim):</b> this learning situation introduces students to the existence of microorganisms and their importance in everyday life through the figure of Margarita Salas, a Spanish scientist known for her research in molecular biology. Students will explore that there are living things that cannot be seen with the naked eye and understand their role in health, hygiene and the environment. Through simple experiments and observation activities, they will develop curiosity and scientific thinking. At the same time, they will improve their scientific vocabulary, oral communication skills and literacy skills through simple procedural and experimental texts in English.</p> <p><b>Final product:</b> a group “Microorganism booklet” including drawings, characteristics and whether the microorganism is helpful or harmful, followed by a short oral presentation.</p>		
<b>CONTENT</b>		
<b>Curricular content (Decree 61/2022)</b>		
A. Cultura científica	Iniciación en la actividad científica	<ul style="list-style-type: none"> <li>- Instrumentos y apropiados para realizar observaciones y mediciones precisas, usados con seguridad, de acuerdo con las necesidades de la investigación.</li> <li>- El ensayo y error como parte de los inicios de la actividad científica.</li> <li>-Vocabulario científico básico y adecuado a su edad</li> <li>-Fomento de la curiosidad</li> </ul>

	La vida en nuestro planeta	- Hábitos de vida saludables.
B. Tecnología y digitalización	Proyectos de diseño y pensamiento computacional	- Materiales, herramientas y objetos adecuados a la consecución de un proyecto de diseño. - Técnicas sencillas de trabajo en equipo.
<b><u>Contribution to key competences (RD 157/2022):</u></b> CCL, CPSAA		<b><u>Operational descriptors (RD 157/2022):</u></b> CCL1, CCL5, CPSAA1, CPSAA5
<b><u>Contribution to specific competences (Decree 61/2022):</u></b> 2, 3		<b><u>Evaluation criteria (Decree 61/2022):</u></b> 2.4, 3.1, 3.2
<b>Language content</b> Key language for describing experiments and explaining results. Genre type: Explanation.		
<b>COGNITION</b>		
<b><u>Learning goals</u></b> 1 To <b>remember</b> that there are living things we cannot see and to <b>understand</b> the role of microorganisms in health and hygiene. 2. To <b>apply</b> this knowledge by classifying microorganisms and organizing information in a booklet, and to <b>analyze</b> their role in daily life. To <b>evaluate</b> the importance of hygiene habits in everyday life. 3. <b>Metacognition:</b> to reflect using a self-evaluation checklist. 4. <b>Language:</b> to describe processes and explain results using simple structures.		<b><u>Learning outcomes (standards)</u></b> 1.1 Students identify the existence of microorganisms. 1.2 Students explain their role in daily life. 2.1 Students record and describe results. 2.2 Students organize information in a structured booklet format. 2.3 Students explain the importance of hygiene habits. 3.1 Students reflect on their habits. 4.1 Students explain the experiment orally.
<b>CULTURE</b>		
<b><u>Learning goals</u></b> To analyze how scientific discoveries can have an impact on society and everyday life.		<b><u>Learning outcomes (standards)</u></b> Students explain how scientific research contributes to improving health and society.
<b>COMMUNICATION</b> Coyle, Hood and Marsh (2010)		
<b>LANGUAGE OF LEARNING</b>		
<ul style="list-style-type: none"> <li>- <b>Key language:</b> microorganism, germ, invisible, health, hygiene, clean, experiment, result, observe.</li> <li>- <b>Language content (genre):</b> explanatory texts. <ul style="list-style-type: none"> <li>o <b>Structure:</b> title, introduction, description, classification, example, conclusion.</li> <li>o <b>Language input:</b> imperatives (mix, clean), present simple.</li> </ul> </li> </ul>		

- **Academic language:**
  - **To give instruction:** first, then, next, finally.
  - **To describe results:** we observed.
  - **To explain:** this happens because.
  - **To conclude:** in conclusion.

#### **LANGUAGE FOR LEARNING**

- **Language for describing** microorganisms: “It is very small”.
- **Language for classifying:** “This one is harmful”.
- **Language for explaining** function: “It helps to”.
- **Classroom language**
  - **Group work:** “Let’s organize our ideas”
  - **Activities:** complete your booklet section.
  - **Classroom interaction:** “Can you explain your choice?”

#### **LANGUAGE THROUGH LEARNING**

- Learning through experimenting and observing results.
- Learning through recording and explaining findings.
- Learning through connecting science with daily habits.

### **EVALUATION**

#### **Natural Science content evaluation (Decree 61/2022)**

2.4 Propose possible answers to the questions by interpreting the information and results obtained.

3.1 Work as a team to build a simple final product that provides a solution to a problem of need, use, or design, proposing possible solutions, testing different prototypes, and using appropriate tools, techniques, and materials safely.

3.2 Present the final product of the design projects in different formats, explaining the steps followed.

#### **Language evaluation criteria (CEFR, 2018)**

**ADDRESSING AUDIENCES (A2):** Can answer straightforward follow up questions if he/she can ask for repetition and if some help with the formulation of his/her reply is possible.

#### **Assessment tools**

- **For interaction:** group discussions during experiments.
- **For active observation:** checklist focused on participation, experimentation and understanding.
- **For peer/self-evaluation:** peer feedback and self-evaluation checklist.
- **For summative assessment:** rubric for the final booklet and for the oral presentation.

#### **Grading criteria**

#### **FORMATIVE ASSESSMENT**

Cooperative work (20 %)  
Classroom activities (10%)  
Active participation (10%)

#### **SUMMATIVE ASSESSMENT**

Final booklet and oral presentation checklist (60%)

### **ATTENTION TO DIVERSITY**

#### **DUA - General measures**

Use of structured templates and guided tables to help students organize and classify information about microorganisms. In addition, a step-by-step modelling by the teacher to demonstrate how to complete the booklet.

- **The why of learning**

<p>Use of engaging experimental activities connected to daily life, offering different levels of difficulty.</p> <ul style="list-style-type: none"> <li>○ <b>The what of learning</b> Presentation of content through demonstrations, visuals and examples.</li> <li>○ <b>The how of learning</b> Different ways to express learning, such as experimenting, describing or explaining results, supported by scaffolding strategies.</li> </ul>	
<p><b>LOTS to HOTS</b> Ask students to follow simple instructions to complete an experiment. Adapt by asking students to explain the results and connect them to real-life hygiene habits.</p>	<p><b>HOTS to LOTS</b> Ask students to compare different microorganisms and explain their role in daily life. Adapt by asking them to classify images into “helpful” and “harmful” categories.</p>

#### 4.3.5 Challenge 15: Sylvia Earle

LS III CHALLENGE 15: Life under the sea		
<p><b>Timing:</b> Jun 1–Jun 22, 6 sessions.</p> <p><b>Description (aim):</b> this learning situation introduces students to the importance of oceans and marine life through the figure of Sylvia Earle, a marine biologist and ocean explorer. Students will explore ocean ecosystems, the impact of human actions on marine environments and the importance of protecting them. As a final step of the project, they will apply all the knowledge acquired throughout the course to propose actions that contribute to environmental conservation. At the same time, they will develop scientific vocabulary, oral communication skills and literacy skills through explanatory texts in English.</p> <p><b>Final product:</b> A group environmental campaign with a poster to encourage others to protect the oceans, including simple persuasive messages.</p>		
CONTENT		
Curricular content (Decree 61/2022)		
A. Cultura científica	La vida en nuestro planeta	<ul style="list-style-type: none"> <li>- Los reinos de la naturaleza desde un punto de vista general.</li> <li>- Características propias de los animales que permiten su clasificación y diferenciación en subgrupos.</li> <li>- Las funciones y servicios de los ecosistemas.</li> <li>- Ejemplos de buenos y malos usos de los recursos naturales de nuestro planeta y sus consecuencias.</li> </ul>
B. Tecnología y digitalización	Proyectos de diseño y pensamiento computacional	<ul style="list-style-type: none"> <li>- Materiales, herramientas y objetos adecuados a la consecución de un proyecto de diseño.</li> <li>- Técnicas sencillas de trabajo en equipo.</li> </ul>
<p><b><u>Contribution to key competences (RD 157/2022):</u></b> CCL, CPSAA, CC</p>		<p><b><u>Operational descriptors (RD 157/2022):</u></b> CCL1, CCL5, CPSAA1, CPSAA3, CC4</p>

<u><b>Contribution to specific competences (Decree 61/2022):</b></u> 2, 3, 5, 6	<u><b>Evaluation criteria (Decree 61/2022):</b></u> 2.4, 3.1, 3.2, 5.1, 6.1
<b>Language content</b> Key language for explaining environmental issues and solutions. Genre type: Explanation.	
<b>COGNITION</b>	
<u><b>Learning goals</b></u> 1. To <b>remember</b> key elements of ocean ecosystems and to <b>understand</b> how human actions affect marine environments. 2. To <b>apply</b> this knowledge by identifying environmental problems and to <b>analyze</b> their causes and effects. To <b>evaluate</b> different solutions and explain their importance. 3. <b>Metacognition:</b> to reflect through a simple checklist about what students do to protect the oceans. 4. <b>Language:</b> to explain problems and solutions using simple structured language.	<u><b>Learning outcomes (standards)</b></u> 1.1 Students identify elements of marine ecosystems. 1.2 Students explain human impact on oceans. 2.1 Students identify environmental problems. 2.2 Students analyze causes and effects. 2.3 Students explain possible solutions. 3.1 Students reflect on their habits to protect oceans. 4.1 Students explain ideas orally using simple structures.
<b>CULTURE</b>	
<u><b>Learning goals</b></u> To analyze how global awareness and scientific work contribute to ocean conservation.	<u><b>Learning outcomes (standards)</b></u> Students explain the importance of oceans and how scientific knowledge helps protect them.
<b>COMMUNICATION</b> Coyle, Hood and Marsh (2010)	
<b>LANGUAGE OF LEARNING</b> <ul style="list-style-type: none"> <li>- <b>Key language:</b> ocean, marine life, ecosystem, pollution, plastic, protect, environment, damage, solution.</li> <li>- <b>Language content (genre):</b> explanatory texts. <ul style="list-style-type: none"> <li>o <b>Structure:</b> title, introduction, description, causes, effects, solutions, conclusion.</li> <li>o <b>Language input:</b> use of present simple, cause-effect (as a result).</li> </ul> </li> <li>- <b>Academic language:</b> <ul style="list-style-type: none"> <li>o <b>To explain causes:</b> this happens because.</li> <li>o <b>To explain effects:</b> as a result.</li> <li>o <b>To explain solutions:</b> this helps to.</li> <li>o <b>To organize ideas:</b> first, another, finally.</li> </ul> </li> </ul> <b>LANGUAGE FOR LEARNING</b> <ul style="list-style-type: none"> <li>- <b>Language for describing</b> ecosystems: “The ocean is, it has, it contains”.</li> <li>- <b>Language for explaining</b> problems: “This is a problem because”.</li> <li>- <b>Language for explaining</b> solutions: “We can solve this by”.</li> <li>- <b>Classroom language</b> <ul style="list-style-type: none"> <li>o <b>Group work:</b> “Let’s organize our explanation”.</li> <li>o <b>Activities:</b> explain the problem and the solution.</li> <li>o <b>Classroom interaction:</b> “What is the cause of this problem?”</li> </ul> </li> </ul>	

<p><b>LANGUAGE THROUGH LEARNING</b></p> <ul style="list-style-type: none"> <li>○ Learning through explaining environmental problems and solutions.</li> <li>○ Learning through organizing information in a structured way.</li> <li>○ Learning through connecting causes, effects and actions.</li> </ul>
<p><b>EVALUATION</b></p>
<p style="text-align: center;"><b>Natural Science content evaluation (Decree 61/2022)</b></p> <p>2.4 Propose possible answers to the questions posed by interpreting the information and the results obtained and comparing them with the predictions made.</p> <p>3.1 Work collaboratively to build a simple final product that provides a solution to a need-, use-, or design-based problem, proposing possible solutions.</p> <p>3.2 Present the final product of the design projects orally and explaining the steps followed.</p> <p>5.1 Identify the characteristics, organization, and properties of elements in the natural environment.</p> <p>6.1 Identify social and environmental problems.</p>
<p style="text-align: center;"><b>Language evaluation criteria (CEFR, 2018)</b></p> <p><b>SPOKEN INTERACTION (A2):</b> Can interact with reasonable ease in structured situations and short conversations, provided the other person helps if necessary. Can manage simple, routine exchanges without undue effort; can ask and answer questions and exchange ideas and information on familiar topics in predictable everyday situations.</p>
<p style="text-align: center;"><b>Assessment tools</b></p> <ul style="list-style-type: none"> <li>● <b>For interaction:</b> group discussions focused on explaining problems and solutions.</li> <li>● <b>For active observation:</b> checklist focused on participation, understanding and use of vocabulary.</li> <li>● <b>For peer/self-evaluation:</b> peer feedback and students' checklist.</li> <li>● <b>For summative assessment:</b> rubric for the final poster and for the oral presentation.</li> </ul>
<p style="text-align: center;"><b>Grading criteria</b></p> <p><b>FORMATIVE ASSESSMENT</b>  Cooperative work (20 %)  Classroom activities (10%)  Active participation (10%)</p> <p><b>SUMMATIVE ASSESSMENT</b>  Final poster and oral presentation rubric (30%)  Exam (30%)</p>
<p><b>ATTENTION TO DIVERSITY</b></p>
<p><b>DUA - General measures</b></p> <p>Use of organizers and guided frameworks to help students structure explanations about causes and effects. Use of teacher modelling and guided questioning to support understanding of complex relationships.</p> <ul style="list-style-type: none"> <li>○ <b>The why of learning</b>  Use of meaningful environmental topics connected to real life, offering different levels of complexity to engage all learners.</li> <li>○ <b>The what of learning</b>  Presentation of content through examples, visuals and structured explanations.</li> <li>○ <b>The how of learning</b>  Different ways to express learning, such as explaining, organizing or presenting ideas, supported by scaffolding strategies.</li> </ul>

<p><b>LOTS to HOTS</b> Ask students to identify elements of ocean ecosystems from images. Adapt by asking students to explain environmental problems, their causes and possible solutions.</p>	<p><b>HOTS to LOTS</b> Ask students to discuss in groups which ocean problem is the most serious and explain their reasons. Adapt by asking them to complete a simple sentence about that problem.</p>
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## 5. CONCLUSION

The development of this teaching and learning proposal has been both an academic and personal challenge, allowing me to reflect about bilingual education and, more specifically, the CLIL approach. Throughout this process, I have been able to design a complete annual syllabus composed of fifteen didactic units for Natural Science in 4<sup>th</sup> year of Primary Education, integrating scientific content in a meaningful and coherent way.

Regarding the degree of achievement of the objectives, it can be stated that the initial goals have been successfully accomplished. Firstly, the proposal presents a structured and coherent sequence of didactic units focused on the contributions of women in science, giving visibility to relevant female role models that are often absent in educational contexts. In addition, the units promote meaningful and competence-based learning through active methodologies, such as cooperative work, in line with the principles established by the LOMLOE.

From a personal perspective, this project has allowed me to grow both professionally and personally. On the one hand, I have developed essential teaching skills such as planning or sequencing content. On the other hand, I have become more aware of the importance of motivation and vocation in the teaching profession. This experience has reinforced my desire to become a teacher who not only transmits knowledge, but also inspire students.

One of the most meaningful aspects of this work has been the inclusion of female scientists as the central element of the proposal. As stated in the justification, the lack of female references in science can influence students' future choices. Through this project, I have tried to contribute to reducing this gap and promoting a more equal and inclusive vision of science. This idea is especially relevant from a personal point of view, as it connects with my own experiences and my concern for future generations, including my younger sister.

In addition, working with the CLIL approach, which initially represented a challenge, has become one of the most valuable parts of this process. I have been able to understand its importance to create meaningful learning environments. This has confirmed my interest in bilingual education and my intention to continue developing professionally in this field.

## 6. BIBLIOGRAPHY AND REFERENCES

### 6.1 Webgraphy

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## 7. ANNEXES

### 7.1 Annex 1. Stage objectives from Decree 61/2022

<b>a)</b>	To understand and value the principles and norms of coexistence, to learn to act in accordance with them in an empathetic way, to prepare for active citizenship, and to respect human rights as well as the pluralism inherent in a democratic society.
<b>b)</b>	To develop habits of individual and group work, effort, and responsibility in study, as well as attitudes of self-confidence, critical thinking, personal initiative, curiosity, interest, creativity in learning, and an entrepreneurial spirit.
<b>c)</b>	To acquire skills for the peaceful resolution of conflicts and the prevention of violence, enabling students to act autonomously in school and family environments, as well as within the social groups they interact with.
<b>d)</b>	To know, understand, and respect different cultures and individual differences; to uphold equal rights and opportunities for men and women; and to reject discrimination based on ethnicity, sexual orientation or identity, religion or beliefs, disability, or other conditions.
<b>e)</b>	To know and use the Spanish language appropriately, and, where applicable, the co-official language of the autonomous community, and to develop reading habits.
<b>f)</b>	To acquire basic communicative competence in at least one foreign language, enabling them to express and understand simple messages and manage everyday situations.
<b>g)</b>	To develop basic mathematical competencies and begin solving problems that require elementary calculations, geometric knowledge, and estimations, as well as being able to apply them to everyday life situations.
<b>h)</b>	To learn the fundamental aspects of Natural Sciences, Social Sciences, Geography, History, and Culture.
<b>i)</b>	To develop basic technological competencies and begin using them for learning, fostering a critical attitude toward how technologies work and the messages they receive and produce.
<b>j)</b>	To use different artistic representations and expressions and begin creating visual and audiovisual works.
<b>k)</b>	To value hygiene and health, accept their own body and that of others, respect differences, and use physical education, sports, and healthy eating as means to promote personal and social development.
<b>l)</b>	To know and appreciate the animals closest to human beings and adopt behaviors that promote empathy and care for them.
<b>m)</b>	To develop their emotional capacities in all areas of their personality and in their relationships with others, as well as an attitude against violence, prejudice of any kind, and sexist stereotypes.
<b>n)</b>	To develop daily habits of autonomous, active, and healthy mobility, promoting road safety education and respectful attitudes that contribute to preventing traffic accidents.

## 7.2 Annex 2. Second cycle Natural Science content distribution.

2nd Cycle	Subject block	Block item	Content
Year 3	A. Cultura científica	Iniciación en la actividad científica	<ul style="list-style-type: none"> <li>- Instrumentos y apropiados para realizar observaciones y mediciones precisas, usados con seguridad, de acuerdo con las necesidades de la investigación.</li> <li>- El ensayo y error como parte de los inicios de la actividad científica.</li> <li>- Avances en el pasado relacionados con la ciencia mostrando modelos que incorporen la igualdad entre hombres y mujeres.</li> <li>- La importancia del uso de la ciencia.</li> </ul>
		La vida en nuestro planeta	<ul style="list-style-type: none"> <li>- Los reinos de la naturaleza desde un punto de vista general.</li> <li>- Características propias de los animales que permiten su clasificación y diferenciación en subgrupos.</li> <li>- Características propias de las plantas que permiten su clasificación en relación con su capacidad adaptativa al medio.</li> <li>- Las funciones y servicios de los ecosistemas.</li> <li>- Hábitos de vida saludables.</li> </ul>
		Materia, fuerzas y energía	<ul style="list-style-type: none"> <li>- El calor y la temperatura. Cambios de estado.</li> <li>- Los cambios reversibles e irreversibles que experimenta la materia desde un estado inicial a uno final.</li> </ul>
	B. Tecnología y digitalización	Uso de los recursos digitales con responsabilidad	<ul style="list-style-type: none"> <li>- Dispositivos y recursos digitales. Estrategias de búsqueda guiada de información segura y eficiente en internet.</li> <li>- Reglas básicas de seguridad y privacidad para navegar por internet.</li> </ul>
		Proyectos de diseño y pensamiento computacional	<ul style="list-style-type: none"> <li>- Fases de los proyectos de diseño: diseño, prototipado, prueba y comunicación.</li> <li>- Técnicas sencillas de trabajo en equipo y estrategias para la gestión de conflictos.</li> </ul>

		Evolución de la tecnología y la digitalización en las diversas etapas de la historia de la humanidad	- Beneficios y perjuicios de algunas herramientas, máquinas e instrumentos a lo largo de la historia.
<b>Year 4</b>	A. Cultura científica	Iniciación en la actividad científica	-Procedimientos de indagación y formulación de hipótesis adecuados a las necesidades de la investigación -Vocabulario científico básico y adecuado a su edad -Fomento de la curiosidad
		La vida en nuestro planeta	- Ejemplos de buenos y malos usos de los recursos naturales de nuestro planeta y sus consecuencias. - Las formas del relieve más relevantes. - Clasificación elemental de las rocas. - Las funciones vitales del ser humano. - La relación entre las emociones y los principales sistemas del cuerpo.
		Materia, fuerzas y energía	- Fuerzas de contacto y a distancia. - Herramientas, máquinas e instrumentos. - Las sustancias puras y las mezclas.
	B. Tecnología y digitalización	Uso de los recursos digitales con responsabilidad	- Recursos y plataformas digitales restringidas y seguras para comunicarse con otras personas. - Estrategias para fomentar un buen uso digital.
		Proyectos de diseño y pensamiento computacional	- Materiales, herramientas y objetos adecuados a la consecución de un proyecto de diseño. - Iniciación en la programación a través de recursos analógicos o digitales.
		Evolución de la tecnología y la digitalización en las diversas etapas de la historia de la humanidad	- Hitos tecnológicos en cada etapa de la historia de la humanidad.

### 7.3 Annex 3. Specific competences and assessment criteria from Decree 61/2022

<b>First term</b>		
Learning situation I	Specific competences	Evaluation criteria
1 Taking care of our bodies	2, 3	2.1, 2.4, 3.1, 3.2
2 Healing plants from nature	2, 3, 6	2.1, 3.2, 6.1
3 From caterpillar to butterfly	2, 3	2.1, 3.2
4 Why is nature so diverse?	2, 3, 5	2.1, 2.4, 3.1, 3.2, 5.1
5 Secrets hidden in fossils	2, 3, 5, 6	2.1, 2.3, 3.2, 5.3, 6.2
<b>Second term</b>		
Learning situation II	Specific competences	Evaluation criteria
6 Our body, our well-being	2, 3, 4	2.1, 2.4, 3.2, 4.3
7 The important job of mushrooms	2, 3, 5	2.4, 3.2, 5.2
8 Invisible science that helps people	1, 2, 3	1.1, 2.1, 2.3, 3.2
9 Understanding energy around us	2, 3, 5	2.3, 2.5, 3.2, 5.2
10 Why we look like our family	2, 3	2.1, 2.3, 3.2, 5.2
<b>Third term</b>		
Learning situation III	Specific competences	Evaluation criteria
11 Protecting nature from pollution	2, 3, 5, 6	2.4, 3.1, 3.2, 5.1, 5.3, 6.1
12 The instructions of life	1, 2, 3	1.1, 2.4, 3.1, 3.2
13 How animals live and learn	2, 3	2.1, 2.4, 3.2
14 The invisible living beings	2, 3,	2.4, 3.1, 3.2
15 Life under the sea	2, 3, 5, 6	2.4, 3.1, 3.2, 5.1, 6.1

## 8. APPENDICES

### 8.1. Appendix 1. Scientific mission letter.

**SCIENTIFIC MISSION**

Dear students, this year we are going to start a very special mission. We are going to travel through time. But we won't travel in a normal way. We will travel like scientists. Every few weeks, we will meet an incredible woman who helped change the world with her discoveries. Some of them looked at the stars, some studied plants, some discovered secrets inside our bodies, others explored the oceans. Each time we meet one of these scientists, we will become part of her team. We will investigate what she studied. We will ask questions. We will experiment. We will observe. We will think like real scientists.

And there is one important thing you need to remember: Science is not only for boys. Science is not only for adults. Science is for everyone. Science is for you. At the end of each mission, we will create something special to show what we have learned. And step by step, we will build our own big scientific adventure.

Are you ready to travel through history and discover the secrets of nature?


**Source:** own creation made with “Canva”: <https://www.canva.com/>

## 8.2 Appendix 2: Brainstorm




Source: own creation made with “Canva”: <https://www.canva.com/>

## 8.3 Appendix 3: Barbara’s biography



# BIOGRAPHY



## Barbara McClintock


- 16th of June of 1902
- Scientist
- US Citizen

### Who was she

Barbara McClintock was a scientist who studied corn plants to understand how traits are passed from parents to children. She looked at the genes inside the plant's chromosomes, the parts that carry instructions for how living things grow and look. Barbara's discovery helped scientists understand that DNA isn't fixed, it can change and adapt.





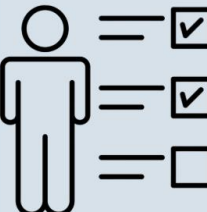


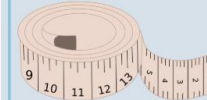
### Curiosities

- She loved working alone.
- She won the Nobel Prize at 81 years old.



Source: own creation made with “Canva”: <https://www.canva.com/>

#### 8.4 Appendix 4: Vocabulary introduction

			
			
PARENTS	GRANDPARENTS	SIMILAR	DIFFERENT
CHARACTERISTIC	INHERIT	DNA	SIZE

Source: own creation made with “Canva”: <https://www.canva.com/>


### 8.5 Appendix 5: Observation activity





Source: own creation made with “Copilot”: <https://copilot.microsoft.com/>


### 8.6 Appendix 6: Genetics song


**GENETICS SONG**

 I have brown eyes, look at me,  
curly hair for all to see.  
My mother's eyes, my father's nose,  
where it comes from, now I know!

 We get traits from our family.  
From our parents, you and me!  
Some are same and some are new,  
that's what genes can do!

 He is tall and she is short,  
Straight hair, curly—different sort!  
My grandparent has the same,  
Family traits are not a game!

 We get traits from our family.  
From our parents, you and me!  
Some are same and some are new,  
that's what genes can do!



Source: own creation made with “Canva”: <https://www.canva.com/>







### 8.7 Appendix 7: Spot the difference



Source: own creation made with “Chatgpt”: <https://chatgpt.com/>

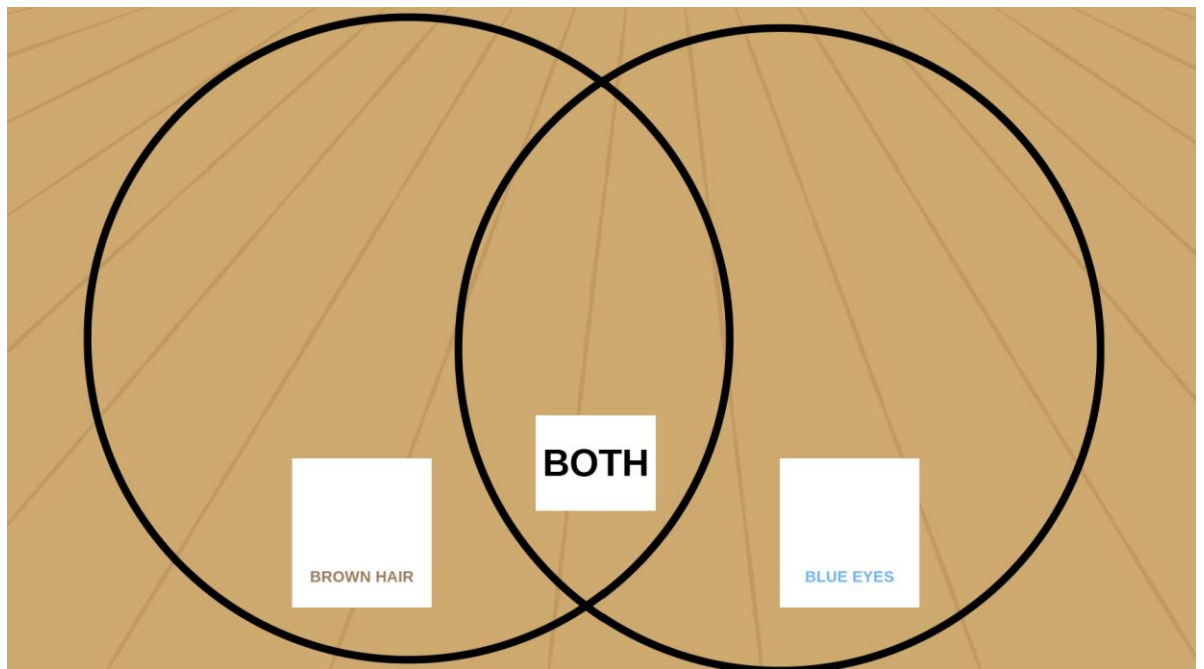
### 8.8 Appendix 8: Guess who

**GUESS WHO**

 MARCOS	 CLARA	 ANA	 MARIA JOSÉ	 LUCÍA
 SANTIAGO	 PAULA	 JAIME	 JULIA	 LUCAS
 CRISTINA	 NURIA	 IRENE	 AMAYA	 JUAN
 VICTOR	 ISABEL	 PEDRO	 SARA	 LUIS
 RAQUEL	 JAVIER	 PABLO	 CARMEN	 JORGE

Source: own creation made with “Canva”: <https://www.canva.com/>

### 8.9 Appendix 9: Human Venn Diagram



Source: own creation made with “Canva”: <https://www.canva.com/>

### 8.10 Appendix 10: Family photos analysis



Source: own creation made with “Chatgpt”: <https://chatgpt.com/>

## 8.11 Appendix 11: Question prompts

# Question prompts

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- Who has your \_\_\_?
- Do you have your \_\_\_'s \_\_\_?
- Is your \_\_\_ similar to your \_\_\_?
- Who in your family \_\_\_?
- Do you share \_\_\_ with \_\_\_?
- Are your \_\_\_ like your \_\_\_?
- Does anyone in your family have \_\_\_?
- Who looks most like you?
- Who do you think you inherited \_\_\_ from?

Source: own creation made with “Canva”: <https://www.canva.com/>

## 8.12 Appendix 12: My family tree (invented)



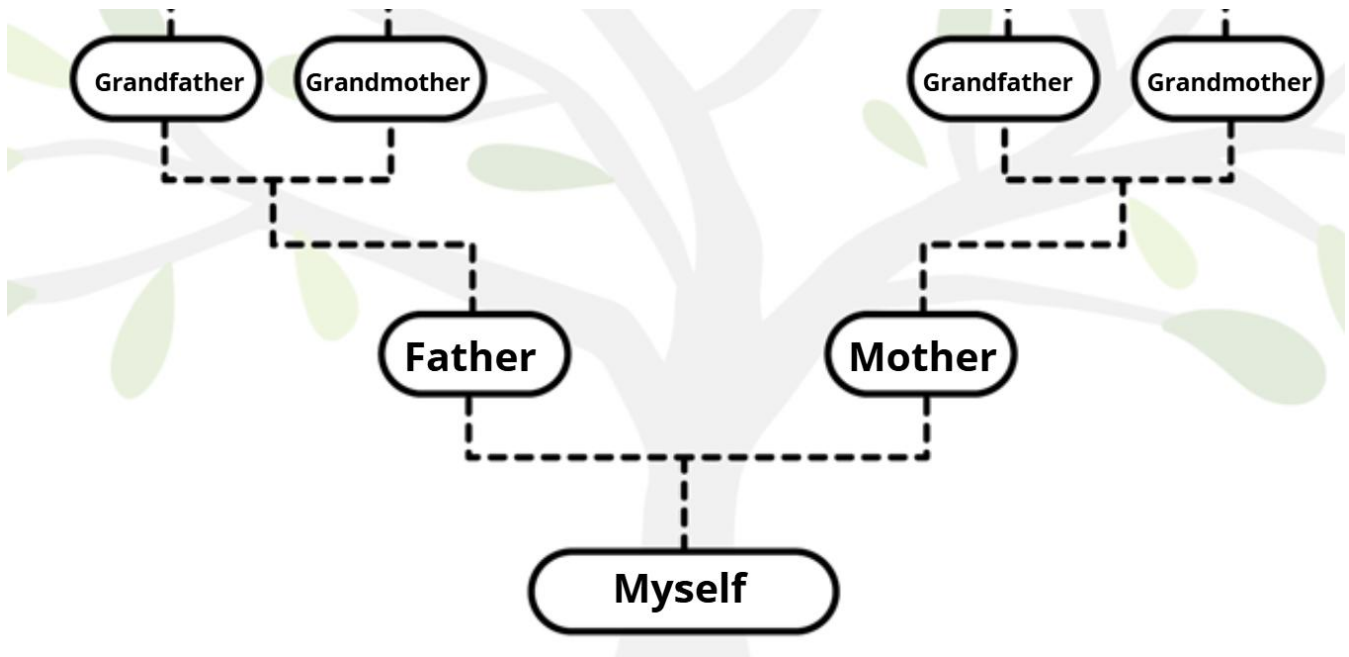
Source: own creation made with “Canva” and “Chatgpt”: <https://www.canva.com/> , <https://chatgpt.com/>

### 8.13 Appendix 13: Genetic puzzle



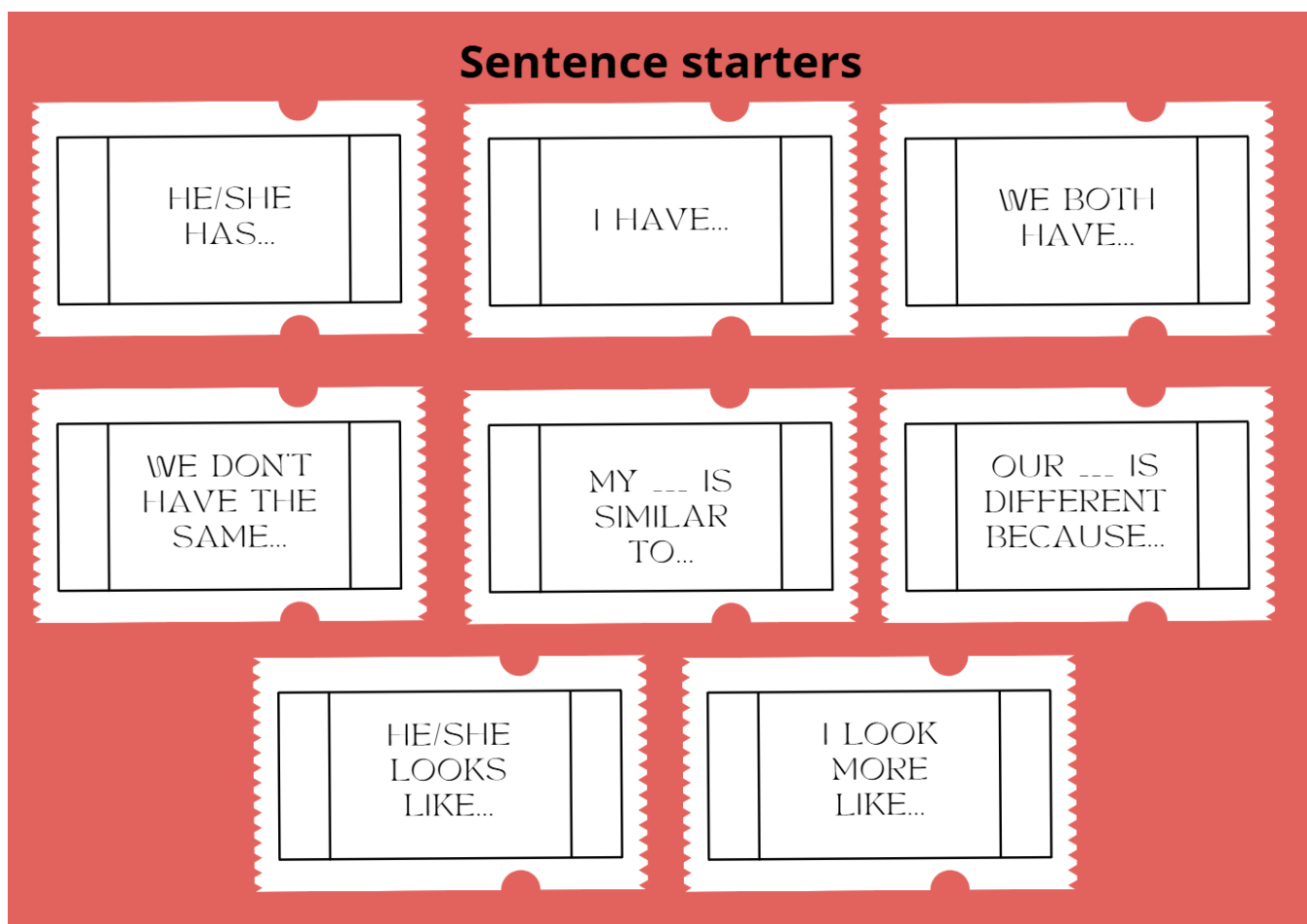
Source: own creation made with “Canva” and “Chatgpt”:  
<https://www.canva.com/> , <https://chatgpt.com/>

#### 8.14 Appendix 14: Family tree diagram



**Source:** own creation made with “Canva”: <https://www.canva.com/> , <https://cdn.freefamilytreetemplates.com/images/large/blank-family-tree-template.png>

## 8.15 Appendix 15: Sentence starters



Source: own creation made with “Canva”: <https://www.canva.com/>

## 8.16 Appendix 16: Family tree rubric

### FAMILY TREE RUBRIC

CONTENT ASSESSMENT	1. NEEDS IMPROVEMENT	2. GOOD	3. VERY GOOD	4. EXCELLENT
Understanding of genetics	Shows little understanding of traits or family similarities.	Identifies some traits but with limited understanding.	Correctly identifies traits and simple inheritance patterns.	Clearly explains traits and how they are inherited within the family.
Accuracy of family tree content	Family tree is incomplete or incorrect.	Includes basic family members with some mistakes.	Complete and mostly accurate family tree.	Fully accurate and detailed family tree with clear relationships.
Connection between traits and family members	Does not relate traits to family members.	Makes simple or unclear connections.	Relates traits to family members correctly.	Clearly explains and justifies similarities and differences between members.
LANGUAGE ASSESSMENT	1. NEEDS IMPROVEMENT	2. GOOD	3. VERY GOOD	4. EXCELLENT
Clarity of oral presentation	Difficult to understand; very limited speech.	Understandable but with pauses and hesitation.	Clear and mostly fluent with minor pauses.	Very clear, confident and well-paced.
Use of vocabulary	Uses very limited or incorrect vocabulary.	Uses basic vocabulary with errors.	Uses appropriate vocabulary with few mistakes.	Uses a wide range of vocabulary accurately and naturally.
Use of simple structures	Uses incorrect or incomplete sentences.	Uses simple sentences with errors.	Uses correct simple structures.	Uses structures accurately and confidently.

OTHER SKILLS	1. NEEDS IMPROVEMENT	2. GOOD	3. VERY GOOD	4. EXCELLENT
Visual presentation of the family tree	Messy, incomplete or hard to read.	Complete but not very organized.	Clear and well-organized.	Very clear, creative and visually attractive.
Attitude and participation	Shows little interest or avoids participation.	Participates with low confidence.	Participates actively.	Shows enthusiasm, confidence and strong engagement.

**Source:** own creation made with “Canva”: <https://www.canva.com/>

## 8.17 Appendix 17: Self-assessment checklist

# SELF-ASSESSMENT CHECKLIST

Student **author** name

What did I learn about myself?	Yes	A little	Not yet
I learnt that I have the same traits as someone in my family.			
I learnt that I am different from someone in my family.			
I can say who I look like (mother, father, grandparent...).			
I can explain it using because.			
I discovered something new about my family.			

Now write your idea

Something I learnt about myself is....

**Source:** own creation made with “Canva”: <https://www.canva.com/>