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### DE APRENDIZAJE INTEGRADO

### DE CONTENIDO Y LENGUA (AICLE) EN CIENCIAS NATURALES

4.º EDUCACIÓN PRIMARIA

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PROGRAMACIÓN GENERAL ANUAL – AICLE  
ÁREA CIENCIAS DE LA NATURALEZA  
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## **RESUMEN**

Este Trabajo de Fin de Grado es una Programación General de Aula para el área de Ciencias de la Naturaleza. Esta programación está orientada al curso de 4º de Educación Primaria. La propuesta está basada en el enfoque de Aprendizaje Integrado de Contenido y Lengua (AICLE), que propone un aprendizaje del contenido curricular y de la lengua extranjera de forma conjunta y experimental. El trabajo consta de dos partes; la primera parte es el marco teórico en el que están expuestos todos los fundamentos teóricos en los que se basan las unidades didácticas, que componen la segunda parte. El marco teórico incluye también los contenidos, objetivos, criterios de evaluación, tipología de actividades y la colaboración con las familias, entre otros. Para su elaboración, se ha realizado un proceso de investigación, de consulta de bibliografía y de lectura de abundantes artículos, libros y otras fuentes. En la segunda parte del trabajo, se presentan nueve unidades didácticas diseñadas de acuerdo con las teorías explicadas previamente; cuatro de ellas se han desarrollado en su totalidad e incluyen la secuencia de actividades y de evaluación. Por último, la unidad 1 incluye, además, una descripción detallada de los materiales y recursos.

## **PALABRAS CLAVE**

Ciencias de la naturaleza, AICLE, Programación general de aula, Aprendizaje Basado en Proyectos, Scaffolding

## **ABSTRACT**

This End of Degree Project is an Annual Syllabus for the area of Natural Sciences. This programming is oriented to the 4th year of Primary Education. The proposal is based on the Content and Language Integrated Learning (CLIL) approach, which proposes a joint and experimental learning of the curricular content and the foreign language. The work consists of two parts; the first one is the theoretical framework which consists of the theoretical foundations that sustain the didactic units, which make up the second part. The theoretical framework also includes the contents, objectives, evaluation criteria, types of activities and collaboration with families, among others. Its elaboration has involved a process of research, consulting bibliography and reading abundant articles, books and other sources. In the second part of the work, nine teaching units have been designed according to the previously explained theories; four of them have been fully developed and include the sequence of activities and assessment. Finally, unit 1 also includes a detailed description of the materials and resources.

## **KEY WORDS**

Natural Sciences, CLIL, Syllabus, Project Based Learning, Scaffolding.

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## I. GENERAL PRESENTATION

The aim of this TFG is the proposal of a complete Natural Science annual syllabus for Year 4 of Primary Education. This document consists of two different parts. The first part presents the legislative corpus to be applied and the theoretical framework on which the work is based, which means that the procedures, methodologies, skills and projects of the didactic units are elaborated taking into account the Royal Decree 126/2014, of 28 February, which establishes the basic curriculum of Primary Education and the Content and Language Integrated Learning (CLIL) approach. The second part of this TFG, includes the nine didactic units to be developed in a whole school year so as to achieve the objectives and contents established for 4<sup>th</sup> grade of Primary Education.

The nine didactic units (DU) are formulated for the next school year (from September 2021 to June 2022) in the Padre Manyanet private school, in Alcobendas, where I am doing my practicum. All nine DU are based on the CLIL approach, which promotes content learning and language acquisition at the same time. The student understands the curricular contents, making use of the foreign language necessary to learn them.

In this teaching and learning context the role of the teacher will be to guide and support, leaving the role of leader to the student, who will discover and learn according to their own learning rhythm and interests. Moreover, as this is the area of Natural Science, experimentation and manipulative activities will prevail, incorporating an experimental activity carried out by the students in each unit.

When I was offered the opportunity to do an End-of-Degree Project on CLIL, my first thought was that it was a big challenge. I knew it was not going to be easy, not only because it should be done in another language, but also because the task was huge. This has been my first design of a syllabus and it is about a very demanding subject. Besides this, the syllabus is directed to very curious children of the XXI century so the activities are supposed to be motivating, innovative and exciting, likely to develop their key competences. All this implied the use of a very well selected set of digital and analogical resources from the point of view of an education aimed at providing these students with quality learning on Science, Technology, Engineering and Mathematics (STEM) in the CLIL Natural Science classroom. However, I also knew that I would have to do so every school year from now on.



As teachers, we are impelled to do our best in each lesson, detecting the needs and providing the most efficient, innovative, and attractive solutions to our students. We are teachers to teach, to motivate and to make our students grow. So, it is worth the challenge.

Definitely, this TFG gave me the opportunity to learn more about what I know and what I should be always learning in order to feel satisfied with the work done. It has been an excellent way to finish this university degree.

## II. INTRODUCTION AND JUSTIFICATION

This section consists of the theoretical justification of this final degree project which includes a description of the socio-economic context of the school, Colegio Padre Manyanet, a brief description of the structure of the teaching staff and the specification of the psycho-evolutive characteristics of 4-year-old students of Primary Education, for whom it is intended.

### 2.1. Theoretical justification

It is important to highlight that this annual Natural Science program proposal is in line with Content and Language Integrated Learning approach (CLIL), which I consider essential for a rational and innovative conception of the Natural and Social Science areas in a bilingual educational environment.

On the other hand, it should be considered that the projects designed for each of the terms have a common thread: the three Rs (reduction, recycling, and reuse), chosen to give continuity to the didactic units, to facilitate the learning narrative and to enhance individual and collective commitment to the sustainable development goals of the 2030 Agenda. Thus, each project proposes the development of a final collaborative work that includes a variety of activities related to the reduction in the use of raw materials and natural resources, the reuse of elements to promote a more rational consumption, and recycling as a means of sustainable use of some basic resources.

It is also necessary to specify that this annual programme is designed to be carried out in a course not conditioned by the limitations that COVID-19 has imposed at schools. There is no need to say that if it had to be developed in a pandemic environment, it would be necessary to adapt essential aspects of the programming such as objectives, contents, activities, resources, or the evaluation criteria.

CLIL is an educational approach whose aim is promoting both content and language mastery to predefined levels (Marsh et al., 2010). This approach has turned into a very effective way to learn content and a second language at the same time, and it has emerged as an example of “interdisciplinary educational convergence” (Wolff, 2012, p. 11) that involves many different approaches and methods in practice.

Since 2004, the Community of Madrid has been implementing a bilingual teaching program which in 2020 reached 50% of the public and semi-private schools and the 54,7% of the public and semi-private secondary schools (Comunidad de Madrid, 2019). This

bilingual program consists not only of studying English as a second language, but also of teaching other curricular areas in that language with a CLIL approach. Areas such as Natural and Social Sciences, Arts, Physical Education or Music are studied in English, the minimum is a 30% of the teaching time.

Bilingual programs are aimed at enhancing the competency in a second language, and that is the reason why a high exposure to English is required. The objective is to use English in everyday educational situations as an efficient communicative tool in and outside school. In the year 2019-2020, there were 399 public bilingual school, 181 public secondary schools, and 216 semi-private centres (Comunidad de Madrid). Teacher training has been a major issue since teachers are a basic part to achieve the objectives. Without a proper qualification it would be impossible to lead students to an adequate competence in English.

Apart from the Program design and development by the Educational Institutions and the essential teacher training, bilingual education requires a rigorous lesson planning (Custodio Espinar, 2019a; 2019b). Related to this, the annual syllabus presented includes three term projects as the whole proposal is inspired by the Project-Based-Learning (PBL) approach. In PBL students are active participants setting their own learning goals and creating meaningful relations through their experiences. Projects allow students to work in peers or collaborative groups to obtain products as diverse as: new digital content, posters or infographics showing what the group has learnt along the project, or items and artefacts built as a result of a complex learning process.

Thomas (2000, pp. 3-4) identified five characteristics of the PBL approach:

- Centrality: it is central to the curriculum.
- Driving question: projects should focus on questions or problems that “drive” students to encounter the central concepts and principles of a discipline.
- Constructive investigations: the principal activities of the Project must involve the construction of knowledge by students.
- Autonomy: projects are student-driven to some significant degree.
- Realism: projects are realistic or authentic, not school-like.

## 2.2. Socio cultural context

This end of degree project is based on the school Padre Manyanet, which is a semi-private bilingual religious institution placed in Alcobendas, Madrid. It is an entity belonging to “Hijos de la Sagrada Familia” which was founded by San José Manyanet, in 1864. Its educational offer ranges from pre-primary to High school and it counts with the following facilities:

- Educational spaces: conference room, library, science and chemistry laboratories, technology workshop, about 60 classrooms, and a chapel.
- Sport facilities: sports centre, specific rooms for judo, ballet, dance and psychomotricity, and three fields for both soccer and basketball.
- ICT equipment: Internet connection, educational platform, digital blackboards on every classroom, and iPads for individual use.

From a religious point of view, the aim of the centre is to teach to be a person and to know what the keys to happiness are, and to contribute to the development of their emotional and moral intelligence. The school ensures the basic competencies to face the demands of the actual “society of knowledge”, and, as an institution, it wants to be a place for social learning which lead to a more human society, that is, a place where students would learn to live in family and in community. The school is also a place where students could improve their existential and spiritual intelligence, inspired by the Gospel.

The main educational objectives of the Padre Manyanet school are:

- To promote the students integral education in collaboration with the family.
- To promote the development and enrichment of the biopsychological, sociocultural, and transcendent dimensions of the student.
- To train students to read and interpret reality with a critical and a creative attitude.
- To awake and enhance the sense of responsibility and help them make coherent personal decisions.
- To prepare students to develop a supportive and active attitude to contribute to the transformation of society.

Some of the Padre Manyanet schools educational bases are:

- Base the pedagogical work on the culture of the heart and intelligence, developing an integral formation of the student.
- Guide students in their maturation process and help them discover their vocations.
- Define the human relationships on trust and dialogue in a context of co-responsibility, joy and harmony.
- Present the Gospel as a choice of life and commitment, and work with human and Christian values.
- Constant search for pedagogical innovation has lead us to create our Innovation Program, which is based on active methodologies: cooperative learning, PBL, gamification, diversified evaluation.
- Understand new technologies as an indispensable tool in student learning.
- Take care of the coexistence between the entire educational community (educators, students and families), promoting participation in activities based on the principle that education must necessarily be a shared action.

A relevant information related to the context of the school is that most of the families have a high socio-economic level and both parents work in the tertiary sector, and close to the area of the centre.

### **2.3. Teaching staff context**

The teaching staff of the Padre Manyanet schools follow the Christian values, which inspire their teaching action. As professionals, they are constantly learning, improving their abilities and skills and participating in courses and different educative activities.

A basic scheme of the teaching staff of the institution would be the following (Figure 1):

|

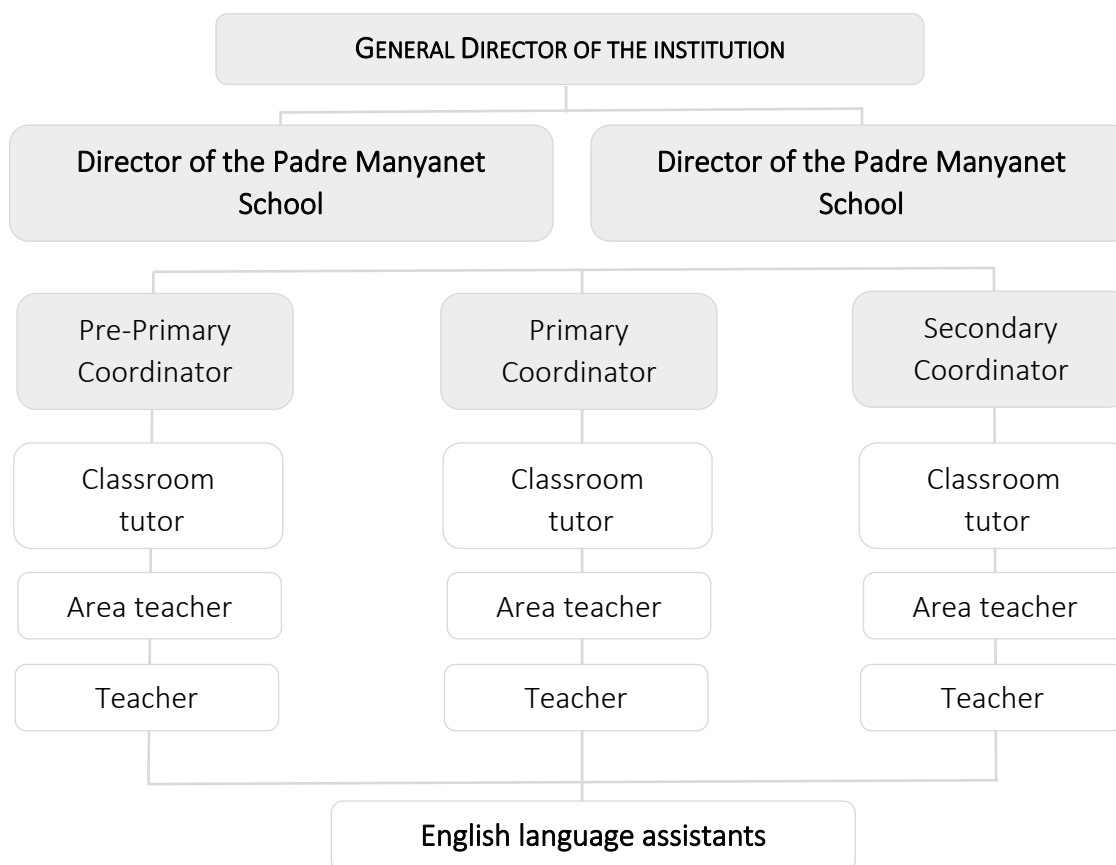


Figure 1: General organization scheme. Source: Author

#### 2.4. Phychoevolutive characteristics of the target students

All students differ significantly from each other. This end-of-grade project is designed for students in 4th grade of primary education, so these students are between 9 and 10 years old.

Piaget (1963) identified four stages of cognitive and affective development in childhood and adolescence. Those four stages are as follows (Table 1):

**Table 1**

*Cognitive and affective development in childhood.*

STAGE	AGE	CHARACTERISTICS
Sensorimotor	0-2 years	<ul style="list-style-type: none"> <li>Physical exploration</li> </ul>
Preoperative	3-7 years	<ul style="list-style-type: none"> <li>Egocentrism</li> <li>Concrete thinking</li> <li>Focus on one thing</li> <li>Trouble distinguishing between fantasy and reality</li> </ul>

		<ul style="list-style-type: none"> <li>● Problems with moral judgments</li> <li>● Problems with inferences</li> </ul>
<b>Concrete operations</b>	8-12 years	<ul style="list-style-type: none"> <li>● Sympathy for others</li> <li>● Decent attention</li> <li>● Inferences</li> <li>● Progress in the fantasy-reality distinction</li> <li>● Concrete thinking</li> <li>● Emphasis on the present</li> </ul>
<b>Formal operations</b>	13-17 years	<ul style="list-style-type: none"> <li>● Emphasis on the future</li> <li>● Probability understanding</li> <li>● Hypothetical reasoning</li> </ul>

*Note.* Based on Piaget (1963).

But, as the students to whom this work is directed are 9-10 years old, we are going to focus only on the characteristics of concrete operations stage.

This period begins around 7-8 years and ends at 11-12; it is the third stage proposed by Piaget (1963) in the theory of Cognitive Development. During this stage, students acquire a greater ability to structure their ideas and develop better logical, rational and operational thinking.

It is at this stage when students begin to be able to express arguments and demonstrate greater intellectual capacity. One of the most important characteristics of this stage is that students are better able to use logical thinking.

The main characteristics of the “Concrete operations” stage are:

**Conservation:** it is the ability to understand that an object can change its appearance but not its quantity; that is, the distribution of matter does not matter because this does not affect its mass, length or volume.

Example: If we have an elongated and thin glass filled with water and we pass it to another smaller but wider glass, the amount of water is the same. Although its appearance changes, the quantity is the same, but the distribution is different.

**Classification:** this characteristic refers to the ability that students acquire to identify the properties of objects and classify them based on those. In this stage, they

can classify objects based on three different categories: inclusion of classes, simple classification, and multiple classification.

Example: having different farm, domestic, marine animals, etc., students should be able to classify them according to, at least, three criteria such as diet, way of reproduction, and habitat.

**Seriation:** this refers to the ability to put different elements in order according to weight, size, colour...

Example: if we have tubes of different sizes, they have to know how to put them in order from the largest to the smallest.

**Decentration:** it refers to the ability of students to consider different aspects of a conflict situation and manage them to seek a solution. Students at this stage are already able to control themselves facing troubles.

Example: if students have a conflict with a classmate they would be able to find a solution by means of dialogue and maintaining an open attitude.

**Transitivity:** this refers to the ability of students to find the existing relationship between two elements. With this ability students can relate ideas and concepts.

Example: if we present new concepts like some body organs (bronchi, lungs, heart, bones or muscles), students would be able to relate them with the idea of “human body”.

### III. CLIL APPROACH

As a brief introduction to CLIL approach, some of the different methodologies in which it is based should be summarized. Many different authors have defined the pillars for CLIL Approach:

- For Marsh (1994) CLIL can be explained as “...situations where subjects, or parts of subjects, are taught through a foreign language with dual-focussed aims, namely the learning of content, and the simultaneous learning of a foreign language” (p. 23).
- Coyle et al. (2010) formulated the 4Cs approach which consider CLIL a curriculum which develops the content, culture, communication, and cognition.
- Bruner’s concept (1978) of scaffolding focused in student learning and how to achieve greater autonomy for students.



- Cummins (1979, 2001) contribution to CLIL approach deals with the distinction between BICS (basic interpersonal communication skills) and CALP (cognitive academic language proficiency).
- Finally, Vygotsky (1978) developed a theory that pointed out the relation between cognitive and language development, and the importance of the role of the teacher as a guide to the student, leaving him to be the leader of his own learning.

These are the pillars of CLIL. Below, a detailed description of their implications in lesson planning is described.

### 3.1 Methodological principles

It is important to identify the principles on which this annual syllabus is based so the CLIL methodological model is clearly shown. In a CLIL teaching program there are some essential principles which serve as a reference for teachers in their task of designing the adequate teaching strategies that best accomplish their groups' learning necessities.

Custodio Espinar (2019b) sets a list of the essential methodological principles that should be part of an efficient CLIL program ([Annex 1](#)). These are the core ones:

- Didactic programming, which must include the 4C's .
- Language, which must be approached from BICS to CALP.
- Content, which is determined by the official curriculum and worked according to student's level of linguistic competence.
- Linguistic demands of the content learned, which lead to "scaffolding" in order to adapt learning strategies to student's cognitive and linguistic competence.

### 3.2 The 4C's

Coyle's 4 C's framework integrates content learning and language learning within specific contexts and acknowledges the symbiotic relationship that exists between these elements (Coyle et al. 2010). She suggests that effective CLIL takes place as a result of this symbiosis, through:

- progression in knowledge, skills and understanding of the context;
- engagement in associated cognitive processing;
- development of appropriate language knowledge and skills;
- the acquisition of a deepening intercultural awareness, which is in turn brought about by the positioning of self and "otherness". (Coyle et al., 2010, p. 41)

Figure 2 shows the relationship of these components of CLIL.

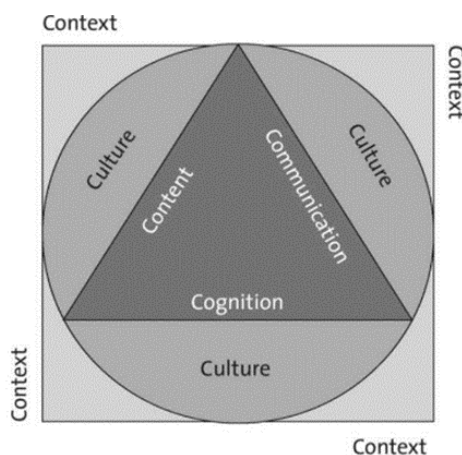


Figure 2: *The 4 Cs Framework*. Source: (Coyle et al., 2010).

Coyle's 4 Cs are an essential ingredient in CLIL contexts. The framework integrates four contextualized building blocks (Coyle et al., 2010):

- Content (Subject matter): it refers to the curricular subject progression in knowledge, skills and understanding and to the way students construct knowledge and develop skills (Lantolf, 2000; Vygotsky, 1978). CLIL programmes develop cross-curricular links among different subjects. In all CLIL contexts we need to analyse content for its language demands and to present content in an understandable way.
- Communication (Language learning and usage): the terms 'language' and 'communication' are used interchangeably. This is not only a syntactical device for promoting the *C concepts*, but also a strategy for promoting genuine communication in the vehicular language if learning is to take place (Coyle et al., 2010) Language needs to be learnt in context; the key is interaction: using language to learn while learning to use language. When students produce the target language while studying curricular subjects, they show that subject knowledge and language skills are integrated. Learners have to produce subject language in both oral and written forms. CLIL aims to increase Students Talking Time (STT) and reduce Teacher Talking Time (TTT). Self-evaluation and peer and group feedback should be encouraged.
- Culture (Intercultural understanding): developing global citizenship. Culture is at the core of CLIL. Learners sometimes need to communicate in a non-native language with new arrivals who may have different home languages as well as

different social and cultural backgrounds. Learners need knowledge of those who live in other regions and countries.

- Cognition (Learning and thinking processes): developing cognitive and thinking skills. CLIL promotes cognitive or thinking skills which challenge learners. We need to develop learners' cognitive skills so they can study subjects from the curriculum and express their thoughts and ideas. (p. 7)

From this perspective, CLIL involves “learning to use language appropriately whilst using language to learn effectively” (Coyle, 1999, p. 9). It is built on the following principles (Coyle, 1999):

- Content matter is not only about acquiring knowledge and skills, but also about the learner creating their own knowledge and understanding and developing skills.
- Content is related to learning and thinking.
- Thinking process need to be analysed for their linguistic demands.
- Interaction in the learning context is fundamental to learning.
- The relationship between cultures and languages is complex.
- CLIL is embedded in the wider educational context in which it is developed and therefore must take account of contextual variables in order to be effectively realized.

### 3.3 Communicative language teaching

Snow, Met and Genesee (1989, p. 205) differentiated between content-obligatory language, essential for learning the content, from the content-compatible language, which transmits both the content of a lesson and the linguistic cultural objectives of the curriculum.

In a CLIL approach, teachers and learners need to know the language of the curricular subjects or *content-obligatory language*, which is the vocabulary, grammatical structures, and functional language for each of the subjects. Unless learners know this language, they will not be able to understand the content subject or any communicative ideas.

Also, there are different examples of *content-compatible language*, which occur when students use the language learned in their English lessons to describe an experiment or an event, and they can use the vocabulary and grammatical structures used to describe geographical features to enrich their L2 knowledge.

Although subject-specific language is used in tests, CLIL does not only test knowledge of subjects-specific vocabulary but knowledge of grammatical structures and functional language used across the curriculum (Bentley, 2010).

Even though the focus of a CLIL lesson is on understanding subject content not on grammatical structures, CLIL model gives learners opportunities to develop linguistic abilities and to improve their acquisition of vocabulary and grammar.

In a CLIL program teachers need to take into consideration the relationship between content objectives and language objectives. The Language Triptych is a representation of how CLIL encourage language learning by using it from three different perspectives, or with three different purposes.

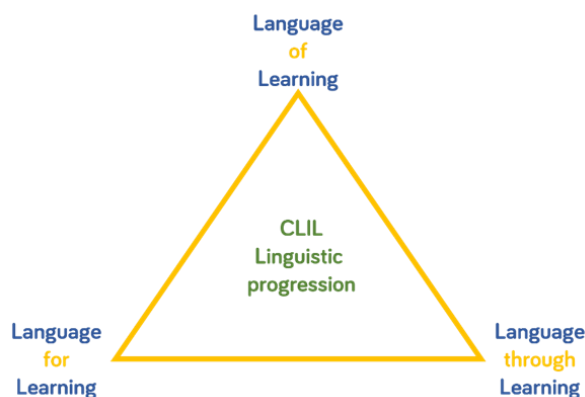


Figure 3: The Language Triptych. Author: based on Coyle, 2000, 2002)

- Language of learning (content): essential vocabulary and grammar associated with the topic for a communicative approach. It is used in authentic interactive contexts to develop communicative skills, rather than focusing on grammar.
- Language for learning (meta-cognition and grammar system): the kind of language needed to operate in a foreign language environment. Learners need skills for pair work, cooperative group work, asking questions, debating, enquiring, thinking, memorizing, etc.
- Language through learning (cognition): new meanings would require new language. Effective learning cannot take place without active involvement of language and thinking. According to Met (1988: 38), "research indicates that strengthening and making connections amongst concepts and knowledge increases learning and retention".

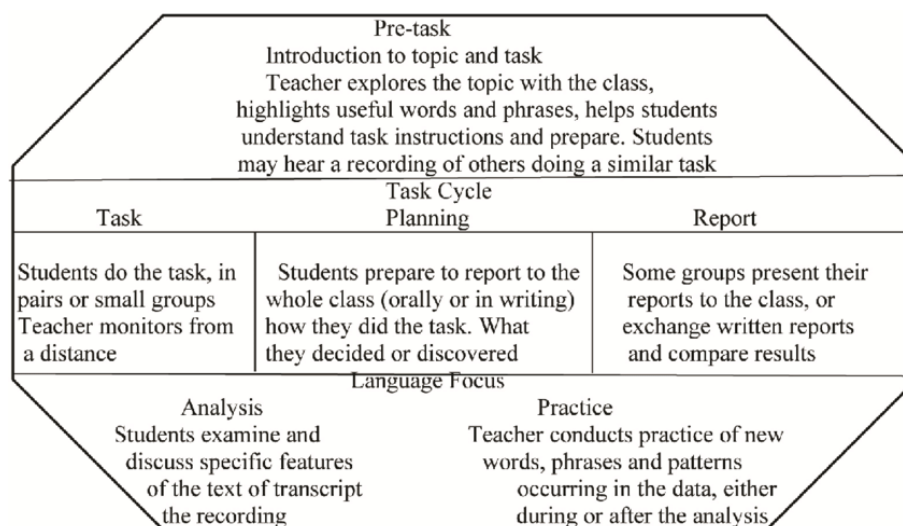
For Ball et al. (2015), teachers, as mediators, must build bridges capable of helping learners to connect with the new subject’s knowledge. According to these authors, this “bridge” is the language practice, which is sustained by the following principles:

1. *Mediate* language between the learner and the new knowledge
2. Develop subject language awareness
3. Plan with language in mind
4. Carry out a curriculum language audit
5. Make general academic language explicit
6. Create initial talk time
7. Sequence activities from “private” through to “public” (p. 2)

Another pillar of the communicative approach of this syllabus is task-based learning (TBL) (Nunan, 2004). It is a very common communicative language teaching strategy among CLIL teachers because it means a switch from grammar-based methods to task-based ones. It encourages learners to use the L2 for meaningful purposes; they use their language resources during the various stages of the task rather than practising pre-selected items such as grammar, adjectives, etc.

The following diagram displays the different stages of a communicative based task and the uses and purposes of language in each of them.

Figure



4: Task-based Approach. Author: Cinganotto et al., 2019

A researcher in bilingual education, Jim Cummins (1984), described BICS and CALP as two different types of language involved in bilingual education contexts.

- BICS: (Basic Interpersonal Communicative Skills). These are skills needed for social, conversational situations. Language learning is contextualised and supported by teachers and resources. Tasks associated with BICS are often less cognitively demanding.
- CALP: (Cognitive Academic Language Proficiency). It takes learners at least five years to achieve CALP, which is a level required for academic school study. Language used in subject teaching is often abstract and formal and therefore is cognitively demanding.

As a result of this differentiation, CLIL activities should be designed to allow a great variety of learning styles of a combination of learning techniques to provide significant experiences for the individual learner to promote both BICS and CALP.

### **3.4 Teacher and students' roles**

As CLIL constitutes a new approach, it requires new pedagogical resources and teaching methodologies which implies that educational systems need to change their perspective on second language teaching and teachers must adopt new roles.

To enable a successful implementation of a CLIL approach, teachers should receive a correct preparation in a content subject and to be fully competent in the second language to accomplish the teaching objectives in class. Also, the assimilation of CLIL within the educational institution will be essential (Marsh, Mehisto, Wolff, & Frigols, 2010).

In most cases, it is the content teacher who is considered the most adequate CLIL teacher, although he or she is commonly supported by a language teacher who is in charge of making the integration of both language and content. Unfortunately, it is usually difficult for content teachers to present subject content in the target language, and it is so for language teachers when teaching content (Pavón & Rubio, 2010).

According to Pavón & Ellison (2013), content teachers may face two problems when teaching through a foreign language: on one hand, their low level in the second language leads them to use their mother tongue to teach the content and to summarize what they have tried to introduce. The success of the CLIL teacher is based in an effective implementation of linguistic tasks with communicative goals; the objective is therefore not to teach something but to understand and be able to put it into practice.

On the other hand, content teachers usually feel that students need to improve their language knowledge, so their classes result in linguistic explanatory lessons instead of

conveying the content of the subject. Therefore, it is important to emphasize that content teachers delivering a CLIL class will never be language teachers (Pavón & Ellison, 2013), and this is why CLIL teachers should never try to overexpose their students to a great amount of language elements.

To attend CLIL approach, it seems that there are two different types of courses that could be delivered to teachers: training courses for language teachers who must integrate content in their lessons, and courses for content teachers who need to know how to integrate a second language in the curricular subject (Calle Casado, 2015, p. 17). That is, CLIL training programmes should emphasize the integration of both content and language. CLIL teachers should be competent in L2. Marsh et al. (2001, pp. 78–80) outline the “idealised competencies” required of a CLIL teacher (Table 2).

**Table 2**

*Competences required of a CLIL teacher*

LANGUAGE AND COMMUNICATION	METHODOLOGY
<ul style="list-style-type: none"> <li>• Sufficient target language knowledge and pragmatic skills for CLIL.</li> <li>• Sufficient knowledge of the language used.</li> </ul>	<ul style="list-style-type: none"> <li>• Ability to identify linguistic difficulties.</li> <li>• Ability to use communication and interaction methods that facilitate the understanding of meaning.</li> <li>• Ability to use strategies (repetition, echoing etc.) for correction and for modelling good language usage.</li> <li>• Ability to use dual-focussed activities which simultaneously cater for language and subject aspects.</li> </ul>
THEORY	LEARNING ENVIRONMENT
<ul style="list-style-type: none"> <li>• Comprehension of the differences and similarities between the concepts of language learning and language acquisition.</li> </ul>	<ul style="list-style-type: none"> <li>• Ability to work with learners of diverse linguistic and cultural backgrounds.</li> </ul>
MATERIALS DEVELOPMENT	ASSESSMENT
<ul style="list-style-type: none"> <li>• Ability to adapt and exploit materials.</li> <li>• Ability to select complementary materials on a given topic.</li> </ul>	<ul style="list-style-type: none"> <li>• Ability to develop and implement evaluation and assessment tools.</li> </ul>

*Note:* based on Marsh et al. (2001).

CLIL has been implemented in many schools. In many cases, the appeal of CLIL to primary and secondary schools is the amount of practise in a foreign language it provides. There are many benefits to integrate content and language (Frigols & Michel, 2011, p.87 88) since CLIL means using as you learn and learning as you use, not learning now for use later.

The CLIL approach also supposes a change on the student role in the teaching-learning process. From the point of view of the students, they will have an active role although they will count with the help of the teacher. Students will build their own knowledge, observing, discovering, thinking critically, and getting involved in the different activities individually, in pairs, in cooperative groups or with the whole class.

According to Attard Montalto (2014), one of the most important and most difficult challenges of CLIL teachers is to train students to be autonomous but learning autonomously requires that teachers establish goals and activities that enable them to fulfil the tasks. While completing the tasks, the autonomous students must be able to understand what is done, how it is done and why it is done; this means that it is required a training of metacognitive skills, because it enables students to make decisions about the best way to complete the task, the steps and skills necessary for it.

According to Dale and Tanner (2012) CLIL has many different benefits for learners, narrowly related to the different roles they have to play in CLIL approach; that is, the way the students are impelled to be in a CLIL lesson, bring out a direct benefit for them. While they participate in a creative, collaborative, and active activity, they are learning in a deeper and wider way. The following could be highlighted:

- Students must be motivated
- Students have to develop cognitively so that their brain works harder
- Students have to develop communication skills
- Students have to create new personal meanings in another language
- Students have to improve their CLIL language
- Students must work effectively with the information they receive
- They should interact in a meaningful way
- Learners must learn to speak and write
- Learners have to develop intercultural awareness



- Learners have to learn about the “culture” of a subject
- Learners have to be prepared for studying in another language
- Learners have to learn in different ways (pp. 11-13)

### 3.5 Scaffolding

Scaffolding is a metaphor commonly used in educational contexts to describe “any temporary support made available to the learner by the teacher or a more capable peer, designed to assist the learner in successfully accomplishing a learning task and progress in learning and which is removed when it is no longer needed” (Shaman, 2014, p. 131).

It was first used by Wood, Bruner, and Ross (1976) to refer to the context of learning and learner development. Scaffolding is a teaching method that helps students learn more by working with a teacher or a more advanced student to achieve their learning goals. The theory behind “instructional scaffolding” (Vygotsky, 1978) is that compared to learning independently students learn more when collaborating with others who have a wider range of skills and knowledge than the student currently does. These peers are the “scaffolding” who help the students expand their learning boundaries.

Vygotsky’s scaffolding is part of the concept of “zone of proximal development” (ZPD), which refers to the skills or knowledge the learner cannot do alone but can do with the guidance of the teacher or a more capable peer.

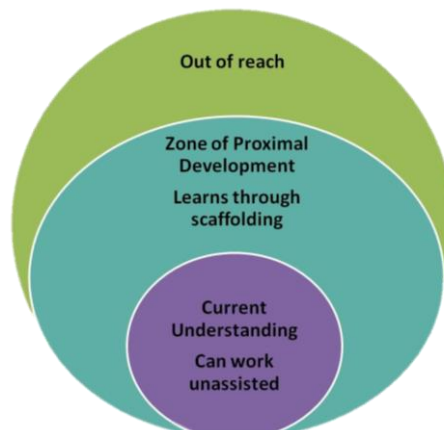


Figure 5: Vygotsky’s ZPD (Vygotsky, 1978).

Vygotsky (1978) defines the ZPD (Zone of Proximal Development) as “the distance between the actual developmental level as a determined by independent problem solving and the level of potential development as determined through problem solving under the adult guidance or in collaboration with more capable peers” (Vygotsky, 1978, pp. 86). The author identifies the ZPD as the exclusive area where learning can occur.

In the specific context of classroom interaction, Hammond and Gibbons (2001) highlighted three key features of scaffolding:

1. Extending understanding: the learning activities and the teachers' support manages to "challenge and extend what students are able to do".
2. Temporary support: refers to the temporary nature of the different forms of support offered to learners, withdrawn as soon as they demonstrate ability to work alone.
3. Micro and macro focuses: they refer to the spontaneous student-teacher and student-student interactions, and the syllabus goals and activities prepared by the teacher. (pp. 13-16)

As scaffolding is basic in CLIL teaching, the support provided by the teachers when trying to activate students' knowledge related to content and to the foreign language must be appropriately selected and planned. According to Walqui (2006) in a supportive CLIL environment the teacher applies different scaffolding strategies (modelling, bridging, contextualising, schema building, re-presenting text and developing meta-cognition).

In addition, Mehisto (2012) suggests activities teachers can use in CLIL classes in order to provide adequate scaffold for language, content and learning skills, while promoting cognitive development and supporting their growing autonomy.

1. Language can be scaffolded by repeating new nouns as opposed to using pronouns; shortening sentences and paragraphs, asking students to first brainstorm related language...
2. Content can be scaffolded by helping students in an introductory paragraph assignment to access their tacit knowledge and to connect the topic to their lives, using other graphic organisers, highlighted or underlining key ideas or facts, showing what falls outside of a concept, as well as what it includes...
3. Learning skills can be scaffolded by: providing a sample correct answer at the start of an exercise, asking students to guess meaning from context... (p. 24)

In the following the classification made by Dodge (2009), cited in Dale and Tanner (2012), there are three types of scaffolding:

- Reception scaffolds help direct learners' attention to what is important in information sources, and helps them to organise, understand and record what they observe.

- Transformation scaffolds help learners change information into another form and require higher thinking skills.
- Production scaffolds help learners produce or create something new, which shows their understanding; these also require a higher level of thinking.

These different scaffolds will be integrated in the design of the activities provided in this syllabus.

#### IV. ANNUAL SYLLABUS

##### 4.1. Main objectives, general stage objectives and didactic objectives

The general principles are defined in the Royal Decree 126/2014, of 28 February, which establishes the basic curriculum for Primary Education ([Annex 2](#)).

In the Community of Madrid, the Decree 89/2014 ([Annex 3](#)) establishes that the Primary Education will contribute to the children's skills development that will enable them to:

- Know and appreciate values and norms of coexistence and learn to act in accordance with them.
- Prepare for the active exercise of citizenship and respect human rights.
- Develop individual and teamwork habits, effort and responsibility; as well as attitudes such as: self-confidence, critical sense, initiative, interest ...
- Acquire skills for peaceful conflict resolution and prevention.
- Know, understand and respect different cultures and differences between people.
- Acquire basic communicative competence in at least one foreign language.
- Know the fundamental aspects of the natural sciences.
- Get started in the use of educational technologies.
- Value hygiene and health, accept one's own body and that of others.
- Develop affective capacities in all areas of the personality.

Primary Education consists of six courses, which start at the age of 6 and finish at the age of twelve. This educative stage is organized into areas which have an integrative approach.

A syllabus is composed by different components which determine the teaching and learning processes.

According to the LOMCE, Real Decreto 126/2014, de 28 de febrero, por el que se establece el currículo básico de la Educación Primaria. Boletín Oficial del Estado, 52, 1 de marzo de 2014, pp. 19349-19420, ([Annex 2](#)):

- a) Objectives: related to what student must achieve at the end of the educational process, as a result of the teaching-learning experiences intentionally planned for this purpose.
- b) Competences: capabilities to apply the contents of each educational stage in an integrated way to achieve an adequate performance of activities and the effective resolution of complex problems.
- c) Contents: set of knowledge, abilities, skills and attitudes that contribute to the achievement of the objectives of each teaching and educational stage and to the acquisition of competencies. Contents are distributed into subjects, areas and modules according to the teachings, the educational stages, or the programs in which the students participate.
- d) Didactic methodology: it includes both the description of the teaching practices and the organization of the teachers' work. This consists of the set of strategies, procedures and actions organized and planned by the teaching staff in a conscious and reflective manner to enable students to learn and achieve the objectives set.
- e) Learning standards and learning outcomes: specifications of the evaluation criteria that allow defining the learning results, and that specify what the student must learn, understand, and know how to do in each subject. They must be observable, measurable, and evaluable and allow the performance or achievement to be graduated. Its design should contribute to and facilitate the design of standardized and comparable tests.
- f) Evaluation criteria: they measure the degree of acquisition of the competences and the achievement of the objectives of each teaching and educational stage. They are the specific reference to evaluate the learning of the students and describe what you want to value and that the student must achieve, both in knowledge and in skills; they respond to what is intended to be achieved in each subject.

In the Community of Madrid, the Decree 89/2014 establishes that Primary Education will contribute to the children's skills development that will enable them to:

1. Understand and appreciate the values and standards of living, learn to act in accordance with them, prepare for active citizenship and respect for human rights and pluralism inherent in a democratic society.
2. Develop individual and teamwork, effort and responsibility in the study as well as attitudes of self-confidence, critical sense, personal initiative, curiosity, creativity and interest in learning, and entrepreneurship.
3. Acquire skills for the prevention and peaceful resolution of conflict, enabling them to function independently in the family and household, as well as in social groups with which they are associated.
4. Know, understand and respect different cultures and differences among people, equal rights and opportunities for men and women and non-discrimination of people with disabilities.
5. Know and use appropriately the Spanish language and develop reading habits.
6. Acquire, in at least one foreign language, skills to enable them to express and understand simple messages and function in everyday situations.
7. Develop basic Maths's skills and initiative in solving problems that require elementary operations of calculation, geometry and estimates, as well as being able to apply to situations in everyday life
8. Know the main features of Natural Science, Social Science, Geography, History and Culture.
9. Start using, for learning, the information technology and communication to develop a critical mind to the messages they receive and produce.
10. Use representation and artistic expression and start to build visual and audio-visual proposal.
11. Rate hygiene and health, accept their body and that of others, respecting differences and using physical education and sport to encourage both personal and social development.
12. Know and appreciate those animals closest to us and adopt forms of behaviour that contribute to their preservation and care.
13. Develop emotional skills in all areas of personality and in their relationships with others and an attitude opposed to violence, prejudice of any kind and sexist stereotypes.

14. Promote road safety education and respectful attitudes that affect the prevention of accidents.

#### *4.1.1. Competency-based Learning Approach.*

The Organization for Economic Cooperation and Development (OECD) launched the project called DeSeCo (Definition and Selection of Competencies) in the late 1990s. The objective of this project was to provide a conceptual framework that would establish the objectives that any system should achieve.

According to this, a competence is the ability to respond to individual or social demands or to carry out an activity or a task. Each competence rests on a combination of interrelated practical and cognitive skills, knowledge, motivation, values, attitudes, emotions, and other social and behavioural elements that can be mobilized together to act effectively (OECD, DeSeCo project, 2002, p. 8).

Among competencies, there are some called “fundamental competencies” that are those that human beings need to face the demands of the different contexts of their lives, being important for many different areas of life and contribute to the proper functioning of the social community. Since they are considered “key”, DeSeCo aims to establish lifelong skills in a well-educated citizenry.

According to LOMCE the key competences are those which individuals need for personal development, employability, social inclusion, and active citizenship.

The key competences included in the Royal Decree 126/2014, of 28<sup>th</sup> February are:

- Competence in Linguistic communication (CLC) is the result of the communicative action within particular social practices, in which the individual interacts with other interlocutors orally and through texts in multiple modalities and formats.
- Competence in Mathematics, Science, and Technology (CMST) consist of the ability to use and relate numbers, basic operations, symbols and forms of mathematical expression and reasoning. Involves the ability to apply mathematical thinking and mathematical tools to describe, interpret and predict different phenomena in context.
- Digital Competence (DC) involves a creative, critical and safe use of information and communication technologies, in order to achieve the objectives related to work, employability, learning, use of free time, and inclusion and participation in society.

- Learning to Learn (L2L) is vital for lifelong learning taking place in different contexts, both formal and non-formal or informal ones. This competence is characterized by the ability to start, organise and persist in learning. This requires the ability to feel motivated to learn, and the need to foster organization and learning management.
- Social and Civic Competence (SCC) involve the skills and abilities necessary to use their knowledge and attitudes towards society in order to interpret social problems in the diverse contexts, take decision and solve conflicts.
- Sense of initiative and entrepreneurship (SIE) is the ability to transform ideas into actions. That means becoming aware of the situation to be solved, know how to choose, plan and manage their knowledge.
- Cultural Awareness and Expression (CAE) involves knowing, understanding, appreciating and valuing the different cultural and artistic demonstrations, using them as a source of enrichment and personal enjoyment.

Navracsics (2017) says that today, young people need a broader set of competences to find jobs and become independent, engaged citizens who contribute to society. Education and training have a crucial role in enabling young people to develop these competences, giving them the best possible start in life.

#### *4.1.2. Objectives of the subject and objectives of the course.*

The objectives for each subject and course are established in the Royal Decree 126/2014 ([Annex 2](#)). The Decree 89/2014 ([Annex 3](#)) describes the content and standards for the evaluation of students in this area in the Community of Madrid. [Annex 4](#) shows the description of the distribution of this content and its standards in this annual syllabus.

## **4.2. Contents**

### *4.2.1 Sequencing of the contents of the official curriculum.*

According to Royal Decree 126/2014, the contents of the Natural Science area of the fourth year of Primary Education are classified into concepts, procedures and attitudes that help students to interpret reality and know how to approach and propose solutions to the different problems.

It is divided into five main blocks: Initiation to scientific activity; Living beings, Human beings and health, Matter and energy, and Technology, objects and machines. “Its treatment must allow students to advance in the acquisition of ideas of scientific

knowledge, in their organization and structuring, as an articulated and coherent whole” (p. 17).

The contents are “a set of knowledge, abilities, skills and attitudes that contribute to the achievement of the objectives of each teaching and educational stage” (Art.2, RD 126/2014, p.3). The contents established by the Community of Madrid in Decree 89/2014, are mandatory for the design of the didactic units that this syllabus comprises. These contents are shown in [Annex 3](#).

#### 4.2.2. Sequencing in Projects.

Each of the three projects consist of three teaching units: Body systems, Animal and Plant kingdom, and Matter and Machines. (Table 3)

**Table 3**

*Distribution of the content from a cross-curricular approach.*

<b>BODY SYSTEMS</b>		
<b>NAME OF THE PROJECT: BECOMING DOCTORS!</b>		
<b>UNIT 1:</b>	<b>UNIT 2:</b>	<b>UNIT 3:</b>
<b>RESPIRATORY AND CIRCULATORY SYSTEM</b>	<b>REPRODUCTIVE SYSTEM</b>	<b>HEALTHY LIFESTYLE</b>
<b>Contents:</b>	<b>Contents:</b>	<b>Contents:</b>
<ul style="list-style-type: none"> <li>• <b>Respiratory system: parts and organs.</b></li> <li>• <b>Circulatory system: parts, organs and blood circulation.</b></li> </ul>	<ul style="list-style-type: none"> <li>• Reproduction: male and female organs.</li> <li>• fertilization, embryonic development and parturition (baby birth)</li> </ul>	<ul style="list-style-type: none"> <li>• Diseases that affect our body.</li> <li>• Healthy habits.</li> <li>• Diagnosis, prevention and treatment.</li> </ul>
<b>ANIMAL AND PLANT KINGDOM</b>		
<b>NAME OF THE PROJECT: FINDING NEMO</b>		
<b>UNIT 4:</b>	<b>UNIT 5:</b>	<b>UNIT 6:</b>
<b>VERTEBRATES</b>	<b>INVERTEBRATES</b>	<b>PLANTS</b>
<b>Contents:</b>	<b>Contents:</b>	<b>Contents:</b>
<ul style="list-style-type: none"> <li>• <b>Characteristics of vertebrate animals.</b></li> <li>• <b>Nutrition of vertebrate animals.</b></li> <li>• <b>Reproduction of vertebrate animals.</b></li> </ul>	<ul style="list-style-type: none"> <li>• Characteristics of invertebrate animals.</li> <li>• Sponges, cnidarians, and worms.</li> <li>• Mollusks.</li> <li>• Echinoderms.</li> </ul>	<ul style="list-style-type: none"> <li>• Characteristics and parts.</li> <li>• Nutrition of the plants.</li> <li>• Reproduction of the plants (sexual/asexual)</li> <li>• Pollination and Germination.</li> </ul>



- 
- **Mammals.**
  - **Birds.**
  - **Reptiles.**
  - **Amphibians.**
  - **Fish.**
- Insects, arachnids and crustaceans.
- 

### ENERGY AND MACHINES

#### NAME OF THE PROJECT: EUREKA!

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UNIT 7: MATTER	UNIT 8: FORCES	UNIT 9: SIMPLE AND COMPLEX MACHINES
<b>Contents:</b> <ul style="list-style-type: none"> <li>• <b>Properties of the matter.</b></li> <li>• <b>Mass, volume and density.</b></li> <li>• <b>States of materials (liquid, solid and gas)</b></li> </ul>	<b>Contents:</b> <ul style="list-style-type: none"> <li>• Classification of forces.</li> <li>• Forces and movement.</li> <li>• Gravity and speed.</li> </ul>	<b>Contents:</b> <ul style="list-style-type: none"> <li>• Simple machines.</li> <li>• Complex machines.</li> <li>• Pulley, wedge, lever, incline plane, wheels.</li> <li>• Archimedes.</li> </ul>

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### 4.3. Activities and resources

#### 4.3.1. Activity-type.

In line with the idea that activities are, as the practical and procedural part of the teaching and learning process, the main way of acquiring knowledge, Piaget (1975) defined the characteristics that they should have for a meaningful and constructive learning model.

According to him, activities should:

- Allow learning by understanding and not by repetition.
- Develop cognitive schemas of the learner.
- Be related to the general objectives of the stage.
- Demand from the students the practical application of the knowledge, skills, values, attitudes and learning strategies of the areas in which they are presented.
- Facilitate their relationship autonomously and demand an active role from the student.
- Be applied to reality, outside the classroom context.
- Encourage the transfer of learning.
- Be motivating and adjusted to the interests and needs of the students.

Agreeing with the previous list, for an effective CLIL approach, any sequence of activities begins with a diagnostic activity which connects contents with the interests of the students and activates their previous knowledge about the topic.

In a CLIL context, the basic types of activity that can help students to progress, despite their possible lack of linguistic resources are listed below:

1. Activities to enhance peer communication
2. Activities to help develop reading strategies
3. Activities to guide student production (oral and written)
4. Activities to engage higher cognitive skills (p. xx)

Choosing a particular type of activity depends on different factors such as the methodology applied, the students' needs, or the content learnt. A common set of activities could include reinforcement, application or extension activities. In addition, in CLIL, it is essential that this sequence promotes higher order thinking and the necessary interaction. For example, tasks of analysis, evaluation or creation should be included, preferably in pairs or groups, since it allows a sharing and publication of the final product. This will consolidate the learning of the content and facilitate the integration of the language in the CLIL lesson.

The integration of activities based on digital tools and resources in the annual programming will promote the integration of CLIL principles. (Custodio Espinar & Caballero, 2016)

Therefore, for the design of constructive, process-based, and student-centred learning activities, these steps should be followed:

1. Determine what area, level, and content of the official curriculum (Decree 89/2014) of the stage you are going to work on.
2. Define the learning objectives of the activities or tasks that will allow students to achieve them.
3. Identify, in the official national curriculum (Decree 89/2014) the evaluation criteria and learning standards to evaluate the content.
4. Check that objectives have been programmed to evaluate the language demanded by the content and that these are linked to the objectives of the content.
5. Write the descriptors that reflect the level of competence for each criterion in carrying out the task, from perfect to poor performance.

6. Decide on the tools for evaluating the activity.

7. Use the descriptors to make the evaluation tools (checklists, rubrics ...).

#### 4.3.2. *Human, Material and ICT resources.*

CLIL approach and the related methodologies imply the use of materials and other resources that will be fundamental in the teaching and learning process. Although there is an increasing number of CLIL projects by different publishing companies, there is still certain lack of adequate and flexible CLIL programmes, that teachers have to overcome adapting authentic materials in their lessons or designing original ones to meet their students' needs.

Pérez Cañado (2014: 16) points out some of the key deficiencies related to the materials and resources for CLIL purposes: "Thus, it seems that practicing teachers are well-acquainted with the authentic materials and software available for CLIL programs, but lack sufficient grounding on ICT options, (except for interactive whiteboards), materials design and adaptation, and collaborative work for integrated curriculum design" (p. 20). One of the key elements for the success of the CLIL teacher is related to the ability to create activities for their teaching lessons. At this point, it would be necessary to differentiate between L2 teachers and content teachers. Traditionally, language teachers have been taught how to create new activities for their lessons because these play a prominent role in language lessons. However, content teachers may not have sufficient experience in creating their own exercises, which means that they should hone and fine-tune this aspect of their teaching methodology.

The reinforcement of the creativity of exercises is thought as essential in CLIL owing to the scarcity of materials specifically designed for teaching through this approach. In this sense, CLIL is not likely to be successful if teachers are not provided with quality materials (Cabezas Cabello, 2010).

Regarding to human resources, they refer to the different people who support the students' learning process.

- The Science teacher, who is the content and the language teacher at the same time.
- The Language assistants (LA), native speakers teachers that can support the CLIL teacher before, during and after the lessons. They can work on phonics or lead oral activities in the classroom and also can help other teachers to improve their English language.

- Families: all the family members can participate in the educational process of the students and the adults have to show their commitment with the tasks and procedures to help their children achieve their group and individual goals. Beside this, some family members can provide the class with interesting experience and context information related to their jobs or areas of work.
- The experts: people from the educative community that could present valuable content to the class related to the topic learnt. These could be workers from any area. In this syllabus, for example, it will be a very valuable figure the school nurse.
- The students: those who learn the subject. They can provide personal experiences and opinions, investigations, etc.

Material resources involve a wide variety of materials needed to help students learn meaningfully. Apart from ordinary materials such as notebooks and pens, CLIL teachers should prepare as many scaffolding resources as necessary such as handouts, word cards, games, etc. They would also need technological resources such as iPad's, digital whiteboards and, of course, Internet access to be able to use valuable web resources and applications like Nearpod or Google forms.

At the same time, text resources such as stories, letters or the "Theory booklet" will be used as support material.

Finally, ICT resources take an essential role in the CLIL classroom. The use of tablets and other devices will be at all times regulated by the teacher, who will ensure that they enjoy this resource. Technological resources would be mainly used to carry out research, to review content on different apps or websites, to watch videos or animations related to the topics covered, play games aimed to learn vocabulary or concepts related to their lessons, etc.

#### *4.3.3. Space and time resources.*

In relation with the space where lessons are taken, most activities and sessions will be held in the classroom, although others would need different places such as the playground, the school laboratory, or the dance room where the students can investigate, interact and experiment with different materials and resources.

It is very important to create a space and atmosphere where students can feel safe, and where they can participate and express themselves without being judged. As part as the PBL methodology, there will be a specific area where the final products of the different

projects can be exhibit and kept accessible while the project is being developed. Learners have individual desks, but they are expected to work in groups or the class as a whole in specific activities. Some activities will allow students to freely move around the classroom.

This syllabus is designed for a course year, from September 2021 to June 2022. Taking into account the schedule, which includes two 50-minute sessions of Natural Science twice a week (Wednesdays and Thursdays), the syllabus is divided into nine didactic units which sum up 72 hours.

#### *4.3.4. Classroom organization and management.*

In order for CLIL teachers to increase interaction between students, pair work and group work should be placed. Also, some learning strategies will convey a freer disposition of the elements in the classroom that will allow the formation of groups. For example, HOTS activities, a problem-solving task, creative collaborative works, etc.

Despite the characteristics or the objectives of this type of activities, if the behaviour of individuals or groups becomes out of control or the development of the activity itself is not achieving its goal, teachers can use different management strategies that will ask students to “think, pair, share”, such as the following:

1. First, students are given some silent thinking time, so that they can rehearse the answer in their own mind.
2. Then, each student is asked to tell their ideas to a partner, so that they can both find out if their ideas make sense, and if the language they use is understandable.
3. By this stage, the students will have had an opportunity to try out what they want to say and will be much more confident of sharing their ideas with the whole class.  
Group work While students are interacting in pairs, they will be getting to know one another better and building new relationships. This is likely to be especially useful for project work, in which interaction between members of a group is essential for cooperation.
4. Interacting in groups, students can relax, work creatively, and take more risks with their language skills.
5. They can work to their strengths and can take control of their own learning.
6. By the time the project is successfully completed, students will have had numerous opportunities to speak together and to construct together the learning of content

and of new language. Pair and group work are nothing new, but they are a focus of the CLIL approach.

#### 4.4. Assessment and evaluation strategies

Assessment refers to the wide variety of methods or tools that educators use to evaluate, measure, and document the academic readiness, learning progress, skill acquisition, or educational needs of students. Besides, feedback gives students the opportunity to reflect on their performance, identify strengths and weakness and find ways for improvement, activating and meta-cognition. It is important to provide feedback before, during and after a task or assignment.

Assessment is often a major area of teacher uncertainty in CLIL contexts and, as with other issues relating to CLIL, must be considered with the CLIL practitioners' specific situation in mind. Coyle et al. (2010) define the types of knowledge that can be assessed, for example:

- Factual recall
- General understanding
- Ability to manipulate the content using higher-level thinking skills
- Ability to research more independently and extend the topic knowledge beyond what has been presented (Pinker, 1994, pp.116) cited in Coyle et al., 2010, p. 116)

##### 4.4.1. Formative assessment.

Formative assessment is a complex task as its intention is to reach a diagnostic that can be immediately impacting on the student's next steps along the learning process. It includes a wide variety of methods that teachers use to identify concepts that students are struggling to understand, skills they are having difficulty acquiring, or learning standards they have not yet achieved so that adjustments can be made to lessons, instructional techniques, and academic support (Coyle et al. 2010, p.112).

According to Custodio Espinar (2019), formative assessment is oriented to achieve the following objectives:

1. To adjust the teaching and the learning to a continuous form.
2. Increase the level of interaction and have feedback loops through the development of strategic questions.
3. Improve the performance of students in relation to the objectives and assessment criteria raised both content and language.

Formative assessments help teachers identify learning needs and problems, and in many cases the assessments also help students develop a stronger understanding of their own academic strengths and weaknesses. These ideas are included in the Learning to learn competence: if students know what they do well and what they need to work harder on, they are conscious of their learning progress and can take greater responsibility over it. Many educators and experts believe that formative assessment is an integral part of effective teaching. The following are a few representative examples of formative assessments:

- Questions that teachers pose to individual students and groups of students during the learning process to determine what specific concepts or skills they may be having trouble with. A wide variety of intentional questioning strategies may be employed, such as phrasing questions in specific ways to elicit more useful responses.
- Specific, detailed, and constructive feedback that teachers provide on student work, such as journal entries, essays, worksheets, research papers, projects, ungraded quizzes, lab results, or works of art, design, and performance. The feedback may be used to revise or improve a work product, for example.
- Self-assessments that ask students to think about their own learning process, to reflect on what they do well or struggle with, and to articulate what they have learned or still need to learn to meet course expectations or learning standards.
- Peer assessments that allow students to use one another as learning resources. For example, “workshopping” a piece of writing with classmates is one common form of peer assessment, particularly if students follow a rubric or guidelines provided by a teacher.

In addition to the reasons addressed above, formative assessment can also be used to:

- Refocus students on the learning process and its intrinsic value, rather than on grades or extrinsic rewards.
- Encourage students to build on their strengths rather than fixate or dwell on their deficits. (For a related discussion, see growth mindset.)
- Help students become more aware of their learning needs, strengths, and interests so they can take greater responsibility over their own educational growth. For

example, students may learn how to self-assess their own progress and self-regulate their behaviours.

- Give students more detailed, precise, and useful information. Because grades and test scores only provide a general impression of academic achievement, usually at the completion of an instructional period, formative feedback can help to clarify and calibrate learning expectations for both students and parents. Students gain a clearer understanding of what is expected of them, and parents have more detailed information they can use to support their child's education more effectively.
- Raise or accelerate the educational achievement of all students, while also reducing learning gaps and achievement gaps.

#### 4.4.2. *Summative assessment.*

Summative assessment evaluates student learning, skill acquisition, and academic achievement at the end of a project, unit, course, or school year. It is defined by three major criteria:

- The tests, assignments, or projects are used to determine whether students have learned what they were expected to learn. What makes an assessment "summative" is not the design of the tool but the way it is used, for instance, to determine whether and to what degree students have learned the material they have been taught.
- Summative assessments are given at the conclusion of a specific instructional period, and therefore they are generally evaluative, rather than diagnostic. Thus, they can be used to evaluate the learning progress or the effectiveness of educational programs, and to measure progress toward goals, among other possible applications.
- Summative-assessment results are often recorded as scores or grades that are then factored into a student's permanent academic record. While summative assessments are usually used as a major component of the grading process in most schools, not all assessments considered to be summative are graded.

Some examples of summative assessments include end-of-unit or chapter tests, end-of-term or course tests, or portfolios of student work.

Clarke (2001) compares summative assessment to the simple measurement of a plant, and formative assessment to the feeding process which leads to growth.



**Table 4***Differences between formative and summative assessment*

FORMATIVE ASSESMENT	SUMMATIVE ASSESMENT
<ul style="list-style-type: none"> <li>• Occurs during a learning activity</li> <li>• Aims to monitor student learning</li> <li>• Provides students with feedback</li> <li>• May occur several times during a course unit</li> <li>• Uses a wide range of question formats</li> </ul>	<ul style="list-style-type: none"> <li>• Occurs at the end of a learning activity</li> <li>• Aims to evaluate student learning</li> <li>• Yields a specific score or result</li> <li>• May occur few times over the course of the academic year</li> <li>• Uses a limited question formats</li> </ul>

Note. Based on Baehr (2010).

#### 4.5. Attention to diversity through CLIL

Two essential and complementary principles of a democratic school and society should be combined in a CLIL classroom: the principle of attending to diversity and the principle of integration. These principles make it clear that all people have the right to basic learning, through equal opportunities, the same curriculum and a formal school setting (Ainscow, 2001; UNESCO, 2004).

Diversity is an inherently human trait. It is based on respect for individual differences; diversity in prior ideas, experiences, knowledge and attitudes; different learning styles and multiple intelligences (Gardner, 1993); different learning methods; varying achievement levels, learning paces, and intellectual capacity; diverging interests, motivations, and expectations; and different socioeconomic and cultural backgrounds that affect the lives of students (Arnaiz, 2009; Julius & Madrid, 2017).

In a broad sense, attending to diversity encompasses all activity that responds to students' educational needs, especially those that need tailored responses due to sociocultural disadvantage, health restrictions, high intellectual capacities, special language requirements, disabilities, or serious personality disorders (León, Estévez, & Crisol, 2016; Monclús & Saban, 2012).

The second principle that helps promote equal opportunities among the student body is inclusión (Armstrong & Spandagou, 2010). Inclusive education is an educational model that aims to respond to the learning needs of all students with a special focus on those who are at risk of marginalization and social exclusion.

Both inclusion and attending to diversity are associated with the phenomenon of integration, which is a consistent response to the diversity of student needs. These needs are met in the school and social setting through greater participation in learning (León et al., 2016; Stainback & Stainback, 1999). As Madrid Manrique (2014) has acknowledged, inclusive education has become an influential movement in the 21st century.

Other proposals (Ainscow, 2001; Arnaiz, 2009) involve offering an inclusive curriculum that breaks down barriers, incorporating principles (valid for all) that facilitate accessibility for all students in all subjects, and making the methodology flexible to include learner autonomy in learning and the human support that students need to reach their goals.

Coyle et al. (2010); Marsh (2010) and Perez Cañado (2017) have considered CLIL Approach more accessible to all types of learners. Other authors have maintained that CLIL promotes social inclusion and egalitarianism, as the introduction of this approach. On the one hand, Marsh (2002, p. 10) claimed that “egalitarianism has been one success factor because this approach is seen to open doors on languages for a broader range of learners.” On the other hand, Coyle et al. (2010, p. 2) also underscored that CLIL is appropriate “for a broad range of learners, not only those from privileged or otherwise elite backgrounds.”

In the CLIL approach, students are usually perceived to be more intelligent, motivated and competent in the language, which produces differences between students that lead to discrimination and prejudice against students who do not learn CLIL.

#### *4.5.1. Cognitive demand analysis: HOTS and LOTS*

For content learning to be effective students must be cognitively engaged. CLIL teachers will have to consider how to actively enable them to think through and articulate their own learning (Coyle et al., 2010). Students need to know how to think, need to be skilled in problem solving and higher order thinking skills (HOTS), creative thinking, in order to construct a framework through which to interpret meaning and understanding:

If learning is to be retained and to be readily available for use, then learners must make their own construction of knowledge – make it their own – and must learn to take responsibility for the management of their own learning (Nisbet, 1991).

Since the publication of Bloom's taxonomy outlining six different thinking processes in 1956, the categorization of different types of thinking has been the subject of great

debate (McGuinness, 1999). In 2001, Anderson and Krathwohl published an updated version of Bloom's taxonomy.

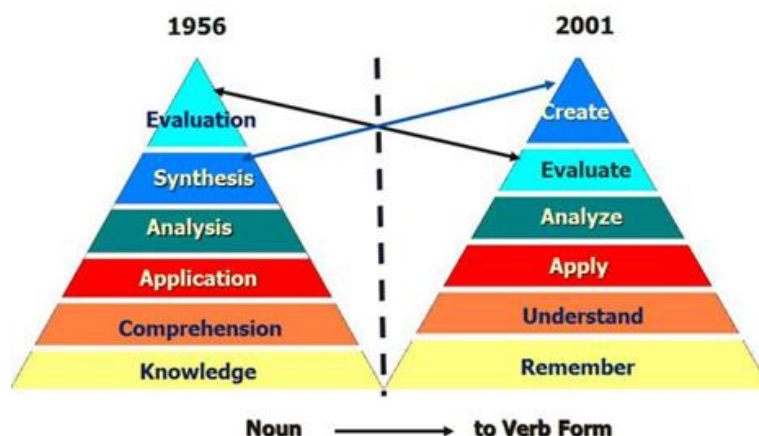


Figure 6: Firsts Bloom's Taxonomy and Anderson and Krathwohl revised taxonomy.

Source: Anderson and Krathwohl (2001).

The cognitive process dimension consists of lower order thinking skills (LOTS) (remembering, understanding and applying) and HOTS (analysing, evaluating and creating), both of which are integral to effective learning. In this approach it is important to achieve the maximum development of cognitive skills such as analyse, evaluate and create, as opposed to lower order ones, remembering to understand and apply, following a sequence that progresses from LOTS to HOTS.

A very useful tool to identify the level of difficulty of the task with which content is presented is Bloom's (1956) cognitive taxonomy, which establishes a hierarchy of educational objectives linked to certain thinking skills, grouped in cognitive domains (Custodio Espinar, 2019).

The taxonomy assumes the premise that, starting from lower thinking skills, progress is made to the acquisition of higher cognitive skills. The revised version of this taxonomy by Anderson and Krathwohl (2001) presents two important modifications. The first has to do with the substitution of nouns, to name the domains, by verbs and the inclusion of verbs for educational objectives in accordance with the knowledge society. The second refers to the alteration of the order in the two superior domains of the taxonomy (Figure 6).

#### 4.5.2. Ordinary measures to attend to diversity

According to article 19 in LOMLOE (2020) these are some of the ordinary measures to attend diversity:

1. At this stage, special emphasis will be placed on guaranteeing educational inclusion; in personalized attention to students and their learning, participation and coexistence needs; in the prevention of learning difficulties and in the implementation of reinforcement and flexibility mechanisms, methodological alternatives or other appropriate measures as soon as any of these situations are detected.
2. Without prejudice to its specific treatment in some of the areas of the stage, reading comprehension, oral and written expression, audio-visual communication, digital competence, the promotion of creativity, the scientific spirit and entrepreneurship will be worked on all areas. Similarly, gender equality, education for peace, education for responsible consumption and sustainable development and health education, including affective-sexual education, will be worked on. Likewise, special attention will be paid to emotional and values education and to the enhancement of meaningful learning for the development of transversal competences that promote autonomy and reflection.
3. In order to promote the habit and mastery of reading, all educational centres will dedicate time to reading each day, in the terms set out in their educational project.
4. In order to promote the integration of competences, time will be devoted to the school day to carry out meaningful projects for students and to collaborative problem solving, reinforcing self-esteem, autonomy, reflection and responsibility.
5. The educational administrations will encourage the centres to establish measures of flexibility in the organization of the areas, the teachings, the spaces and the times and promote methodological alternatives, in order to personalize and improve the learning capacity and the results of all the students.
6. Flexibility measures and methodological alternatives will be established in the teaching and assessment of the foreign language for students with a specific need for educational support, especially for those who present difficulties in understanding and expressing them. The official languages will be used only as a support in the foreign language learning process.

The educational intervention must contemplate as a principle the diversity of the students, understanding that in this way their development is guaranteed as well as personalized attention based on the needs of each one.

According to Comunidad de Madrid legislation there are different types of students who required special attention in the classroom:

- Students with Special Educational Needs. Curricular and organizational measures and significant adaptations of the elements of the curriculum for students with special educational needs will be established, taking into account the different learning rates of students, promoting autonomy and teamwork.
- Students with High Intellectual Abilities. Appropriate measures will be taken to identify students with high intellectual abilities and to assess their needs early. In the same way, action plans and curricular enrichment programs appropriate to these needs will be developed that allow them to develop their capacities to the maximum.
- Students joining the education system late. The schooling of students who join the educational system late will be carried out according to their circumstances, knowledge, age and academic history. The necessary reinforcement measures will be adopted to facilitate their school integration and the recovery of their lag. If such a gap is overcome, they will join the course corresponding to their age.

Attention to diversity from the teaching teams. The teaching teams will design and apply the organizational and curricular measures to attend to the diversity of the students. The Pedagogical Coordination Commission will elaborate the proposal of criteria and procedures to carry out the appropriate curricular adaptations to students with specific educational support needs.

Among these students with special needs, some need ordinary measures and others need more specific and extraordinary adaptation of the learning context. In LOMCE, students with ADHD (Attention Deficit Hyperactivity Disorder) are included among the students with specific educational needs, which were not considered in the LOE. This syllabus is designed for Year 4 where there is a student with ADHD. Some ordinary measures necessary to attend these students are:

- The student must be placed as close as possible to the teacher.
- Tasks are going to be very organized, short, graded in difficulty and with simple formats. Bloom taxonomy will be used to ensure the cognitive progression from LOTS to HOTS and to adapt the cognitive demand of any activity that requires it.
- Regarding assessment, there are some strategies that can be used:

1. Provide qualitative feedback. Avoid scoring numerically but by achievements, using rubrics and checklists.
2. The assessment needs to be informed in advance. Avoid setting several exams in the same week.
3. The tests will not be very extensive, they will be based on central knowledge, with short questions and not very numerous. The questions will be provided one by one on a separate paper or space.

Some other measures that we will take into account are:

- Understand and help the student to have a positive relationship between pupil-teacher.
- Involve and encourage the student to talk.
- Show interest when working at your table, approach the student's table regularly and ask him if he has any doubts or needs support.
- Encourage him regularly to keep working.

#### *4.5.3. Extraordinary measures to attend to diversity*

Extraordinary measures for the attention to diversity are understood to be the ones aimed at giving an answer to the educational needs of pupils with specific educational needs. They can require significant modifications of the ordinary curriculum, and also suppose essential changes within the organizational field, as well as elements for access to the curriculum or educational modalities. Those measures, that essentially revolve around curricular flexibility, grouping of pupils, and diversification in time and space management, can usually distance the pupil from the group/class (Varela, et al. 2020), so a special effort is necessary to avoid a negative repercussion on this.

#### **4.6. Tutorial Action Plan and Collaboration with Families**

The Tutorial Action Plan (PAT), which is part of the School Educational Project (SEP), includes the set of guidance and monitoring actions aimed at all students throughout their schooling.

The objective of the PAT is to achieve a comprehensive and harmonious development of the student that allows them to respond to the needs and situations of a personal, educational and professional nature that they encounter throughout their life, and that the student feels the protagonist of their own personal and professional project. Some of the aspects of the PAT of the Padre Manyanet school are the following:

1. Encourage identification with the school and a sense of belonging to it.
2. Cultivate a community climate of hope and friendship that favours education and makes coexistence and work more pleasant.
3. Help to achieve the integral formation of students through the harmonious development of all their potentialities: physical, psychological, social, moral and transcendent in accordance with the objectives of the PEC.
4. Educate in values of universal scope within a multicultural framework such as respect, freedom and peace.
5. Develop the personal qualities of the student, favouring a positive self-concept of himself, commitment, creativity and scientific research.
6. Encourage personal maturity processes and decision-making.
7. Provide students with an appropriate educational orientation, according to their aptitudes, needs and interests through an individualized and planned tutorial.
8. Respond effectively to those students who have difficulties in their learning and specific needs for educational support.
9. Transmit and educate students in human-Christian values through a permanent dialogue between faith, culture and life, from the charism of Saint Joseph Manyanet.
10. Establish channels of communication and collaboration with families.

Following the guidelines set out in the different royal decrees and orders, as well as the characteristics of our centre, the functions of the tutor at a general level and those related to the different instances of the centre are indicated below.

Main tutor functions are to coordinate the evaluation process of the students in their group, organize and preside over the Teachers' Board and the evaluation sessions of your group, and participate in the development of the PAT and in guidance activities, under the coordination of the Head of Studies and in collaboration with the Guidance Department, seeking the comprehensive development of students and guidance to their families.

Some of the more important teacher's roles with respect to students are: follow the individual progress of each student, help in the integration of each student in the group and encourage their participation in activities of all kinds, encourage the participation of students in the group-class and their interpersonal relationships so that they learn to resolve conflicts, guide them in making decisions so that they learn to choose their

academic and professional itineraries, and adapt the educational response to proceed with the curricular adaptations that are needed.

Besides, the tutor, in his relationship with the families must facilitate the exchange of information with parents and guide them in the educational task of their children and search for common educational guidelines that promote the collaboration of parents towards the school and a fluid contact between the centre and the family.

In relation to the coordination task as tutors, teachers must provide other teachers with all the individualized information of each student and facilitate coordination with the rest of the teachers who influence their class group.

Finally, tutors also coordinate with the Guidance Department for the appropriate intervention with the group-class and with each student on a personal level, if necessary. Also, they develop curricular adaptations, seek advice on issues related with the specific needs of certain students, and work together to develop interviews with families who need special monitoring and guidance.

#### 4.7. Complementary and Extra-curricular activities

##### 4.7.1. Out-of-class activities.

The out-of-class and complementary activities proposed to carry out are intended to complement the personal and academic development of students. On the one hand, this are those promoted by the school within the school timetable with the aim to relate what the students have learnt in class with the outside world and make it easier for students to extrapolate the contents they have worked on to other contexts.

On the other hand, some of the complementary activities are part of the activation activities of the didactic units in such a way that they serve as preparation for the students to the next topic to develop, linking it with a daily situation., they are shown in (Table 5).

**Table 5**

*Distribution of the complementary activities in the terms*

Term	Complementary activity
First term	Unit 3: medical centre
Second term	Unit 6: Safari park
Third term	Unit 7: physics laboratory



Out of class activities are a good way for students to acquire a more complete content in a more significant context. All the activities are prepared by teachers, both on the school and the visited place.

#### 4.7.2. *Extensive Reading programs.*

According to Hillocks (1987, p. 71) “reading texts connected with particular brand of knowledge provides the learner with a lot of information”.

Scholars argue on the best and most effective reading ways for students. Some specialists, such as Anderson and Pearson (1984) or Aebersold and Field (1997) among others, favour back bottom-up methodology. In this methodology, reading takes place by matching sounds and letters and the students are taught to focus on language knowledge, vocabulary and text structure. Besides, there are other scholars (Goodman, 1967; Smith, 1982) who propose top-down processing. This approach focuses on the prior knowledge of the reader. Yet, some experts (Grabe & Stoller, 2002; Kintsch, 2005) state that an interactive approach is more effective. It involves both bottom-up and top-down processing and the reader can choose which one to use depending on the given situation. The reading plan of the Padre Manyanet school for the students of 4th grade of Primary Education allows to visualize in a very colourful way the number of readings of each student. It consists of a table printed on DIN A3 where the students will colour boxes to the right of their name each time that they read a book. To check that the reading has been done, the student should make a short summary to their classmates, thus inviting them to read that book. The activity is monitored by the Spanish language teacher.

When choosing reading activities a teacher should bear in mind that the content of the reading tasks is more significant and therefore can involve students more in the CLIL classroom than in a non-CLIL classroom. So, two types of reading approach are mainly introduced in the CLIL setting: intensive and extensive reading.

Intensive reading: “is connected with a more in-depth study and analysis of a relatively limited amount of text” (Dakowska, 2005, p. 206). As Papaja mentions, intensive reading “can be very useful to the CLIL learners due to the fact that comprehension process become more active as language and content become more intensive” (2014, p. 39). Examples: reading for specific information, for general orientations, detailed understanding, or reading for pleasure.

Extensive reading: “serves as communicative experience providing language input in the written form” (Dakowska, 2005, p. 206). It is usually defined as reading for information and pleasure, as well as for general, overall meaning. According to Papaja (2014, p. 37), it is “a significant source of cultural and factual knowledge and incidental vocabulary acquisition”. Research has reported beneficial effects of extensive reading on several aspects of L2 ability; for example, reading comprehension and reading speed (Bell, 2001), vocabulary (Grabe & Stoller, 1997; Horst, 2005; Pigada & Schmitt, 2006), grammar (Yang, 2001), reading and writing (Hafiz & Tudor, 1989), writing (Tsang, 1996), a collection of disparate abilities/skills (Elley & Mangubhai, 1983), and general L2 proficiency (Mason & Krashen, 1997).

## V. DIDACTIC UNITS

The teaching units will be grouped into three different projects:

- Becoming doctors. Body systems and healthy lifestyle; DU 1, 2 and 3.
- Finding nemo. Animals and plants; DU 4, 5 and 6.
- Eureka! Matter, forces and machines; DU 7, 8 and 9.

### 5.1 Project 1: Becoming Doctors!

#### 5.1.1. Didactic Unit 1: Respiratory and Circulatory systems

DIDACTIC UNIT 1: Respiratory and circulatory system
<p><b>Content area:</b> NATURAL SCIENCE / BECOMING DOCTORS</p> <p><b>Level:</b> Year 4</p> <p><b>Timing:</b> 4 first weeks of the first term; 7 sessions of 50 minutes.</p> <p><b>Description:</b> students understand the different systems of the human body, its parts and functions.</p> <p><b>Product:</b> students make and explain an analogical model of the circulatory or the respiratory system with recycled materials, and compare a common illness in USA and Spain.</p> <p><b>Rationale:</b> in this unit students will learn about the respiratory and the circulatory systems, they will be able to identify the different organs they consist of and understand their function. Another objective of this unit is to promote the awareness of the human body.</p>

CONTENT	
<p><b><u>Content</u></b></p> <ul style="list-style-type: none"> <li>● Respiratory system</li> <li>● Parts and organs of the respiratory system</li> <li>● Creation of a model of respiratory system</li> <li>● Circulatory system</li> <li>● Parts and organs of the circulatory system</li> <li>● Process of the circulatory system</li> <li>● Explanation of the process of the circulatory system as a narrator</li> </ul>	<p><b><u>Contribution to key competences</u></b></p> <ul style="list-style-type: none"> <li>● Competence in mathematics, science, and technology (CMST)</li> <li>● Learning to learn (L2L)</li> <li>● Competence in linguistic communication (CLC)</li> <li>● Sense of initiative and entrepreneurship (SIE)</li> <li>● Social and civic competence (SCC)</li> <li>● Digital competence (DC)</li> <li>● Study and work techniques.</li> </ul>
COGNITION	
<p><b><u>Teaching objectives</u></b></p> <ul style="list-style-type: none"> <li>● To know the vital functions of the human body.</li> <li>● To understand the principal characteristics of the respiratory system and its components.</li> <li>● To know the principal characteristics of the circulatory system.</li> <li>● To create a model of the respiratory system.</li> <li>● To explain the process of the circulatory system to the class.</li> </ul>	<p><b><u>Learning Outcomes</u></b></p> <ol style="list-style-type: none"> <li>1. Pupils identify the main characteristics of the respiratory system.</li> <li>2. Pupils explain the vital functions of the lungs, bronchi and trachea.</li> <li>3. Pupils illustrate de respiratory system with recycled materials.</li> <li>4. Pupils identify the main characteristics of the circulatory system</li> <li>5. Pupils explain the functions of the heart, veins and arteries.</li> <li>6. Pupils explain the circulatory system in a presentation.</li> </ol>
CULTURE	
<p><b><u>Teaching objectives</u></b></p> <ul style="list-style-type: none"> <li>● To be aware of the inner and outer of different people.</li> </ul>	<p><b><u>Learning outcomes</u></b></p>

<ul style="list-style-type: none"> <li>• To show interest on how our body works.</li> <li>• To respect the opinions of the classmates.</li> <li>• To respect others when they are speaking.</li> <li>• To help the classmates when they need it.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupils compare how people in different continents are different and alike.</li> <li>• Pupils respect the opinions of the partners.</li> <li>• Pupils respect the speaking time and raise their hand to speak.</li> <li>• Pupils help their classmates when they do not know something.</li> </ul>
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### COMUNICACION

#### LANGUAGE OF LEARNING

- **Academic vocabulary:**

Organs and systems: nose, mouth, trachea, pharynx, lungs, alveoli, gas exchange, diaphragm, rib cage, heart, blood vessels (veins, arteries and capillaries), carbon dioxide, oxygen, atriums, ventricles; respiratory system, circulatory system.

Illnesses and health: flu, cold, asthma...; medical protocol, patient, doctor, healthy habit; I've got a cold...

- **Language to define organs and systems:**

The circulatory systems is composed of...; the hearth belongs to the circulatory system...; lungs are part of...; we breathe through the lungs; air gets into the body through...

- **Language to explain their analogical model:**

This model represents...; it consists of a ... and ... This is made with reused materials like...

- **Language to explain the process:** to make our analogical model we have used the following materials..., we have used ... to represent the ...

**Language to summarize the process of making it and list the materials they have use:** I have made it with..., then, I added..., the next step was..., the last one was...

- **Language to describe experiences:** if I run fast my breathing is...: when I am quiet... I can feel the air...

- **Connectors:**

Comparison (is similar to..., works like..., acts like,...) contrast (through, is not nearly good as ...,) cause and effect (because, as a result of), expressing consequences (for this reason, as a result, is the cause of...).

### LANGUAGE FOR LEARNING

**BEFORE THE LESSON:** *greetings* (good morning everyone, how are you getting on?); *time to begin* (let's begin today's lesson, is everybody ready to start?); *register* (who isn't here today? who is absent today?).

**DURING THE LESSON:** *common instructions* (we'll learn how to..., turn to page..., do you follow me?, stand up/sit down...), *classroom management* (open your books at page..., all together now, first of all, after that/then, next, let's..., whose turn is it to read?, stop talking, listen to what ... is saying, any questions?, who knows the answer?, what about this word?...) *error correction* (right! very good, unfortunately not, good try but not quite right...).

**THE END OF THE LESSON:** *time to stop* (it's time to finish now, have you finished?, one minute to finish that activity...), *not time to stop* (one more thing before you go, just a moment please...), *homework* (remember your homework, there is no homework for today...), *meaningful discussion stems* (I have a question, I wonder..., I agree/disagree with... because, another example is...).

- **Language to ask questions to a doctor:** why did you become a doctor? How does our body work? Why does my ... hurt? why do you need our help?

### LANGUAGE THROUGH LEARNING

- Language through activities, videos, quizzes, ICT.
- Language through peer/group interaction.
- Language through project preparation and presentation.
- Language through making the analogical model.

### PROCEDURE

#### Session 1: HOW DOES OUR BODY WORK? 50 minutes

TIMING	ACTIVITIES	GROUPING SPACES

20 minutes	<p><b>Act.1.:</b> Teacher (T) tell students (SS) that an American friend, who is a doctor, has sent them a letter (<a href="#">Appendix A</a>) asking for their help to treat her patients in the United States.</p> <p><b>Act.2:</b> after reading the letter, T asks the SS what they think, and what doubts they have.</p> <p><b>Act.3:</b> T will ask the key question: <i>What will we have to do before we can treat a patient?</i></p> <p><b>Act.4:</b> SS responses will be written on the board and finally, T tells them that the first thing SS have to do is to know well the human body and its systems, and what diagnoses, treatments and preventions exist.</p> <p><b>SCAFFOLDING:</b></p> <p>Reception: detecting the main words and ideas in the doctor's letter; identify the reason for the letter; locating the US in a map; guessing the meaning of significant words (doctor, patient, hospital, symptoms, analyse, treat...), the "Theory booklet" (<a href="#">Appendix B</a>).</p> <p>Transformation: discuss and agree a plan which includes what they think they need to know. Revise and modify the plan from collective suggestions.</p> <p>Production: write a collective answer taking the doctor's letter as a model.</p>	<p><b>Grouping:</b> whole class</p> <p><b>Space:</b> class</p>
30 minutes	<p><b>Our human body</b></p> <p><b>Act.1:</b> T shows a Nearpod video where they can observe all the systems in 3D. Then, asks SS to complete a collaborative Padlet of: "I see, I think, I wonder". T guides their answers focusing on the identification of the main organs and discussing about what they think their functions are.</p>	

	<p>T recalls their prior knowledge with simple questions about the body systems they already know (<i>Which system do we use when we eat? What parts of our body allow us to stand and move?</i>) and guiding their answers with sentences: <i>the stomach is an organ of the digestive system. The digestive system's function is to transform food into nutrients.</i></p> <p><b>Act. 2:</b> Then, asks SS to think and discuss about the importance of keeping healthy habits and to share their opinions and own experiences about illnesses or diseases they have suffered: <i>What body systems are affected if you have a flu/asthma/a cold...?</i></p>	
<b>Session 2: RESPIRATORY SYSTEM/50 minutes</b>		
30 minutes	<p><b>Respiratory System (1)</b></p> <p><i>What is the respiratory system? What is its function?</i></p> <p><b>Act. 1:</b> T asks SS to complete a graphic organiser (<a href="#">Appendix C</a>) while watching “The Dr. Binoc’s show” video (The Respiratory System).</p> <p>Once they have been exposed to the basic vocabulary and ideas (how it works and what its main function is), T asks them to read pages 1 and 2 of the “Theory booklet”. Then, T asks them to compare with the graphic organiser and suggests them to check in groups.</p> <p><b>Act. 2:</b> T shows the pages given in the whiteboard and guide them in the identification and underline of the main ideas and new words. Make sure most of them understand the basic information asking simple questions: <i>Which organs are part of the respiratory system? Is the heart an organ the respiratory system? Which system do lungs belong to?</i></p>	<p><b>Grouping:</b> groups</p> <p><b>Space:</b> class</p>

	<p><b>Act. 3:</b> T invites SS to make a set of cards with the drawings and the names of the main organs, using StudyStack. Once prepared, use them in various games from the same application: flashcards to review vocabulary (new words and definitions), matching (pictures and words), unscramble (spelling), quiz, etc.</p> <p><b>Act. 4:</b> recall the video and the reading to ask SS to describe the route of the air in the respiratory system from the nose to the alveoli. Make sure they name the organs in order.</p> <p><b>Act. 5:</b> SS label a diagram of the respiratory system and fill the gaps in a text describing the process “Activity booklet” (<a href="#">see Appendix D</a>).</p>	
<b>Session 3: RESPIRATORY SYSTEM/50 minutes</b>		
10 minutes	<p><b>Respiratory System (2)</b></p> <p><b>Act. 1:</b> students use a graphic organiser from StudyStack to explain what they learnt in the previous lesson activities. T makes an active observation of the whole activity and uses the Group observation Checklist (<a href="#">Appendix E</a>).</p>	<p><b>Grouping:</b> whole class, groups,</p> <p><b>Space:</b> playground, class</p>
10 minutes	<p><b>Act. 2:</b> take the SS to the playground and asks them to breathe in and out trying to fill their lungs with air. Then, asks:</p> <p style="text-align: center;"><i>What happens when you breathe?</i></p> <p>Make students aware of the relationship between the organs they saw in the video and their feeling while filling and emptying their lungs.</p> <p>After that, T asks SS to run to full speed for one minute. When they stop, asks:</p> <p style="text-align: center;"><i>What do you feel?</i></p> <p style="text-align: center;"><i>Are you breathing faster or slower?</i></p>	



<p>20 minutes</p>	<p>SS discuss their experience and verbalise what they feel. Help them with: <i>At rest, my breathing is slow. When I am quiet, I can hardly hear my breathing or see my chest up and down. After running, my breathing is heavier and faster, and I can feel the air entering the nose and filling up the lungs.</i></p> <p><b>Act. 6:</b> Back to the classroom, SS make a model of the respiratory system with the materials provided (<a href="#">Appendix F</a>). First, show one and let them use it to see the effect of blowing in the tube. Asks SS to point and name the “organs”. Invite them to compare what happens when they blow into the pipe with the experience in the playground.</p> <p>Materials: a plastic bottle, two balloons, tape, scissors and a straw. Once they have finished in groups their models, let them manipulate and check if they function properly.</p>	
<p>10 minutes</p>	<p><b>Act. 7:</b> In groups, students present their model to the class and explain what happens while breathing in and out, using the vocabulary (lungs, rib cage, diaphragm, windpipe). T and LA will give general feedback to the groups about the way they worked in common, how they presented it (language and general performance) and the grade of knowledge of the contents they show (Formative assessment).</p>	
<p><b>Session 4: TEST RESPIRATORY SYSTEM AND A REVIEW/50 minutes</b></p>		
<p>10 minutes</p>	<p><b>Test respiratory system</b></p> <p><b>Act. 1:</b> SS watch the Nearpod video with the 3D lungs model (Becoming doctors) and complete the activity (labelling and colouring).</p>	<p><b>Grouping:</b> individual, groups</p> <p><b>Space:</b> class</p>

30 minutes	<b>Act. 2:</b> SS take the test (Google form) with the key concepts of the content presented.	
10 minutes	<b>Act. 3:</b> SS play a Bamboozle game to review what they have learnt. SS can play in small groups.	
<b>Session 5: CIRCULATORY SYSTEM/50 minutes</b>		
10 minutes	<p><b>Circulatory System (1)</b></p> <p><b>Act. 1:</b> Prepare a nut size ball of plasticine and a toothpick to make a “beat sensor” (<a href="#">Appendix G</a>). In pairs, SS take the pulse of their mates by placing the sensor on their wrists. Ask them to count the beats in one minute. SS then register their pulse. Ask: <i>Is the beat fast or slow? What organ makes those beats?</i></p> <p>Students share their opinions and experiences, while T write down in the board all the significant answers. Ask SS to draw what they think that organ looks like. Then, ask them if they want to know what organ is the responsible for the beats, and what the beats are.</p> <p><b>Act. 2:</b> Watch the video “How the heart works?”. Ask them to describe what they have learnt, letting them read their notes on the boards. Guide them with questions: <i>Were you right? Did you guess that it was the heart? What other organs did the video mention? How do they work? What body system do they all belong to?</i></p>	<p><b>Grouping:</b> individual, pairs</p> <p><b>Space:</b> class</p>
10 minutes	<b>Act. 3:</b> SS do a “tick words” ( <a href="#">Appendix H</a> ) activity to indicate the ones mentioned in the video. Let them check the activity in turns and ask them to correct in pairs.	
5 minutes	<b>Act. 4:</b> students read aloud the definitions of veins, arteries, heart, and capillaries, from the texts in the “Theory booklet”. Guide their reading on the whiteboard	

10 minutes	and ask them to underline the main ideas in one colour, and the new words in another.	
10 minutes	<p><b>Act. 5:</b> After that, the Language assistant pronounces the names of the circulatory organs and students repeat the word, point them in the diagram, and read the definition. The activity can be repeated including the vocabulary from the respiratory system and asking SS to make a different response when they listen to a circulatory or respiratory organ.</p> <p><b>Act. 6:</b> SS complete activities 1 and 2 of their “Activity booklet”. Then, the LA reads the sentences in activity 3, asks SS to repeat paying attention to intonation and meaning, and then invites them to put the sentences in order to describe the circulatory process.</p>	
5 minutes	<p><b>Act. 7:</b> Play a video song in the whiteboard: “Circulatory system song”. Ask the students to listen and try to follow the lyrics.</p>	
<b>Session 6: HOW OUR CIRCULATORY SYSTEM WORKS/50 minutes</b>		
15 minutes	<p><b>Circulatory System (2)</b></p> <p><b>Act. 1:</b> play the song “Circulatory system song” and ask the SS to sing it aloud. Once they have sung the song a couple of times, ask them to listen to it once more and fill in the gaps of activity 4 of their “Activity Booklet”.</p>	<p><b>Grouping:</b> whole class, individual, groups</p> <p><b>Space:</b> class</p>
35 minutes	<p><b>Act. 2:</b> in teams of 4-5, groups choose a task between making a visual (graphic, comic, or poster) (<a href="#">Appendix I</a>) which represents what they have learnt or prepare a StudyStack activity with definitions and vocabulary games as the ones done for the circulatory system. Once finished, groups exhibit and present their works.</p>	
<b>Session 7: CIRCULATORY SYSTEM REVIEW AND MAGIC T-SHIRT/50 minutes</b>		

<p>15 minutes</p> <p>20 minutes</p>	<p><b>Review: Circulatory System</b></p> <p><b>Act. 1:</b> SS will take a review test (Google forms) to check what they have learnt about the circulatory system.</p> <p><b>Act. 2:</b> SS play a Bamboozle game to review the main concepts of the circulatory system.</p> <p><b>Act. 3:</b> The magic T-shirt (<a href="#">Appendix J</a>). Once the respiratory system and the circulatory system have been presented and worked, show SS the magic shirt. Students need their iPads and download Bodyplanet app. While one student wears the T-shirt, the rest will be able to visualize the circulatory and respiratory systems over their mate's body. SS point and name the organs they are able to identify, and describe their shape, size, and colour. T asks them simple questions about their function to make sure they know which system each organ belongs to.</p>	<p><b>Grouping:</b></p> <p>whole class, individual, groups</p> <p><b>Space:</b> class</p>
<b>Session 8: FINAL TEST CIRCULATORY AND RESPIRATORY SYSTEMS /50 minutes</b>		
<p>40 minutes</p> <p>10 minutes</p>	<p><b>Final text: Circulatory and Respiratory System</b></p> <p><b>Act. 1:</b> SS will take a final written test (<a href="#">Appendix M</a>) to check what they have learnt about the circulatory and respiratory systems.</p> <p>Once they have all finished, invite them to check the test aloud in pairs or individually or use a individual checklist (<a href="#">Appendix K</a>).</p> <p><i>Note:</i> T can give students with TADH this extra time to finish or delete some activities of the test.</p>	<p><b>Grouping:</b></p> <p>whole class, individual, pairs</p> <p><b>Space:</b> class</p>
<b>MATERIAL AND RESOURCES</b>		
<p><b>Human resources:</b></p> <ul style="list-style-type: none"> <li>• Natural Science Teacher and students of year 4.</li> <li>• Language assistant will help students to gain accuracy in their pronunciation of the scientific vocabulary and confidence in their intonation. LA plays an</li> </ul>		

important part in activities related to oral presentations and discussion activities, as well as in question-answer activities.

- Help of families to encourage students to learn every day.

#### Material resources:

- ICT resources: iPads, whiteboard
- Letter from the American doctor ([Appendix A](#))
- The Theory booklet ([Appendix B](#))
- Graphic organiser: the Respiratory System ([Appendix C](#))
- Activity booklet ([Appendix D](#))
- Analogical model of the respiratory system ([Appendix F](#))
- Plasticine and toothpick ([Appendix G](#))
- Tick words ([Appendix H](#))
- Graphic organiser: the Circulatory System ([Appendix I](#))
- Magic T-shirt ([Appendix J](#))
- Plastic bottle, 2 balloons, tape, scissors, straw, plasticine

#### Digital resources:

- Nearpod: Session 1, Collaborative padlet:  
<https://app.nearpod.com/presentation?pin=C63E117744EAAF76F7490D8288304DA8-1>
- Nearpod: Becoming doctors (3D lungs, respiratory diagram, 3D circulatory system, heart diagram):  
<https://app.nearpod.com/presentation?pin=D7FFB7D3A435295D9AF3266D3A3531ED-1>
- StudyStack: <https://www.studystack.com/flashcard-1573175>
- The Dr. Binoc's show: The Respiratory System  
<https://www.youtube.com/watch?v=mOKmjYwfDGu&t=17s>
- Bamboozle game: The respiratory system  
<https://www.baamboozle.com/game/405221>
- Video: How your heart works  
[https://www.youtube.com/watch?v=tg\\_ObDJEaGo](https://www.youtube.com/watch?v=tg_ObDJEaGo)

- Bamboozle game: The respiratory system / The circulatory system  
<https://www.baamboozle.com/game/463108>
- Video song: The circulatory system song:  
<https://www.youtube.com/watch?v=WyK9XpII-6g>
- Google test respiratory system:  
[https://docs.google.com/forms/d/e/1FAIpQLSd3JeE-cywFWZ5UQ3AGiTzvsRsG4PWVoyyl0RU6tGydiDxCA/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLSd3JeE-cywFWZ5UQ3AGiTzvsRsG4PWVoyyl0RU6tGydiDxCA/viewform?usp=sf_link)
- Google test circulatory system:  
[https://docs.google.com/forms/d/e/1FAIpQLSe\\_UJ-1MJFpDkCgvtplBRc1xjJf\\_wYC7ZvCCHmgFjeSIHwZ9w/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLSe_UJ-1MJFpDkCgvtplBRc1xjJf_wYC7ZvCCHmgFjeSIHwZ9w/viewform?usp=sf_link)
- ICT resources like iPads to look for information and to make the quizzes and digital board to see the information and the theory  
Bodyplanet: <https://apps.apple.com/es/app/body-planet-magic-t-shirt/id1247830486>  
Body planet - Magic T-shirt de Universo Body Planet S.L.

## ASSESMMENT

### Evaluation criteria:

- Explain the respiratory and circulatory systems and how they work.
- Name the organs involved in the respiratory and circulatory systems.

### Minimum required:

- Name the organs implicated on both systems and their characteristics.

### Assessment:

#### 1. Formative Assessment

- Observation of the group work using a checklist for active observation ([Appendix E](#)).
- Verbal and written feedback of each activity done in class using mini whiteboards and thumbs up/down.
- Self-assessment checklist ([Appendix K](#)).

#### 2. Summative Assessment:

- The analogical model with recycled materials will be assessed by the teacher with a rubric ([Appendix L](#)).

- Unit test ([Appendix M](#)).

### ATTENTION TO DIVERSITY

**Multimodal Input:** The content of the unit will be presented in different ways throughout the sessions to ensure that all students engage and learn it.

- Videos to describe the characteristics of the topic learnt
- 3D digital and analogical models of the human body
- Diagrams
- Magic T-shirt

**LOTS:** make an illustration of how one of the systems works. Label a model of each system.

**HOTS:** investigate on the effects of smoking on the respiratory system and how our lungs suffer and change.

#### Attention deficit hyperactivity disorder (ADHD):

In this unit the self-instruction (what/how/when/ do I have to do?) is done through group work, role-playing, feedback

For this particular student will:

1. Provide qualitative feedback using rubrics and checklists.
2. The assessment needs to be informed in advance.
3. Avoid setting several exams in the same week.

#### 5.1.2. Didactic Unit 2: Reproductive system

### DIDACTIC UNIT 2:

#### Reproductive system

**Content area:** NATURAL SCIENCE / BECOMING DOCTORS

**Level:** Year 4

**Timing:** 4 weeks of the first term; 7 sessions of 50 minutes.

**Description:** students identify the main characteristics of the male and female reproductive system and will be able to explain in a general way fertilization, embryonic development, and childbirth.

**Product:** lapbooks with the differences between man and woman bodies.

<p><b>Rationale:</b> the main objective of this didactic unit is to learn the differences that exist between the men and woman reproductive systems.</p>	
<p><b>CONTENT</b></p>	
<p><b><u>Content</u></b></p> <ul style="list-style-type: none"> <li>● Reproductive system</li> <li>● Principal characteristics of the male and female system</li> <li>● Organs of both reproductive systems</li> <li>● Physical differences between man and woman</li> <li>● The main stages of pregnancy</li> <li>● Language content: explanation of the lapbooks.</li> </ul>	<p><b><u>Contribution to key competences</u></b></p> <ul style="list-style-type: none"> <li>● Competence in mathematics, science, and technology (CMST)</li> <li>● Learning to learn (L2L)</li> <li>● Competence in linguistic communication (CLC)</li> <li>● Sense of initiative and entrepreneurship (SIE)</li> <li>● Social and civic competence (SCC)</li> <li>● Digital competence (DC)</li> <li>● Study and work techniques</li> </ul>
<p><b>COGNITION</b></p>	
<p><b><u>Teaching objectives</u></b></p> <ul style="list-style-type: none"> <li>● To understand the physical differences between male and female.</li> <li>● To know the organs of both reproductive systems.</li> <li>● To compare the reproductive systems of men and women using a Ven Diagram.</li> <li>● To understand principal stages of pregnancy.</li> </ul>	<p><b><u>1. Learning Outcomes</u></b></p> <ol style="list-style-type: none"> <li>2. Pupils compare, identify and name the differences between female and male organs.</li> <li>3. Students distinguish between female and male reproductive systems.</li> <li>4. Pupils use a Ven Diagram to contrast reproductive systems of men and woman.</li> <li>5. Pupils analyse the differences between men and women bodies through diagrams, pictures and texts, displayed in a lapbook.</li> <li>6. Students explain the four different stages of pregnancy.</li> </ol>



CULTURE	
<u>Teaching objectives</u> <ul style="list-style-type: none"> <li>To be aware of stereotypical ideas related to sex orientation.</li> </ul>	<u>Learning Outcomes</u> <ul style="list-style-type: none"> <li>Pupils compare, identify and name stereotypes about sex.</li> </ul>
COMUNICACION	
<b>LANGUAGE OF LEARNING</b> <ul style="list-style-type: none"> <li><b>Academic vocabulary:</b> Babies, ovaries, ova, uterus, development, vagina, vulva, scrotum, testicles, sperm, penis, urethra, ovum, embryo, fertilization, organs, limbs, foetus, gender, pelvis, birth, born, reproductive, male, female.</li> <li><b>Genre:</b> Description. This graphic represents... In this drawing we can see... This text explains how..., this organ is ..., it is located in..., it functions as...</li> <li><b>Language to explain the poster:</b> The title of the poster is ... because..., the main sections are... Here we have a drawing about..., this text refers to...; I've put the key words here because...</li> <li><b>Language to explain the stages of pregnancy:</b> at the beginning, at the end, the first stage..., when it has (number) months...</li> <li><b>Language to compare the two reproductive systems:</b> they are similar in..., they are different in..., this system has... and the other one has...).</li> <li><b>Language to describe parts of the body:</b> this is my...; I have got a...: boys have... girls have...</li> <li><b>Connectors:</b> Comparison (is similar to..., is like, equally...); contrast (however, instead...); cause and effect (because, as a result of...); expressing consequences (so, because of this, for this reason, as a result, causes...).</li> </ul> <b>LANGUAGE FOR LEARNING</b> <p><b>BEFORE THE LESSON:</b> <i>greetings</i> (good morning everyone, how are you getting on?...); <i>time to begin</i> (let's begin today's lesson, is everybody ready to start?...); <i>register</i> (who isn't here today?, who is absent today?..);</p> <p><b>DURING THE LESSON:</b> <i>common instructions</i> (we'll learn how to..., turn to page..., do you get it?, do you follow me?, stand up/sit down...), <i>classroom management</i></p>	

(open your books at page..., all together now, first of all, after that/then, next, for the last thing today, let's..., whose turn is it to read?, any questions?, who knows the answer?, what about this word?...); *error correction* (right!, you did a great job, you've improve a lot, good try but not quite right...).

**THE END OF THE LESSON:** time to stop (let's stop now, have you finished? one minute to finish...); homework (do you remember what you have to do before the next lesson?...), meaningful discussion stems (I have a question, I noticed that..., I wonder..., I agree/disagree with.... because another example is...).

### LANGUAGE THROUGH LEARNING

- Language through activities, videos, quizzes, ICT.
- Language through peer/group interaction.

Language through project preparation and presentation.

### PROCEDURE

#### Session 1: PRESENTING THE REPRODUCTIVE SYSTEM/ 50 minutes

TIMING	ACTIVITIES	GROUPING SPACES
25 minutes	<p><b>Act. 1:</b> the teacher begins the session presenting the video "The Human Reproduction" that describes human reproduction in a simple way. Then, T distributes a KWL table and asks the students to complete the three fields individually.</p> <p>Video should be watched a couple of times to facilitate SS the record of the new words and concepts they want to add to their charts.</p>	<p><b>Grouping:</b> individual, whole class</p> <p><b>Space:</b> Class</p>
25 minutes	<p><b>Act. 2:</b> Reception scaffolding: the LA will guide the activity by which SS will use the vocabulary and basic concepts recorded on their tables to complete a concept map. This will present a title (The Reproductive system) and two branches: female reproductive system and male reproductive system. From each of those, two new branches open: external and internal organs. The LA will</p>	

	<p>ask the SS to add the names and concepts in an appropriate way and invite the whole class to revise and agree the final map.</p> <p>Transformation scaffolding: T asks SS to transform their concept map into a summary or basic description of the video watched, paying attention to writing, spelling and to the accuracy of the concepts explained.</p> <p>Production scaffolding: SS start to prepare a lapbook in groups to show the organs of the female and male bodies and a basic sequence from fertilization to birth. This lapbook will be completed while the DU is developed. At the end of the unit, SS will revise and present it to their classmates.</p>	
<b>Session 2: REPRODUCTIVE SYSTEM/50 minutes</b>		
10 minutes	<p><b>Act. 1:</b> Students open their “Theory booklet” with the information about the reproductive system and individually read the text. Then, SS underline the main ideas and make a list with the words they do not understand. (Reception scaffolding: underlining).</p>	<p><b>Grouping:</b> individual, whole class, groups</p> <p><b>Space:</b> class</p>
10 minutes	<p><b>Act. 2:</b> Then, T invites SS to ask their mates to solve their vocabulary doubts. Both the T and the LA will check if the answers students give to their mates are correct and will give the appropriate feedback.</p> <p>Once everyone has finished doing the individual reading, there will be a group reading where all the vocabulary and concept doubts will be solved.</p>	
10 minutes	<p><b>Act. 3:</b> divide the classroom into two: the group of boys, in charge of completing the female reproductive system, and the group of girls, who will complete the male reproductive system. Project the Activity booklet and show SS the activity 1 of the Reproductive system. In turns, SS label the</p>	

10 minutes	<p>organs according to what they have agreed previously in groups. (Transformation scaffolding: booklet) T will give SS oral feedback about their performance.</p> <p><b>Act. 4:</b> Once the previous activity is checked in groups, invite SS to complete the activity 2. To do so, voluntary students will go the whiteboard, choose a word, read it aloud and classify it in the correct box. Once finished, check answers aloud.</p> <p><b>Act. 5:</b> Watch the Happy Learning video stopping and comment what T consider important according to the doubts and interests that had observed in the group during the previous activities. At the end of the video, T will make sure SS solve their doubts.</p>	
<b>Session 3: REPRODUCTIVE SYSTEM/50 minutes</b>		
20 minutes	<p><b>Act. 1:</b> SS remember what they learnt in the previous session with the help of their copies of the concept maps, the summaries written or their activity booklet. At this stage of the unit, T will make some questions and should get correct answers. To do so, T projects page 6 of the Theory booklet and asks precise questions about what is shown on the screen.</p> <p>Reception scaffolding: questioning using mini.whiteboards and visual support from previous classes.</p> <p style="text-align: center;"><i>What do these pictures represent?</i></p> <p style="text-align: center;"><i>What is the main function of the reproductive system?</i></p> <p style="text-align: center;"><i>What are the organs of the female / male reproductive system? How are both systems different?</i></p> <p>LA and T will provide SS with the adequate oral feedback.</p>	<p><b>Grouping</b></p> <p>Whole group</p> <p>Individual work</p> <p>Peer</p> <p><b>Space:</b></p> <p>class</p>
20 minutes	<p>Call SS attention to the fact that boys and girls have different reproductive systems; tell them that the only system that is different in boys and girls is the</p>	

10 minutes	<p>reproductive, but that the rest of their bodies are the same. From this point, let them share their opinions about the differences and similarities between sexes. Let them talk about the prejudice of defining different roles to girls and boys and lead their reflections towards the equality of both.</p> <p><b>Act. 2:</b> SS prepare a matching activity with the basic words of the unit and their definitions. They will work in groups or pairs to select the basic terms and write correct definitions. Optionally they can add a third column to the activity including simple drawings of the organs involved. Once completed, groups exchange their works and fulfil the activity. Give the groups the opportunity to correct their activities if any mistake is detected.</p> <p><b>Act. 3:</b> T plays a 3-minute interactive video (Edpuzzle video) on the whiteboard. While SS watch it, some questions appear on the screen that should be answered to go on. This will give the T the opportunity to identify the difficulties the group may still have.</p> <p>SS should be given enough time to comment or ask questions about the video. As it presents extra content, T can recommend that SS take notes to add to their lapbooks.</p>	
<b>Session 4: THE STAGES OF PREGNANCY (1) /50 minutes</b>		
25 minutes	<p><b>Act. 1:</b> T asks student to fill a KWL chart in groups with their experiences, notions or knowledge about pregnancy and birth. Once they have completed it, T projects the Theory booklet and invites them to read the text, identifying the key words and underlining the main ideas (Reception scaffolding). At this point, the LA will lead their exchange of opinions, notions or experiences</p>	<p><b>Grouping</b> Individual, group</p> <p><b>Space:</b> class</p>

<p>10 minutes</p> <p>15 minutes</p>	<p>and to organise the ideas in a chart or concept map. This can be done on a whiteboard, a mural or with an application like iThoughts2go, encouraging the participation (transformation scaffolding). T will use a checklist for an active group work observation.</p> <p><b>Act. 2:</b> Give the students time to do a silent individual reading; then, ask them to read aloud in turns paying attention to key words of each of the stages of pregnancy. Make sure they solve their doubts.</p> <p><b>Act. 3:</b> T asks SS to complete an interactive activity on their iPads (transformation scaffolding) and send it back by email once finished. This worksheet can be a formative assessment tool since it helps teacher identify students' difficulties.</p>	
<p><b>Session 5: THE STAGES OF PREGNANCY (2) /50 minutes</b></p>		
<p>15 minutes</p> <p>10 minutes</p>	<p><b>Act. 1:</b> T shows a series of drawings that represent the different stages of pregnancy and asks SS to describe what they see and to put them in order, assigning each one to first, second or third trimesters. Once they have activated the previous concepts presented, asks:</p> <p style="text-align: center;"><i>How many stages are they?</i></p> <p style="text-align: center;"><i>What is the stage of fertilization?</i></p> <p style="text-align: center;"><i>What about 1-3 months? What about 3-6 months?</i></p> <p style="text-align: center;"><i>What about 6-9 months?</i></p> <p style="text-align: center;"><i>At what stage does the baby begin to form?</i></p> <p><b>Act. 2:</b> students watch a video on the whiteboard and write the key words related to fertilization and pregnancy. Then, they form groups and write two questions about the video. Once they have written them, in turns, the groups ask their mates the questions who have to answer them in a proper way. Both the teacher and the LA will make sure that the</p>	<p><b>Grouping</b></p> <p>Whole class, group, Individual</p> <p><b>Space:</b> class</p>

	<p>answers are correct and give the necessary feedback. They can be written on the blackboard as a guideline for a foster summary (production scaffolding).</p> <p><b>Act. 3:</b> T SS participate in a cooperative activity (Broken template). Divided in 4 groups, T assigns a different stage of pregnancy to each of them who will have to represent it on a DINa-4. Once finished, they put their parts on a mural. The four groups will have to discuss and put the stages in order. The LA and the T will encourage SS to use English and exchange their opinions about the way to do the task (transformation scaffolding).</p>	
<b>Session 6: GROUP WORK /50 minutes</b>		
10 minutes	<p><b>Act. 1:</b> SS remember what they did in the previous session with the help of the four-stage diagram exhibited on the mural (reception scaffolding).</p>	<p><b>Grouping</b> groups <b>Space:</b> class</p>
40 minutes	<p><b>Act. 2:</b> T asks them to organise in four groups that have to be different from the ones formed in the previous lesson. Then, each group chooses to explain one of the stages. They will be encouraged to use the Keynote iPad application to create a presentation which includes the key vocabulary, and the necessary images.</p> <p>To make this task easier for students, show a model of a lapbook and describe the display, format, materials... as well as the place for the title, the text or the labels of the drawings. Call their attention towards the use of graphics to illustrate the basic vocabulary and process. Since in previous sessions SS took notes of the key concepts and vocabulary, they can now write short descriptions and vocabulary labels with the help of their own summaries.</p> <p>This would be a good task to be self-assessed with a checklist.</p>	

Session 7: GROUP PRESENTATION, REVIEW TEST, LAPBOOKS EXHIBITION/50 minutes		
10 minutes	<b>Act. 1:</b> Students will have the first part of the session to finish their group presentations and organize to present it.	<b>Grouping</b> groups, individual <b>Space:</b> class
20 minutes	<b>Act. 2:</b> In turns, the groups will make a five minute presentation of their work to the classmates who will evaluate it with the help of a rubric.	
10 minutes	<b>Act. 3.</b> SS will take a 10 questions test about the key concepts and vocabulary of the whole unit.	
10 minutes	<b>Act. 4:</b> SS will finish their lapbooks which will be part of a global exhibition.	
Session 8: FINAL TEST /50 minutes		
40 minutes	<b>Final test: Reproductive System</b> <b>Act. 1:</b> SS will take a final written test (Appendix D) to check what they have learnt about the reproductive systems and the stages of pregnancy.	<b>Grouping</b> groups, individual <b>Space:</b> class
10 minutes	Once they have all finished, they can check the test aloud in pairs or individually. <i>Note:</i> T can give students with TADH this extra time to finish or delete some activities of the test.	
MATERIAL AND RESOURCES		
<p><b>Human resources:</b></p> <ul style="list-style-type: none"> <li>• Natural Science Teacher and students of year 4.</li> <li>• Language assistant will help students to gain accuracy in their pronunciation of the scientific vocabulary and confidence in their intonation. LA plays an important part in activities related to oral presentations and discussion activities, as well as in question-answer activities.</li> <li>• Help of families to encourage students to learn every day.</li> </ul> <p><b>Material resources:</b></p> <ul style="list-style-type: none"> <li>• ICT resources: iPads, whiteboard</li> <li>• The Theory booklet (<a href="#">Appendix B</a>)</li> <li>• Activity booklet (<a href="#">Appendix D</a>)</li> </ul>		



- Writing frames for summary or presentations.
- Pictures of the stages of pregnancy.

#### Digital resources:

- Google test: The reproductive system
- Video: The reproductive system (by Happy learning),  
<https://www.youtube.com/watch?v=leBLVBXeuno>
- Interactive video + questions:  
<https://edpuzzle.com/media/6088b2dfb89d6f4178f3fede>
- Application for concept map designing: iThoughts2go.  
<https://apps.apple.com/es/app/ithoughts2go/id918458207>
- Interactive worksheet. <https://es.liveworksheets.com/fy255643tn>

### ASSESSMENT

#### Evaluation criteria:

- Identify and localize the organs of the reproductive system in man and woman.
- Distinguish between the male and female reproductive system.
- Understand the four different stages of pregnancy.
- Present one stage of pregnancy.

#### Minimum required:

- Name and locate the main organs involved in both reproductive systems.
- Understand how a baby is formed.
- Interpret the stages of pregnancy.

#### Assessment:

##### 1. Formative Assessment

- Observation of the group work using a checklist for active observation.
- Verbal and written feedback of each activity done in class using mini whiteboards and thumbs up/down.
- Self-assessment checklist-
- Correction of the activity book.

##### 2. Summative Assessment:

- Unit test.

### ATTENTION TO DIVERSITY

**Multimodal Input:** The content of the unit will be presented in different ways throughout the sessions to ensure that all students engage and learn it.

- Photos to describe the characteristics of the topic learnt
- A presentation of the unit.
- Videos of the stages.

**LOTS:** label a model of reproductive system (male and female).

**HOTS:** design a lapbook where each student choose what information will be display, the elements used to present it, how to establish the relationship among concepts, etc.

**Attention deficit hyperactivity disorder (ADHD):**

In this unit the self-instruction (what/how/when/ do I have to do?) is done through group work, feedback.

For this particular student will:

1. Provide qualitative feedback using rubrics and checklists.
2. The assessment needs to be informed in advance. Avoid setting several exams in the same week.
3. Try to get students to participate
4. Constantly asking them if they need help
5. Ask them regularly some questions that we know they know and thus check that they are attentive

*5.1.3. Didactic Unit 3: Healthy lifestyle*

DIDACTIC UNIT 3:

Healthy lifestyle

**Content area:** NATURAL SCIENCE / BECOMING DOCTORS

**Level:** Year 4

**Timing:** 4 weeks of the first term; 7 sessions of 50 minutes.

**Description:** students know some diseases that affect the systems of the body and identifies and values healthy habits to prevent these diseases. This knowledge enables them to suggest a treatment to their patients that attend their illnesses.

**Product:** A patient report.

<p><b>Rationale:</b> The main objective of this didactic unit is to learn the differences between health and disease, and the prevention of disease by having healthy habits.</p>	
<p><b>CONTENT</b></p>	
<p><b><u>Content</u></b></p> <ul style="list-style-type: none"> <li>● Healthy habits</li> <li>● Diseases that affect our body systems.</li> <li>● Prevention.</li> <li>● Diagnosis.</li> <li>● Treatment.</li> <li>● Language content: a patient report.</li> </ul>	<p><b><u>Contribution to key competences</u></b></p> <ul style="list-style-type: none"> <li>● Competence in mathematics, science, and technology (CMST)</li> <li>● Learning to learn (L2L)</li> <li>● Competence in linguistic communication (CLC)</li> <li>● Sense of initiative and entrepreneurship (SIE)</li> <li>● Social and civic competence (SCC)</li> <li>● Digital competence (DC)</li> <li>● Study and work techniques.</li> </ul>
<p><b>COGNITION</b></p>	
<p><b><u>Teaching objectives</u></b></p> <ul style="list-style-type: none"> <li>● To know some diseases that affect our body systems.</li> <li>● To be aware of healthy habits to prevent disease such as regular check-ups, healthy habits, vaccination and avoid unhealthy habits.</li> <li>● To identify some types of diagnosis such as X-rays, electrocardiograph, thermometer, blood tests and ultrasound machine.</li> <li>● To understand some treatments to illnesses such as eat healthy, do some exercise, sleep, keep clean...</li> </ul>	<p><b><u>Learning Outcomes</u></b></p> <ul style="list-style-type: none"> <li>● Pupils identify the main diseases that affect our body.</li> <li>● Pupils identify healthy habits to prevent disease.</li> <li>● Pupils identify some treatments to diseases.</li> <li>● Pupils analyse patients and diagnose and treat them.</li> <li>● Pupils write different medical reports with a recommended treatment that respond to three particular medical cases.</li> </ul>

<ul style="list-style-type: none"> <li>To write a report describing the treatment recommended to patients according to their illnesses.</li> </ul>	
<b>CULTURE</b>	
<p><u>Teaching objectives</u></p> <ul style="list-style-type: none"> <li>To respect other opinions.</li> <li>To be aware of mental and physical health.</li> <li>To recommend healthy habits to prevent certain illness.</li> </ul>	<p><u>Learning Outcomes</u></p> <ul style="list-style-type: none"> <li>Pupils are able to respect their turn to speak.</li> <li>Pupils list mental health and physical health problems.</li> <li>Pupils classify the problems and relate them to possible solutions.</li> </ul>
<b>COMUNICACION</b>	
<p><b>LANGUAGE OF LEARNING</b></p> <ul style="list-style-type: none"> <li><b>Academic vocabulary:</b> Cold, cough, flu, sneeze, virus, bacteria, fats, minerals, carbohydrates, vitamins, protein, nutrients, antibiotics, vaccination, drugs, empathy, confused, uncomfortable, worried, shy, angry, calm, regular check-ups, unhealthy, x-rays, ultrasound machine, electrocardiograph, blood tests, thermometer, sleep, keep clean, microsurgery, splints, organ transplant, lifestyle.</li> <li><b>Genre:</b> expositive text, report: (After reading the case; according to the results of the diagnostic devices and tests... It is recommended that..., the patient must, should... ).</li> <li><b>Language to explain healthy habits:</b> from this we can understand, as you can see...).</li> <li><b>Language to analyse a patient:</b> (we have observed that..., I think this patient could have..., the diagnosis could be..., the treatment could be..., we can recommend our patient to...).</li> <li><b>Connectors:</b> Comparison (is similar to..., acts like..., is like...) contrast (even so, though, instead, is better ... than ..., is not as important as...), cause and effect (as a</li> </ul>	

result of, therefore), expressing consequences (because of this, for this reason, as a result, produces, causes, is the cause of...).

### LANGUAGE FOR LEARNING

**BEFORE THE LESSON:** *greetings* (good morning everyone, how are you getting on?...); *time to begin* (let's begin today's lesson, is everybody ready to start?...); *register* (who isn't here today?...).

**DURING THE LESSON:** *common instructions* (we'll learn how to..., turn to page..., do you follow me?...), *classroom management* (the whole class please, give your group the instructions to..., first of all, after that/then, next, for the last thing today, whose turn is it to read?, *communicative exchanges* (how are these similar/different...? What is... connected to...? what do you think about...?, any different opinion...? Do you agree with...? any questions?, who knows the answer?...), *error correction* (very good, great job, good but try to make it clear, would you like to improve your drawing of...? Quite good, you've improve a lot, check this part with... and correct it...)

**THE END OF THE LESSON:** *time to stop* (it's time to finish now, have you finished?...), homework (remember your homework, finish this exercise...), meaningful discussion stems (I noticed that..., I wonder..., I agree/disagree with...).

### LANGUAGE THROUGH LEARNING

- Language through activities, videos, quizzes, ICT.
- Language through peer/group interaction.
- Language through project preparation and presentation.

### PROCEDURE

#### Session 1: THE GOLDEN RULE/ 50 minutes

TIMING	ACTIVITIES	GROUPING SPACES
15 minutes	<b>Act. 1:</b> Reception scaffolding: SS share their experiences about doctors and their work. Let them exchange their opinions and make sure they respect them all and they take turns to speak and listen to others in an active and	<b>Grouping</b> Individual whole class <b>Space:</b>

10 minutes	<p>respectful way. T asks them to collaborate in a spidergram suggesting words related with one of the topics of the unit, for example: doctors' job or healthy habits (Reception scaffolding).</p> <p><b>Act. 2:</b> Transformation scaffolding. SS read and encourage SS organise the words written according to some criteria (instruments, place of works, other people jobs in a hospital, etc.). Invite SS to talk about the new words and ask them to look them up in a dictionary or ask their meaning to the LA, for example.</p>	class
10 minutes	<p><b>Act. 3:</b> Once all words are shared and clarified, guide SS reflection towards the human qualities a doctor should have to do a good job (kind, methodical...). Let them think in their own experiences and suggest the word "empathy". Tell the students some examples of an empathic behaviour (think and guess how others feel in different situations and try to act accordingly). Finally, present the video "Strings" telling them they will have the opportunity to comment about the values portrayed.</p> <p><a href="https://www.youtube.com/watch?v=4INwx_tmTKw">https://www.youtube.com/watch?v=4INwx_tmTKw</a></p>	
15 minutes	<p><b>Act. 4:</b> Guide their comments and reflections towards the importance for doctors to be empathic since they treat people who are ill, weak, worried, sad... Explain that empathy would be their golden rule as future doctors.</p>	
<b>Session 2: PREVENTION /50 minutes</b>		
5 minutes	<p><b>Act. 1:</b> Ask students to remember the video and the comments they made about empathy. Then, ask them how they think Dr. Peter, the American doctor, is. <i>Do you think she is a good doctor? Why? Why not?</i></p>	<b>Grouping</b> Whole class, Individual
10 minutes	<p><b>Act. 2:</b> After a short exchange of opinions, project the Activity booklet section "The Golden Rule" and ask them</p>	<b>Space:</b> class

10 minutes	<p>to listen to the LA reading the text. Then, invite them to read the text again individually. Afterwards, let them ask and underline the words they don't know or the ideas they don't understand (Reception scaffolding: underlining).</p> <p><b>Act. 3:</b> Once the students know some of the emotions the patients can feel, invite SS to play a mimic game: ask for a volunteer and tell him/her an emotion; the student has to mimic it while the rest of the class have to guess what emotion is. Call SS attention towards the facial gestures (mouth, eyebrows, eyes...). <i>How do you think he/she feels? Why? What can be the problem? What can you do?</i></p>	
10 minutes	<p><b>Act. 4:</b> SS will complete the activity of their booklet in which they have to draw six faces showing different emotions. Remember them the importance of the eyebrows and the mouth to transmit them. (Transformation scaffolding)</p>	
<b>Session 3: PREVENTION AND DIAGNOSIS /50 minutes</b>		
20 minutes	<p><b>Act. 1:</b> T projects the Theory booklet section "Medical action protocol" and reads aloud the text, stopping to explain or give examples were necessary. Then, asks student to underline the key ideas and concepts. After this, ask some questions to make sure they understand. If not, invite more competent student to explain them with their own words and examples. Write some explanations to be copied by students in a proper Writing framework (Transformation scaffolding: Summarizing, main ideas...).</p>	Individual Whole class
10 minutes	<p><b>Act. 2:</b> Invite SS to share anecdotes or experiences related with the four parts of the Prevention section. Encourage SS to give positive feedback to their mates and ask them</p>	

5 minutes	<p>to write down any new word. They can use a writing framework to record them (glossary).</p> <p><b>Act. 3:</b> students do the activity 1 of the Activity booklet.</p> <p>Invite them to make a group correction encouraging SS to express dis/agreement and giving reasons or examples.</p>	
15 minutes	<p><b>Act. 4:</b> Present SS the section “Diagnosis”; read and explain the key concepts, help student solve their doubt in different ways: looking for pictures or information in the Internet, explaining the meaning of new words, giving extra examples... Make sure they all get a proper idea of the main devices used in the diagnostics.</p> <p><b>Act. 5:</b> Show the activity booklet in the whiteboard and point to the different devices. Invite students name them, match picture and text and finally, imagine different situations in which people may need them. SS define and describe the devices using as much of the original text as possible (Production scaffolding).</p>	<p><b>Grouping</b></p> <p>Whole group, Individual</p> <p><b>Space</b></p> <p>Class</p>
<b>Session 4: TREATMENT /50 minutes</b>		
20 minutes	<p><b>Act. 1:</b> SS individually read the theory booklet section “Treatment” and write down what they do not understand. Invite them to ask their classmates for an explanation and make sure all the answers are quite correct. Invite them to a coral loud reading, following the directions of the LA (pronunciation and intonation).</p> <p>Finally, suggest SS to underline the key concepts and ideas. Give SS the opportunity to ask for help if they need and solve any doubt.</p>	<p><b>Grouping</b></p> <p>Individual, whole class</p> <p><b>Space</b></p> <p>class</p>
10 minutes	<p><b>Act. 2:</b> Ask students to group in teams and represent the information with visual thinking graphics (transformation scaffolding). Once done, share their work and ask for classmates’ feedback. Give them the chance of checking</p>	



15 minutes	<p>and correcting their work if necessary. Give the adequate feedback about the writing, the use of graphics and the concepts included.</p> <p><b>Act. 3:</b> Students do the last activity and check in pairs. Invite them to copy the words and their definitions or examples in a graphic organiser to facilitate learning.</p>	
<b>Session 5: MEET DR. PETER'S PATIENTS /50 minutes</b>		
40 minutes	<p><b>Act. 1:</b> In groups, T gives them a copy of the patients' expedients and asks them to read their stories and make a diagnosis. While working in groups, T will make sure that advantaged students help and guide the classmates with difficulties, as well as encourage them to ask questions to solve their doubts.</p> <p><b>Reception scaffolding:</b> To facilitate the activity, the T will take the first patient as an example the students take as a model or guide to do the rest.</p> <p>If necessary, the teacher will give them a simple guide with a few steps (1. read the story; 2. identify the problem(s); 3. Read the diagnostic guide and suggest a treatment/test to confirm it...). Make sure that the students have understood the correct procedure before asking them to read the two remaining expedients.</p> <p><b>Act. 3:</b> SS imagine they are all doctors from a hospital and that they are discussing the case. Encourage them to put their ideas in common and to make an agreement on the treatment. The LA will monitor the activity and the T will make an active observation to record their communicative competence, their knowledge of the content and the attitude in the group activity.</p>	<p><b>Grouping</b> whole class, groups, individual</p> <p><b>Space</b> class</p>
10 minutes		
<b>Session 6: ANALYZE PETER AND ALICE /50 minutes</b>		

50 minutes	<p><b>Act.1:</b> SS remember the steps followed to treat the first patient and to describe their performance as doctors. Give them the expedients of the two cases left and give them time enough to complete the process: diagnosis and treatment. Invite them to finish their works as doctors with recommendations to prevent illness.</p> <p><b>Act. 2:</b> In groups, SS explain to the other groups the treatment they recommend in each case and contrast the differences. Invite SS to change whatever they consider that improve their works.</p> <p><b>Act. 3:</b> After the final doctors' performance, invite SS to participate in a debate to talk about all they have learnt about the body, their health, the golden rule... Ask them to express their opinion about the different activities realised in class and about which of them have enjoyed the most or which were more difficult (self-assessment). Invite the school nurse or a doctor (from family members or friends), to explain what they have learnt and to ask for advice for a good doctor carrier. Ask them about the importance of empathy in their daily activity. SS can prepare a simple survey to ask them about what they want to know (Production scaffolding).</p>	<p><b>Grouping</b></p> <p>Whole class, Individual</p> <p><b>Space</b></p> <p>class</p>
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Session 7: ANSWER AND FINAL TEST /50 minutes		
10 minutes	<b>Act. 1.</b> In groups, SS make a draft of the letter they would sent to Dr. Peter with the summary of their discussions and treatments. Then, the groups put in common their ideas and they all collaborate to write a final letter in the whiteboard. Once written, the LA and the T will give feedback making comments both on content and on format and language usage.	<b>Grouping</b> Whole class, individual, 4 groups of 5 <b>Space</b> class
15 minutes	<b>Act. 2:</b> Students will take an individual final test (Google forms) on the iPads. The test will have about 15 questions and will have about 15 minutes to answer.	
25 minutes	<b>Act. 3.</b> Students will finish the unit with a series of bamboozle games to review the three body systems studied.	

#### MATERIAL AND RESOURCES

##### Human resources:

- Natural Science Teacher and students of year 4.
- Language assistant will help students to gain accuracy in their pronunciation of the scientific vocabulary and confidence in their intonation. LA plays an important part in activities related to oral presentations and discussion activities, as well as in question-answer activities.
- If possible, invite a doctor (from the neighbourhood or town, family member related to medical context) or the school nurse to talk about their jobs and the importance of the golden rule: empathy.
- Help of families to encourage students to learn every day.

##### Material resources:

- Letter from the American doctor.
- The Theory booklet
- Activity booklet
- Writing frameworks (summary, letter, glossary).
- Pictures of medical instruments and devices.

**Digital resources:**

- Google test: Healthy habits: prevention and treatment
- Video: Cuerdas [https://www.youtube.com/watch?v=4INwx\\_tmTKw](https://www.youtube.com/watch?v=4INwx_tmTKw)
- Application for spidergrams: Spidergram maker:  
<https://creately.com/lp/spider-diagram-maker-online/>  
Interactive worksheet.  
[https://www.liveworksheets.com/worksheets/en/English as a Second Language \(ESL\)/Healthy Habits/Keeping healthy nx1291813sx](https://www.liveworksheets.com/worksheets/en/English_as_a_Second_Language_(ESL)/Healthy_Habits/Keeping_healthy_nx1291813sx)

**ASSESMMENT****Evaluation criteria:**

1. Write and draw the emotions patients feel when they visit the doctor.
2. Match the vocabulary words of prevention, diagnosis and treatment with their corresponding image.
3. Analyse the patients (Linda, Peter and Alice) so that they fill in the blanks with the appropriate words for each diagnosis.

**Minimum required:**

- Name the illnesses that we have studied.
- Identify the different diagnosis, prevention and treatment vocabulary.

**Assessment:****1. Formative Assessment**

- Observation of the group work using a checklist for active observation.
- Verbal and written feedback of each activity done in class using mini whiteboards and thumbs up/down.
- Self-assessment checklist.
- Correction of the activity book in pairs.

**2. Summative Assessment:**

- Unit test.

**ATTENTION TO DIVERSITY**

**Multimodal Input:** The content of the unit will be presented in different ways throughout the sessions to ensure that all students engage and learn it.

- Photos to describe the characteristics of the topic learnt

- A presentation of the unit.

**LOTS:** label emotions to their faces and match the vocabulary with its definition.

**HOTS:** interpret a patient expedient, choose a diagnosis mean and give an adequate treatment, suggesting ways of preventing illnesses.

**Attention deficit hyperactivity disorder (ADHD):**

In this unit the self-instruction (what/how/when/ do I have to do?) is done through group work, feedback.

For this particular student will:

1. Provide qualitative feedback using rubrics and checklists.
2. The assessment needs to be informed in advance. Avoid setting several exams in the same week.
3. Try to get students to participate.
4. Constantly asking them if they need help.
5. Ask them regularly some questions that we know they know and thus check that they are attentive.

## 5.2 Project 2: Finding Nemo

### 5.2.1. UNIT 4. Vertebrate Animals

DIDACTIC UNIT 4: Vertebrate animals
<p><b>Content area:</b> NATURAL SCIENCE / FINDING NEMO!</p> <p><b>Level:</b> Year 4</p> <p><b>Timing:</b> 7 sessions in the second trimester, over 4 weeks; 50-minute sessions.</p> <p><b>Description:</b> Nemo has lost and students have to find him. To do so, students have to learn about the five groups of vertebrates. After learning the characteristics of each group, they get a clue, so at the end of the unit they will get five clues (5 first words of the solution).</p> <p><b>Product:</b> lapbook of vertebrates.</p> <p><b>Rationale:</b> students name and discover different groups of vertebrate animals and its characteristics. Also, they will identify the different ways of reproduction, respiration</p>

and nutrition. Students will need to understand that animals perform the three vital functions just like human beings.

### CONTENT

#### Content

- Characteristics of vertebrate animals.
- Nutrition, reproduction and respiration of vertebrate animals.
- Groups of vertebrates (mammals, birds, reptiles, amphibians and fish)
- Language content (genre): understand and solve questions and clues about animals. Short description of basic characteristics of vertebrates.

#### Contribution to key competences

- Competence in mathematics, science, and technology (CMST)
- Learning to learn (L2L)
- Competence in linguistic communication (CLC)
- Sense of initiative and entrepreneurship (SIE)
- Social and civic competence (SCC)
- Digital competence (DC)
- Study and work techniques

### COGNITION

#### Teaching objectives

- To know the main characteristics of vertebrate animals.
- To know the three types of nutrition: carnivores, herbivores, omnivores.
- To explain nutrition, respiration, and reproduction of mammals, birds, reptiles, amphibians and fish.
- To describe the basic features of some representative animals of the five vertebrate groups.

#### Learning Outcomes

- Pupils identify the 5 types of vertebrate animals.
- Pupils relate each animal to its type of nutrition: omnivore, carnivore and herbivore.
- Pupils identify the different types of reproduction: viviparous and oviparous.
- Pupils classify each animal by its nutrition and reproduction.
- Pupils make research of an animal and explain its characteristics: vertebrate group, nutrition, reproduction, body features...

### CULTURE

<u>Teaching objectives</u>	<u>Learning Outcomes</u>
<ul style="list-style-type: none"> <li>● To understand the importance of vertebrate animals in the world.</li> <li>● To cooperate in whole group activities.</li> <li>● To respect the classmate's opinions.</li> <li>● To raise awareness of personal behaviour to protect animals.</li> </ul>	<ul style="list-style-type: none"> <li>● Pupils respect the ideas from their classmates.</li> <li>● Pupils work collaboratively.</li> <li>● Pupils identify human actions that contribute to protect animals and relate them to their personal experience.</li> </ul>
<b>COMUNICACION</b>	
<b>LANGUAGE OF LEARNING</b>	
<ul style="list-style-type: none"> <li>● <b>Academic vocabulary:</b> carnivore, consumer, herbivore, omnivore, oviparous, viviparous, lungs, producer, mammals, birds, reptiles, amphibians and fish.</li> <li>● <b>Genre:</b> description: This vertebrate belongs to the group of ... It lives in..., it has got..., its body is covered with..., it's an aquatic/land animal..., it is oviparous/viviparous, it breaths through..., it eats...; its mane, beak, wings, wings, scales, tail, is/are...</li> <li>● <b>Connectors:</b> Comparison (is similar to..., acts like..., is like, equally...) contrast (however, even so, though, instead, is better ... than ..., is not nearly good as ..., is not as important as...) cause and effect (because, as a result of, therefore), expressing consequences (therefore, so, consequently, because of this, for this reason, as a result, produces, causes, is the cause of...).</li> </ul>	
<b>LANGUAGE FOR LEARNING</b>	
<p><b>BEFORE THE LESSON:</b> <i>greetings</i> (good morning everyone, how are you getting on?...); <i>time to begin</i> (let's begin today's lesson, is everybody ready to start?...); <i>register</i> (who isn't here today?...).</p> <p><b>DURING THE LESSON:</b> <i>common instructions</i> (we'll learn how to..., turn to page..., do you understand this?...), <i>classroom management</i> (the whole class please, can you repeat this for your mates...? for the last thing today, whose turn is it to read?, <i>communicative exchanges</i> (how are these similar/different...?, How do we</p>	

classify...? What group would you say this belong to?, where do you think Nemo can be...?, Any ideas? Do you agree with...? any questions?, who knows the answer?... *error correction* (very good, great job, good but try to make it clear, would you like to improve your drawing of...? Quite good, you've improve a lot, check this part with... and correct it...).

**THE END OF THE LESSON:** *time to stop* (it's time to finish now, have you finished?...), homework (remember your homework, finish this exercise...), meaningful discussion stems (I noticed that..., I wonder..., I agree/disagree with...).

- **Language to describe where Nemo could be:** Nemo is near.., it is under/inside..., it is hiding behind..., it is next to a thing that seems a...; Nemo is with some other vertebrate friends...

#### LANGUAGE THROUGH LEARNING

Language through activities, videos, ICT, teamwork, readings

Language through peer interaction and project presentation

#### ASSESMMENT

##### Evaluation criteria:

- Identify the characteristics of vertebrate animals.
- Classify the different groups of vertebrate animals.
- Explain the different types of nutrition and reproduction.
- Investigate about endangered animals to produce an action plan.

##### Minimum required:

Pupils explain the nutrition, respiration and reproduction of mammals, birds, reptiles, amphibians and fish.

##### Assessment:

#### 1. Formative Assessment

Observation of the group work using a checklist for active observation.

Activities in their activity book.

#### 2. Summative Assessment:

Unit test.

#### ATTENTION TO DIVERSITY



**Multimodal Input:** The content of the unit will be presented in different ways throughout the sessions to ensure that all students engage and learn it.

Poster where students should write some words and clues to find where Nemo is.

- A presentation of the Project.
- Poster where graphic representation of the different stages of the search for Nemo: it includes a picture of each group of vertebrates and invertebrates and an anemone.
- Videos of vertebrate animals of National Geographic.

**LOTS:** complete the activity book with some activities about vertebrates' animals and its characteristics.

**HOTS:** look for information on the effects of humans and waste on beaches and in nature, research about it and make an explanatory lapbook to expose to the rest of the classmates.

**Attention deficit hyperactivity disorder (ADHD):**

In this unit the self-instruction (what/how/when/ do I have to do?) is done through group work, feedback. For this particular student will:

1. Provide qualitative feedback using rubrics and checklists.
2. The assessment needs to be informed in advance. Avoid setting several exams in the same week.
3. Try to get students to participate
4. Constantly asking them if they need help
5. Ask them regularly some questions that we know they know and thus check that they are attentive.

5.2.2. UNIT 5. *Invertebrate animals*

DIDACTIC UNIT 5: Invertebrate animals
<p><b>Content area:</b> NATURAL SCIENCE / FINDING NEMO!</p> <p><b>Level:</b> Year 4</p> <p><b>Timing:</b> 7 sessions in the second trimester, over 4 weeks; 50-minute sessions.</p> <p><b>Description:</b> Students go on their search for Nemo. In this unit they will have to</p>

learn about the groups of invertebrates to six more clues (6 words of the final message).

**Product:** Map instructions and keys.

**Rationale:** In this 5th DU, students name and discover different groups of invertebrate animals and its characteristics. Also, they identify different kinds of reproduction, respiration and nutrition. Students need to understand that animals perform the three vital functions just like human beings.

### CONTENT

#### Content

- Invertebrate animals.
- Groups of vertebrates (molluscs, arthropods, echinoderms, cnidarians)
- Characteristics of invertebrate animals.
- Nutrition, reproduction and respiration of invertebrate animals.
- Language content: map legends and directions.

#### Contribution to key competences

- Competence in mathematics, science, and technology (CMST)
- Learning to learn (L2L)
- Competence in linguistic communication (CLC)
- Sense of initiative and entrepreneurship (SIE)
- Social and civic competence (SCC)
- Digital competence (DC)
- Study and work techniques

### COGNITION

#### Teaching objectives

- To know the characteristics of invertebrate animals, types and groups.
- To differentiate vertebrates from invertebrates.
- To classify the invertebrate animals into groups.
- To make a map with legends.
- To give directions to others to lead them to a given point.

#### Learning Outcomes

- Pupils identify the main characteristics of invertebrate animals.
- Pupils list the six types of invertebrates.
- Pupils classify the invertebrate animals in groups.

	<ul style="list-style-type: none"> <li>● Pupils differentiate the invertebrates from the vertebrates.</li> <li>● Pupils draw a map and include the legend that correspond to the elements included.</li> <li>● Pupils give precise directions to others to lead them to a given point on a map.</li> </ul>
<b>CULTURE</b>	
<p><u>Teaching objectives</u></p> <ul style="list-style-type: none"> <li>● To understand the importance of vertebrate animals in the world.</li> <li>● To raise awareness of personal behaviour to protect animals.</li> <li>● To cooperate in whole group activities.</li> <li>● To respect the classmate's opinions.</li> <li>● To understand and use map legends in their own creations.</li> <li>● To give directions to guide someone from one place to another drawn on a map.</li> </ul>	<p><u>Learning Outcomes</u></p> <ul style="list-style-type: none"> <li>● Pupils describe the main characteristic of vertebrates and invertebrates and classify some animals according to them.</li> <li>● Pupils elaborate files of given animals including group, main features, nutrition and reproduction types.</li> <li>● Pupils identify human actions that contribute to protect animals and relate them to their personal experience.</li> <li>● Pupils respect the ideas from their classmates.</li> <li>● Pupils work collaboratively in the elaboration of maps that guide them to Nemo.</li> </ul>
<b>COMUNICACION</b>	
<p><b>LANGUAGE OF LEARNING</b></p> <ul style="list-style-type: none"> <li>● Academic vocabulary:</li> </ul>	

Invertebrate, exoskeleton, insects, predators, segments, Shell, tentacles, molluscs, arthropods, echinoderms, cnidarians.

- **Genre:** instructive text, give directions: take 1/2... steps to the north; go three steps towards the rocks; move two steps from the cave; pass between the echinoderm and the mollusc...); map legend: (undersea environment): cave, reef, sand, rocks, algae; north, south, east, west; up, down, right, left; next to, near to, far from, behind, above, under, between, among; sea floor.
- **Connectors:**  
Comparison (is similar to..., acts like..., is like, equally...) contrast (however, even so, though, instead, is better ... than ..., is not nearly good as ..., is not as important as...), cause and effect (because, as a result of, therefore), expressing consequences (therefore, so, consequently, because of this, for this reason, as a result, produces, causes, is the cause of...).

#### LANGUAGE FOR LEARNING

**BEFORE THE LESSON:** *greetings* (good morning everyone, how are you getting on?...); *time to begin* (let's begin today's lesson, is everybody ready to start?...); *register* (who isn't here today?..).

**DURING THE LESSON:** *common instructions* (we'll learn how to..., turn to page..., do you understand this?...), *classroom management* (the whole class please, give your group the instructions to..., can you repeat this for your mates...? Give them a clue... for the last thing today, whose turn is it to read?, *communicative exchanges* (how are these similar/different...?, How do we classify...? What group would you say this belong to?, where do you think Nemo can be...?, Any ideas? Do you agree with...? any questions?, who knows the answer?...), *error correction* (very good, great job, good but try to make it clear, would you like to improve your drawing of...? Quite good, you have improved a lot, check this part with... and correct it...).

**THE END OF THE LESSON:** *time to stop* (it's time to finish now, have you finished?...), *homework* (remember your homework, finish this exercise...), *meaningful discussion stems* (I noticed that..., I wonder..., I agree/disagree with...).

## LANGUAGE THROUGH LEARNING

Language through activities, videos, ICT, teamwork, readings

Language through peer interaction and project presentation

## ASSESSMENT

### Evaluation criteria:

- Identify the characteristics of invertebrate animals.
- Classify the different groups of invertebrate animals.

### Minimum required:

Explain the characteristics of each group of invertebrates.

Differentiate each group.

### Assessment:

#### 1. Formative Assessment

Observation of the group work using a checklist for active observation.

Activities in their activity book.

#### 2. Summative Assessment

Unit test.

## ATTENTION TO DIVERSITY

**Multimodal Input:** The content of the unit will be presented in different ways throughout the sessions to ensure that all students engage and learn it.

- A presentation of the Project.
- Poster where graphic representation of the different stages of the search for Nemo: it includes a picture of each group of vertebrates and invertebrates and an anemone.
- Videos of invertebrate animals of National Geographic.

**LOTS:** complete the activity book with some activities about invertebrates' animals and its characteristics.

**HOTS:** make a research about an endangered sea animal and make a presentation explaining the causes of their situation, the possible solutions and a list of individual actions that can be taken to reduce the problem in a short term.

**Attention deficit hyperactivity disorder (ADHD):**

In this unit the self-instruction (what/how/when/ do I have to do?) is done through group work, feedback. For this particular student will:

1. Provide qualitative feedback using rubrics and checklists.
2. The assessment needs to be informed in advance. Avoid setting several exams in the same week.
3. Try to get students to participate
4. Constantly asking them if they need help
5. Ask them regularly some questions that we know they know and thus check that they are attentive.

### 5.2.3. UNIT 6. Plant kingdom

DIDACTIC UNIT 6: Plant kingdom	
<p><b>Content area:</b> NATURAL SCIENCE / FINDING NEMO!</p> <p><b>Level:</b> Year 4</p> <p><b>Timing:</b> 7 sessions in the second trimester, over 4 weeks; 50-minute sessions.</p> <p><b>Description:</b> When Nemo was lost, he met a fish who told him that seaweeds are not plants, but he still believes that they are, so he wants to know more about plants (what living things produce oxygen in the oceans?).</p> <p><b>Products:</b> the first product will focus on making a comparison diagram of seaweed and plants. The second product will be to make a model of a plant cell in groups with recycled material, recording the steps and the final product.</p> <p><b>Rationale:</b> In this 6th didactic unit the objective is for students to understand that plants are fundamental organisms that require care and knowledge to preserve them and thus favour the development of other species. In addition, plants, like humans and animals, perform the three vital functions (reproduction, nutrition and relationship).</p>	
CONTENT	
<p><u>Content</u></p> <ul style="list-style-type: none"> <li>● Plant reproduction (sexual and asexual).</li> <li>● Parts of the plant cell.</li> </ul>	<p><u>Contribution to key competences</u></p> <ul style="list-style-type: none"> <li>● Competence in mathematics, science, and technology (CMST)</li> </ul>

<ul style="list-style-type: none"> <li>Plants: characteristics and their parts</li> <li>The three vital functions of plants.</li> <li>Language content: aquatic plant, photosynthesis; cell, nucleus, chloroplasts, cell wall, membrane, mitochondria, large vacuole, cytoplasm.</li> </ul>	<ul style="list-style-type: none"> <li>Learning to learn (L2L)</li> <li>Competence in linguistic communication (CLC)</li> <li>Sense of initiative and entrepreneurship (SIE)</li> <li>Social and civic competence (SCC)</li> <li>Digital competence (DC)</li> <li>Study and work techniques</li> </ul>
<b>COGNITION</b>	
<p><u>Teaching objectives</u></p> <ul style="list-style-type: none"> <li>To understand the types of plant reproduction</li> <li>To identify the parts of the plant cell</li> <li>To know the characteristics and parts of plants</li> <li>To know the three vital functions of plants</li> <li>To compare a plant and an algae, signalling the differences.</li> <li>To write the steps followed to make a model of a cell, using connectors.</li> </ul>	<p><u>Learning Outcomes</u></p> <ul style="list-style-type: none"> <li>Pupils differentiate and explain the two different types of plant reproduction and give adequate examples.</li> <li>Pupils identify the parts of the plant cell and explain the function of some of them.</li> <li>Pupils recognize the three vital functions of plants and relate them to animals and humans.</li> <li>Pupils describe the characteristics and the parts of the plants, explaining their function.</li> <li>Pupils understand the process of photosynthesis and represents it with diagrams.</li> </ul>
<b>CULTURE</b>	
<p><u>Teaching objectives</u></p> <ul style="list-style-type: none"> <li>To understand that plants are what give us oxygen.</li> </ul>	<p><u>Learning Outcomes</u></p> <ul style="list-style-type: none"> <li>Pupils understand the importance of plants for sustainability of live on Earth.</li> </ul>

<ul style="list-style-type: none"> <li>• To know the function of plants as producers for other living things.</li> <li>• To work cooperatively.</li> <li>• To understand the importance of not throwing items into the sea.</li> <li>• To care the environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupils discuss about the effects for sea life of throwing garbage, plastics or toxic waste to the sea.</li> <li>• Pupils cooperate in groups to make diagrams to compare plants and algae.</li> <li>• Pupils identify and explain the parts of plants and the function.</li> <li>• Pupils classify human behaviour into “Actions that protect environment” and “Actions that damage the environment”. conclusions about their role in the caring of the environment.</li> </ul>
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#### COMUNICACION

#### LANGUAGE OF LEARNING

- **Academic vocabulary:**  
conifers, corolla, ferns, flowers, leaves, non-flowering, ovules, petals, pistil, pollen, roots, spores, stamens, stem, bud, fertilisation, fruit, pollination, photosynthesis, asexual, sexual, seeds.
- **Genre:** description (aquatic plant, photosynthesis; cell, nucleus, chloroplasts, cell wall, membrane, mitochondria, large vacuole, cytoplasm).
- **Language to describe a plant cell:** A plant cell has a..., the main part is the ..., all the parts are inside a membrane..., it can look like a cube or a prism..., it is mainly green because of the ...
- **Connectors:**  
comparison (is similar to..., acts like..., is like, equally...) contrast (however, even so, though, instead, is better ... than ..., is not nearly good as ..., is not as important as...) cause and effect (because, as a result of, therefore), expressing consequences (therefore, so, consequently, because of this, for this reason, as a result, produces, is the cause of...)



### LANGUAGE FOR LEARNING

**BEFORE THE LESSON:** *greetings* (good morning everyone, how are you getting on?...); *time to begin* (let's begin today's lesson, is everybody ready to start?...); *register* (who isn't here today?...).

**DURING THE LESSON:** *common instructions* (we'll learn how to..., turn to page..., do you understand this?...), *classroom management* (the whole class please, give your group the instructions to..., can you repeat this for your mates...? Give them a clue... for the last thing today, whose turn is it to read?), *communicative exchanges* (how are these similar/different...?, How do we classify...? What group would you say this belong to?, where do you think Nemo can be...?, Any ideas? Do you agree with...? any questions?, who knows the answer?...), *error correction* (very good, great job, good but try to make it clear, would you like to improve your drawing of...? Quite good, you have improved a lot, check this part with... and correct it...).

**THE END OF THE LESSON:** *time to stop* (it's time to finish now, have you finished?...), *homework* (remember your homework, finish this exercise...), *meaningful discussion stems* (I noticed that..., I wonder..., I agree/disagree with...).

### LANGUAGE THROUGH LEARNING

Language through activities, videos, ICT, teamwork, readings

Language through peer interaction and project presentation

### ASSESSMENT

#### Minimum required:

Explain the characteristics of plants.

Understand that plants have the same vital functions as humans and animals.

#### Assessment:

##### 1. Formative Assessment

Observation of the group work using a checklist for active observation.

Activities in their activity book.

Group assessment checklist to assess the notes.

The plant cell model.

**Summative Assessment:**

Unit test.

**ATTENTION TO DIVERSITY**

**Multimodal Input:** The content of the unit will be presented in different ways throughout the sessions to ensure that all students engage and learn it.

- A presentation of the project.
- Poster where graphic representation of the different stages of the search for Nemo: it includes a picture of each group of vertebrates and invertebrates and an anemone.
- Videos of different aspects related to the topic:
  - Photosynthesis: <https://www.youtube.com/watch?v=UPBMG5EYydo>
  - Parts of a flower and pollination: [https://www.youtube.com/watch?v=djPVgip\\_bdU](https://www.youtube.com/watch?v=djPVgip_bdU)
  - Plants sexual reproduction: [https://www.youtube.com/watch?v=W9OiGA5\\_mVs](https://www.youtube.com/watch?v=W9OiGA5_mVs)
  - Plants asexual reproduction: <https://www.youtube.com/watch?v=K0SNI5yCtvU>
- A card puzzle in 3D
- A visual organizer to compare seaweeds and plants.
- An Activity booklet.

**LOTS:** complete the activity book with some activities about plants.

**HOTS:** look for recycled materials and make a plant cell with them.

**Attention deficit hyperactivity disorder (ADHD):**

In this unit the self-instruction (what/how/when/ do I have to do?) is done through group work, feedback. For this particular student will:

1. Provide qualitative feedback using rubrics and checklists.
2. The assessment needs to be informed in advance. Avoid setting several exams in the same week.
3. Try to get students to participate
4. Constantly asking them if they need help
5. Ask them regularly some questions that we know they know and thus check that they are attentive.

### 5.3 Project 3: Eureka!

#### 5.3.1. Didactic Unit 7: Matter

DIDACTIC UNIT 7: MATTER	
<p><b>Content area:</b> NATURAL SCIENCE / EUREKA!</p> <p><b>Level:</b> Year 4</p> <p><b>Timing:</b> 4 weeks of the third term; 7 sessions of 50 minutes.</p> <p><b>Description:</b> students will build a boat as a final product for the project; in this unit they will experiment with the properties of some materials. Students will manipulate a piece of plasticine to give it the size and shape that enables it to float. They will record the steps of the experiment and their observations.</p> <p><b>Product:</b> Report of an experiment on floatability.</p> <p><b>Rationale:</b> In this seventh didactic unit, students will learn about matter, its characteristics and properties. Also, they will review about recycling and why is highly necessary these days.</p>	
CONTENT	
<p><u>Content</u></p> <ul style="list-style-type: none"> <li>● Matter (mass, volume and density)</li> <li>● Properties of materials (hardness, solubility, resistance, elasticity and conductivity)</li> <li>● Archimedes</li> <li>● Isaac Newton</li> <li>● The scientific method: observation, question, hypothesis, experiment.</li> </ul>	<p><u>Contribution to key competences</u></p> <ul style="list-style-type: none"> <li>● Competence in mathematics, science, and technology (CMST)</li> <li>● Learning to learn (L2L)</li> <li>● Competence in linguistic communication (CLC)</li> <li>● Sense of initiative and entrepreneurship (SIE)</li> <li>● Social and civic competence (SCC)</li> <li>● Digital competence (DC)</li> <li>● Study and work techniques</li> </ul>
COGNITION	
<p><u>Teaching objectives</u></p> <ul style="list-style-type: none"> <li>● To understand the concept of matter.</li> <li>● To know materials by their properties.</li> </ul>	<p><u>Learning Outcomes</u></p> <ul style="list-style-type: none"> <li>● Pupils explain the concept of matter and give examples.</li> </ul>

<ul style="list-style-type: none"> <li>• To know the different forces.</li> <li>• To know and explain some of the great discoveries and inventions from history.</li> <li>• To identify the main stages of the scientific method.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupils recognise the different states of matter and find them in nature.</li> <li>• Pupils observe, identify, and classify some materials by their properties.</li> <li>• Pupils understand the importance of some inventions and discoveries for daily life and science progress.</li> <li>• Pupils explain the difference between inventions and discoveries.</li> <li>• Pupils explain some of the great discoveries and inventions in History.</li> </ul>
<b>CULTURE</b>	
<p><u>Teaching objectives</u></p> <ul style="list-style-type: none"> <li>• To appreciate the importance of matter and its properties.</li> <li>• To accept the diversity of opinions on the same subject.</li> <li>• To show respect for speaking and active listening.</li> </ul>	<p><u>Learning Outcomes</u></p> <ul style="list-style-type: none"> <li>• Pupils relate the properties of some materials to their common uses and identify them in daily life objects.</li> <li>• Pupils explain the importance of the scientific research and relate the some inventions or discoveries with their life.</li> <li>• Pupils listen to others opinions about the way to do an experiment and suggest with respect different proposals.</li> <li>• Pupils collaborate in an active way during the realisation of experiments and other group work.</li> </ul>
<b>COMUNICACION</b>	

### LANGUAGE OF LEARNING

- **Academic vocabulary:**

Mathematics, astronomy, gravity, telescope, scientist, screw, cranes, levers, pulleys, density, Archimedes, Newton, windmill, water clock, sundial, mass, matter, balance, grams, volume, amount, measure, measuring cup, millilitres, density, float, sink, properties, hardness, solubility, soluble, insoluble, resistance, elasticity, conductivity, conductors, insulators.

- **Genre analysis:** experiment report (observations and writing of hypothesis; objective of the experiment; list of materials including their properties; description of the process step by step; first, I took a piece of... , then, I tried to..., after..., finally).

- **Language to describe a experiment:** First, we take..., then, we do...; it is necessary to..., let's check if..., what will happen if...? Finally, we arrive to the conclusion that...

- **Connectors:**

Comparison (is similar to..., acts like..., is like, equally...) contrast (however, even so, though, instead, is better ... than ..., is not nearly good as ..., is not as important as...) cause and effect (because, as a result of, therefore), expressing consequences (therefore, so, consequently, because of this, for this reason, as a result, produces, is the cause of...)

### LANGUAGE FOR LEARNING

**BEFORE THE LESSON:** *greetings* (good morning everyone, how are you getting on?); *time to begin* (let's begin today's lesson, is everybody ready to start?); *register* (who isn't here today? who is absent today?).

**DURING THE LESSON:** *common instructions* (we'll learn how to..., turn to page..., do you follow me?, stand up/sit down...), *classroom management* (open your books at page..., all together now, first of all, after that/then, next, let's..., whose turn is it to read?, stop talking, listen to what ... is saying, any questions?, who knows the answer?, what about this word?...) *error correction* (right! very good, unfortunately not, good try but not quite right...).

**THE END OF THE LESSON:** *time to stop* (it's time to finish now, have you finished?, one minute to finish that activity...), *not time to stop* (one more thing before you go, just a moment please...), *homework* (remember your homework, there is no homework for today...), *meaningful discussion stems* (I have a question, I wonder..., I agree/disagree with... because, another example is...).

- **Language to make a boat with plasticine:** the first step..., the second..., the next one..., the shape of the boat should be..., the boat has to be...
- **Language to explain why the boat with plasticine floats:** as you can see..., from this we can understand..., the result of this is..., we have done it...

### LANGUAGE THROUGH LEARNING

Language through activities, videos, ICT, teamwork, readings

Language through peer interaction and project presentation

### PROCEDURE

TIMING	ACTIVITIES	GROUPING SPACES
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#### Session 1: EUREKA!/50 minutes

10 minutes	<b>Act. 1:</b> watch the video “How taking a bath led to Archimedes principle” once and let SS discuss what they have understood. Watch the video again, asking SS to take notes of the words, ideas, names or dates that call their attention. After that, SS share aloud their findings and notes.	<b>Grouping</b> whole class, individual <b>Space:</b> class
10 minutes	<b>Act. 2:</b> T guides SS to recall the concepts of mass, volume and density that they studied in 3rd year, and invite them to write their ideas and definitions on the whiteboard. LA gives SS the adequate feedback and guide them to write correct and complete definitions. T asks them to copy them in their workbooks, highlighting	
20 minutes	<b>Act. 3:</b> SS group in teams of 4 or 5. Then, in turns, read aloud a text about Archimedes from their “Theory	

10 minutes	<p>Booklet". The LA will give the precise feedback on pronunciation and intonation once they have read it all, to avoid interruptions. When they finish reading, students underline the important information and write two questions with their answers to be asked to the other groups (transformation scaffolding). In turns, groups exchange their questions, the mates answer them and T and LA will correct possible mistakes both in the questions and in the answers.</p> <p><b>Act. 4:</b> SS do activity 1 from the "Activity booklet": What do you know about Archimedes?". They will read the text about him and, in pairs, determine whether the sentences given are true or false. Check the answers aloud and ask SS to correct the mistakes.</p>	
<b>Session 2: ISAAC NEWTON!/50 minutes</b>		
10 minutes	<p><b>Act. 1:</b> T asks for volunteers to narrate what they learnt about Archimedes from the video and from the reading. Invite them to draw or write on the whiteboard as a means to better convey their ideas. Get a positive feedback for the effort and suggest them to correct just the important mistakes. Allow the rest of the class to use these speeches and drawings for elaborating their own summaries (reception scaffolding).</p>	<p><b>Grouping:</b> whole class, individual</p> <p><b>Space:</b> class</p>
10 minutes	<p><b>Act. 2:</b> present SS the video about Isaac Newton telling them he is one that most important scientist in History.</p> <p style="text-align: center;"><a href="https://learnenglishkids.britishcouncil.org/short-stories/isaac-newton">https://learnenglishkids.britishcouncil.org/short-stories/isaac-newton</a></p> <p>As usual, SS take notes during the second watch of the video. They may need a third time to check facts. Once finished, SS read aloud their notes and explain the main facts recorded. LA give proper feedback.</p>	

15 minutes	<p><b>Act. 3:</b> T downloads the story scrip of the video and projects it on the whiteboard. SS compare their notes (content, spelling) with the reading, and add the facts, ideas or words they need to complete basic information. Then, invite SS to form groups and create a visual thinking mural or comic which represents the basic elements of Newton’s story. T will do an active observation of the group’s performance, use of language, knowledge of key concepts and words, creativity, etc. Record the observations form a formative assessment.</p>	
10 minutes	<p><b>Act. 4:</b> SS do the activities from the same source and check them in groups. Once they have checked their works, LA will ask the groups a couple of questions to recall the basic facts:</p> <p style="text-align: center;"><i>Where was born Isaac Newton?</i></p> <p style="text-align: center;"><i>What did he discover about the white light?</i></p> <p style="text-align: center;"><i>Which theory did he formed?</i></p>	
<b>Session 3: SEARCHING PROPER MATERIALS!/50 minutes</b>		
15 minutes	<p><b>Act. 1:</b> project the “Theory booklet” on the screen to show SS the info about properties of materials. SS identify and name those materials that they know and describe in their own words what their characteristics are. T asks them to find objects in the classroom that could be similar to those on the screen and compare them, guided by the LA who will lead them to the correct name of each property. SS will write into two columns the materials and the properties. Then, T asks them to add the names of common objects that share the same properties.</p> <p>LA and T read the lists and ask them questions such as:</p>	



<p>20 minutes</p> <p>15 minutes</p>	<p><i>Why are wire covered with plastic?</i></p> <p><i>Why are pans and pots made of metal?</i></p> <p><i>What would you use to build a wall if you want to see the things on the other side?</i></p> <p><b>Act. 2:</b> T asks students to find examples of insulators and connectors in the classroom. SS share their findings and discuss whether all the objects listed have those properties.</p> <p><b>Act. 3:</b> T gives the groups different objects (a battery, a rubber band, plasticine, a paper clip and plastic) and ask them to do an experiment to test whether these materials are conductive or not. If they show doubts, tell them how to use the battery and to record their observations on a paper. Once done, repeat with other materials to taste other properties (soluble, hardness, etc.). T and LA will use a checklist to record their performance. Finally, the whole class values the experiment, state their findings, describe how the group worked, what they discovered, how they recorded the experiment, what have they learnt, etc. T will give them feedback of their recordings, suggesting them to correct major mistakes.</p>	
<b>Session 4: EUREKA!/50 minutes</b>		
25 minutes	<p><b>Act. 1:</b> SS read the “Theory booklet” aloud in silence for the first time. Ask them to underline the words they don’t know and read the text again trying do infer their meaning. Invite them to solve the doubts in groups, monitoring the activity in order to correct mistakes. Read the text aloud and ask SS to give examples of how they calculate volume, mass and density and with what everyday instruments.</p>	<p><b>Grouping:</b></p> <p>Whole class, groups</p> <p><b>Space:</b> class</p>

10 minutes	<p><b>Act. 2:</b> play a simulation game to give the SS the opportunity to imagine they are in a laboratory doing experiments:</p> <p><a href="https://www.educaplus.org/game/laboratorio-de-densidad">https://www.educaplus.org/game/laboratorio-de-densidad</a></p>	
15 minutes	<p><b>Act. 2:</b> SS do exercises from the Activity booklet: ex. 2 (identify what parts of their definitions refers to mass or volume) and ex. 3 (say whether five different objects have low or high density).</p>	
<b>Session 5: LAB DAY!/50 minutes</b>		
50 minutes	<p><b>Act. 1:</b> SS experiment with mass, volume, and density. T gives each group a record chart, a scale, a measuring cup, and an object made of: clay, metal, plastic, glass, and rubber. Before doing the experiment, T asks SS to describe the objects and identifying their properties. Ask them what they remember about density and invite them to make hypothesis about which of the objects given has the highest/lowest density. Check their hypothesis after they had recorded their observations.</p>	<p><b>Grouping</b> Groups <b>Space:</b> lab</p>
<b>Session 6: BUILDING A BOAT!/50 minutes</b>		
50 minutes	<p><b>Act. 1:</b> SS go to the laboratory and there the teacher will give them a container with water and a block of plasticine. Afterwards, T will explain the groups that they have to overcome a scientific challenge:</p> <p style="text-align: center;"><i>Will they be able to build a plasticine boat that does not sink?</i></p> <p style="text-align: center;"><i>What shape should it have?</i></p> <p style="text-align: center;"><i>Will it be light or heavy?</i></p> <p style="text-align: center;"><i>Will the plasticine be thin or thick?</i></p> <p>T tells SS that, as any scientist, they have to record the steps they follow to complete the experiment. First: the</p>	<p><b>Grouping:</b> groups, Individual <b>Space:</b> lab</p>

	<p>observe the materials and think about the best shape for the boat. They can do a drawing to exemplify their hypothesis. (Reception scaffolding). Then, SS try different boat shapes and record the differences regarding the floatability. Despite they get a floating boat, encourage them to try different thickness and shapes to contrast results. SS draw and describe them (production scaffolding). After 15 or 20 minutes, T asks them to explain their process, how they worked in groups, what they discovered and learnt, etc. Let the groups present their floating boats and ask each one how they built the sub-arch and why they have done so.</p> <p><b>Act. 2:</b> SS write a short description of the experiment including materials used and steps followed (writing framework). This will be a draft of their collective report of the whole experience.</p>	
<b>MATERIAL AND RESOURCES</b>		
<p><b>Human resources:</b></p> <ul style="list-style-type: none"> <li>● Natural Science Teacher and students of year 4.</li> <li>● Language assistant will help students to gain accuracy in their pronunciation of the scientific vocabulary and confidence in their intonation. LA plays an important part in activities related to oral presentations and discussion activities, as well as in question-answer activities.</li> <li>● Help of families to encourage students to learn every day.</li> </ul> <p><b>Material resources:</b></p> <ul style="list-style-type: none"> <li>● ICT resources: iPads, whiteboard</li> <li>● The Theory booklet</li> <li>● Activity booklet</li> <li>● Graphic organiser, writing framework</li> <li>● Record chart, scale, measuring cup, objects made of clay, metal, plastic, glass, and rubber.</li> </ul>		

- Container with water, a block of plasticine.

### ASSESSMENT

#### Evaluation criteria:

- To explain the concepts of matter and density.
- To name different materials and describe their properties.
- To make a proper record of an experiment following the basic steps of the scientific method.

#### Minimum required:

- Give examples of matter, materials, properties.
- Explain how to calculate density.
- Explain what floatability is and describe an experiment to prove different materials.

#### Assessment:

##### 1. Formative Assessment

- Observation of the group work using a checklist for active observation.
- Verbal and written feedback of each activity done in class using mini whiteboards and thumbs up/down.
- Self-assessment checklist.

##### 2. Summative Assessment:

- Observation checklist.
- Unit test.

### ATTENTION TO DIVERSITY

#### Multimodal Input:

The content of the unit will be presented in different ways throughout the sessions to ensure that all students engage and learn it.

- Videos to describe the characteristics of the topic learnt
- Realia
- Experiment

LOTS: build a plasticine boat which can float.

HOTS: write an experiment report describing the materials used, the steps, the observations and the conclusion.

**Attention deficit hyperactivity disorder (ADHD):**

In this unit the self-instruction (what/how/when/ do I have to do?) is done through group work, role-playing, feedback

For this particular student will:

1. Provide qualitative feedback using rubrics and checklists.
2. The assessment needs to be informed in advance.
3. Avoid setting several exams in the same week.

*5.3.2. Didactic Unit 8: Forces*

DIDACTIC UNIT 8: FORCES	
<p><b>Content area:</b> NATURAL SCIENCE /</p> <p><b>Level:</b> Year 4</p> <p><b>Timing:</b> 4 weeks of the first term; 7 sessions of 50 minutes.</p> <p><b>Description:</b> students will learn about contact and non-contact forces.</p> <p><b>Product:</b> Interview to Isaac Newton.</p> <p><b>Rationale:</b> Students apply what they have learnt in DU 7 about Newton and what they will learn in DU 8 about forces to writing an interview to Newton, deciding the questions in groups.</p>	
CONTENT	
<p><b><u>Content</u></b></p> <ul style="list-style-type: none"> <li>● Push and pull forces.</li> <li>● Forces (gravity, magnetism, buoyancy and friction)</li> <li>● The interview</li> </ul>	<p><b><u>Contribution to key competences</u></b></p> <ul style="list-style-type: none"> <li>● Competence in mathematics, science, and technology (CMST)</li> <li>● Learning to learn (L2L)</li> <li>● Competence in linguistic communication (CLC)</li> <li>● Sense of initiative and entrepreneurship (SIE)</li> <li>● Social and civic competence (SCC)</li> <li>● Digital competence (DC)</li> </ul>

	<ul style="list-style-type: none"> <li>Study and work techniques</li> </ul>
<b>COGNITION</b>	
<u>Teaching objectives</u> <ul style="list-style-type: none"> <li>To know the characteristics of buoyancy.</li> <li>To know the types and effects of forces.</li> <li>To use different procedures to measure mass and volume.</li> <li>To plan and experiments to prove the theories.</li> </ul>	<u>Learning Outcomes</u> <ul style="list-style-type: none"> <li>Pupils describe the characteristics of buoyancy and relate it to things that happen in daily life.</li> <li>Pupils explain and give examples of forces and its types.</li> <li>Pupils measure volume and mass using different methods.</li> <li>Pupils agree on a method to prove theories.</li> </ul>
<b>CULTURE</b>	
<u>Teaching objectives</u> <ul style="list-style-type: none"> <li>To work collaboratively in group.</li> <li>To take care of the laboratory and its objects.</li> <li>To write the questions and imagine the answers of an imaginary interview to a famous scientist.</li> </ul>	<u>Learning Outcomes</u> <ul style="list-style-type: none"> <li>Pupils work collaboratively in group.</li> <li>Pupils take care of the laboratory and its objects.</li> <li>Pupils collaborate in the writing of the questions of an interview to Isaac Newton and imagine his answers applying what they have learnt about his life and his theories.</li> </ul>
<b>COMUNICACION</b>	
<b>LANGUAGE OF LEARNING</b> <ul style="list-style-type: none"> <li><b>Academic vocabulary:</b> Float, forcé, gravity, magnetic, sink, balanced, contact forcé, pull force, pull force, push force, unbalanced, magnetism, repel, attract, gravity, mass, volume, weight.</li> </ul>	

- **Genre:** an interview: How did you get interested in...? How did you discovered...? What did you know about... before doing a experiment? How did you learn... ? Did anybody inspire you? Who?
- **Connectors:**  
*Comparison* (is similar to..., acts like..., is like, equally...) *contrast* (however, even so, though, instead, is better ... than ..., is not nearly good as ..., is not as important as...), *cause and effect* (because, as a result of, therefore), *expressing consequences* (therefore, so, consequently, because of this, for this reason, as a result, produces, causes, is the cause of...).

### LANGUAGE FOR LEARNING

**BEFORE THE LESSON:** *greetings* (good morning everyone, how are you getting on?...); *time to begin* (let's begin today's lesson, is everybody ready to start?...); *register* (who isn't here today?...).

**DURING THE LESSON:** *common instructions* (we'll learn how to..., turn to page..., do you understand this?...), *classroom management* (the whole class please, give your group the instructions to..., can you repeat this for your mates...? Give them a clue... for the last thing today, whose turn is it to read?), *communicative exchanges* (how are these similar/different...?, How do we classify...? What group would you say this belong to?, where do you think Nemo can be...?, Any ideas? Do you agree with...? any questions?, who knows the answer?...), *error correction* (very good, great job, good but try to make it clear, would you like to improve your drawing of...? Quite good, you've improve a lot, check this part with... and correct it...).

**THE END OF THE LESSON:** *time to stop* (it's time to finish now, have you finished?...), *homework* (remember your homework, finish this exercise...), *meaningful discussion stems* (I noticed that..., I wonder..., I agree/disagree with...).

### LANGUAGE THROUGH LEARNING

Language through activities, videos, ICT, teamwork, readings

Language through peer interaction and project presentation

## ASSESMMENT

### Evaluation criteria:

- Understand forces and its main characteristics.
- Know how to measure mass, volume and density.
- Identify the main characteristics of magnetism, gravity and weight.
- Describe and experiment.

### Minimum required:

- Name forces and its types.
- To measure mass and volume.
- Learn what is buoyancy and how it works.

### Assessment:

#### 1. Formative Assessment

- Observation of the whole group using a checklist.
- Verbal and written feedback of each activity.
- A rubric about the experiment.

#### 2. Summative Assessment:

Unit test.

## ATTENTION TO DIVERSITY

**Multimodal Input:** The content of the unit will be presented in different ways throughout the sessions to ensure that all students engage and learn it.

- A presentation of the project.
- Videos of the topic learnt.
- Experiments.
- An Activity booklet.

**LOTS:** make experiments to measure density.

**HOTS:** pretend to be Isaac Newton and answer an interview made by the classmates.

### **Attention deficit hyperactivity disorder (ADHD):**

In this unit the self-instruction (what/how/when/ do I have to do?) is done through group work, feedback.

For this particular student will:

1. Provide qualitative feedback using rubrics and checklists.



2. The assessment needs to be informed in advance. Avoid setting several exams in the same week.
3. Try to get students to participate
4. Constantly asking them if they need help
5. Ask them regularly some questions that we know they know and thus check that they are attentive

### 5.3.3. Didactic Unit 9: Simple and complex machines

DIDACTIC UNIT 9: SIMPLE AND COMPLEX MACHINES	
<p><b>Content area:</b> NATURAL SCIENCE / EUREKA!</p> <p><b>Level:</b> Year 4</p> <p><b>Timing:</b> 7 sessions during the first semester over 4 weeks. Each session takes 50</p> <p><b>Description:</b> Students apply what they have learnt about materials and forces to build a boat made up with recycled materials.</p> <p><b>Product:</b> create a boat with recycled materials and make it float.</p> <p><b>Rationale:</b> students will have to apply their knowledge about matter, density, properties of materials and forces, and will identify and contrast the differences between pulleys, inclined planes and wheels. They will create a floating boat with recycled materials and describe the process and the forces presented in it.</p>	
CONTENT	
<p><b><u>Content</u></b></p> <ul style="list-style-type: none"> <li>• Simple and complex machines.</li> <li>• Levers, pulleys, wheels and axle.</li> <li>• Incline plane.</li> <li>• Create a boat which floats.</li> <li>• Oral presentation and description of a product created.</li> </ul>	<p><b><u>Contribution to key competences</u></b></p> <ul style="list-style-type: none"> <li>• Competence in mathematics, science, and technology (CMST)</li> <li>• Learning to learn (L2L)</li> <li>• Competence in linguistic communication (CLC)</li> <li>• Sense of initiative and entrepreneurship (SIE)</li> <li>• Social and civic competence (SCC)</li> <li>• Digital competence (DC)</li> </ul>

	<ul style="list-style-type: none"> <li>• Study and work techniques</li> </ul>
<b>COGNITION</b>	
<ul style="list-style-type: none"> <li>• Teaching objectives</li> <li>• To know simple and complex machines.</li> <li>• To be aware of some uses of machines and tools.</li> <li>• To know the uses of pulleys, axle and incline plane.</li> <li>• To design a boat.</li> <li>• To explain how to make a boat with recycled materials and simple and complex machines.</li> <li>• To present orally a product created in groups.</li> </ul>	<ul style="list-style-type: none"> <li>• Learning outcomes</li> <li>• Pupils identify and describe some machines (simple and complex)</li> <li>• Pupils distinguish between simple and complex machines.</li> <li>• Pupils identify the uses of tools and machines.</li> <li>• Pupils design a simple structure with different machines.</li> <li>• Include learning outcomes for the language learning goal.</li> </ul>
<b>CULTURE</b>	
<p><u>Teaching objectives</u></p> <ul style="list-style-type: none"> <li>• To know the different impact of some machines in different cultures.</li> <li>• To respect the others.</li> <li>• To make good use of materials.</li> <li>• To understand the importance of recycling.</li> <li>• To know the usefulness of some recycled materials.</li> </ul>	<p><u>Learning outcomes</u></p> <ul style="list-style-type: none"> <li>• Pupils compare the electrical appliances children use in Spain and in other countries.</li> <li>• Pupils respect the others.</li> <li>• Pupils make a good use of materials.</li> <li>• Pupils understand the importance of recycling.</li> <li>• Pupils know the usefulness of some recycled materials.</li> </ul>
<b>COMUNICACION</b>	
<p><b>LANGUAGE OF LEARNING</b></p> <ul style="list-style-type: none"> <li>• <b>Academic vocabulary:</b> Mixer, crowbar, energy, hammer, lorry, ramp, shovel, Wheel, winch, load, rigid bar, Axle, Groove, rope, inclined plane, screw, slide, steep.</li> </ul>	

- **Language to make a presentation about the boat:**

Parts of making a boat that floats: pulley, inclined plane, wheels, axels; plastic, plastic, metal, cloth; mast, deck, sail, hull, anchor.

Expression: This is a boat is made of...; it has a...; the hull is made of... because...; we have used... for the mast...; the most difficult part is... because; we had a problem with... but we solved it ...

- **Connectors:** *comparison* (is similar to..., acts like..., is like, equally...), *contrast* (however, even so, though, instead, is better ... than ..., is not nearly good as ..., is not as important as...), *cause and effect* (because, as a result of, therefore), *expressing consequences* (therefore, so, consequently, because of this, for this reason, as a result, produces, causes, is the cause of...).

### LANGUAGE FOR LEARNING

**BEFORE THE LESSON:** *greetings* (good morning everyone, how are you getting on?...); *time to begin* (let's begin today's lesson, is everybody ready to start?...); *register* (who isn't here today?..).

**DURING THE LESSON:** *common instructions* (we'll learn how to..., turn to page..., do you understand this?...), *classroom management* (the whole class please, give your group the instructions to..., can you repeat this for your mates...? Give them a clue... for the last thing today, whose turn is it to read?, *communicative exchanges* (how are these similar/different...?, How do we classify...? What group would you say this belong to?, where do you think Nemo can be...?, Any ideas? Do you agree with...? any questions?, who knows the answer?...), *error correction* (very good, great job, good but try to make it clear, would you like to improve your drawing of...? Quite good, you've improve a lot, check this part with... and correct it...).

**THE END OF THE LESSON:** *time to stop* (it's time to finish now, have you finished?...), *homework* (remember your homework, finish this exercise...), *meaningful discussion stems* (I noticed that..., I wonder..., I agree/disagree with...).

### LANGUAGE THROUGH LEARNING

Language through activities, videos, ICT, teamwork, readings

Language through peer interaction and project presentation

### ASSESSMENT

#### Evaluation criteria:

- Know the basic principles of machines and tools.
- Plan how to build a boat that floats.
- Identify simple and complex machines.
- Recognize a pulley, lever and incline plane.

#### Minimum required:

- Recognize what is a pulley, lever and incline plane.
- Distinguish between simple and complex machines.

#### Assessment:

##### 1. Formative Assessment

- Observation of the whole group using a checklist.
- Verbal and written feedback of each activity.
- A rubric about the experiment.

##### 2. Summative Assessment

Unit test.

Quizzes.

### ATTENTION TO DIVERSITY

**Multimodal Input:** The content of the unit will be presented in different ways throughout the sessions to ensure that all students engage and learn it.

- A presentation of the project.
- Videos of the topic learnt.
- Images of examples of boats made with recycled materials and with simple and complex machines where you can see that they float.
- An Activity booklet.

**LOTS:** complete the activity book with some activities about forces.

**HOTS:** make and design a boat that floats.

#### **Attention deficit hyperactivity disorder (ADHD):**

In this unit the self-instruction (what/how/when/ do I have to do?) is done through group work, feedback.

For this particular student will:

1. Provide qualitative feedback using rubrics and checklists.
2. The assessment needs to be informed in advance. Avoid setting several exams in the same week.
3. Try to get students to participate
4. Constantly asking them if they need help
5. Ask them regularly some questions that we know they know and thus check that they are attentive

## VI. CONCLUSIONS

Once the End of Degree project is finished, I affirm what a great challenge it has been for me. When I had to choose between different topics to carry out my work aimed at primary education, I did not really know what to choose, and I decided to add “CLIL and Natural Science” because I knew that it could be a great challenge for me. And so it has been.

My first fear was English, but on the other hand I knew that this could help me loosen up a little more with the language and prepare for the future, since having done this final degree project, I have confirmed my desire to prepare to take the C1 exam, and thus be able to be a teacher of the subjects of Natural and Social Science and Arts.

Another fear I had was the programming. I had never done one before and it seemed like a somewhat complicated challenge. It is true that in the university throughout these five years we have done some didactic units in the different subjects, but it was not the same. In addition, with the added value that the programming was for primary education, a stage in which I had never done my internship before.

However, I have overcome the fears and the challenges and now that I have finished it, I can say that I am proud of the work I have done. I have learned a lot by doing this programming, not only about the language (as I mentioned above) but also about methodologies, knowledge, CLIL and their implementation in the primary classroom.

At the same time that I was doing this final degree project, my tutor at the Father Manyanet school has taught me many things and for that I am grateful. She has allowed me to teach a class and, thus, face a classroom with 21 different students and be able to learn from it. In addition, she is Therapeutic Pedagogue (PT), and he has shown me different ways of working with students taking into account their special educational needs.

One of the things that has surprised me the most is that, I have always been used to going to a center and seeing how the teachers are the ones who explain the theory, correct the exercises out loud or give the children an exam without hardly explaining them. your mistakes. My tutor is the opposite. The students are the ones who carry out the tasks, they are the ones who correct the exams, exercises, etc. While correcting aloud ... everything any teacher should do, and even more so a CLIL teacher.

Carrying out this work has taught me to conceive the different didactic units with a CLIL approach, to give greater importance to the student, to work cooperatively with families and other school entities, and to look for different ways of evaluating students depending on their needs. Also, thanks to this work, I know what types of scaffolding activities can be carried out depending on each activity. In my opinion, scaffolding is an essential puzzle piece in student learning.

Lastly, I would like to thank all those who have helped me during this work. To the professors of the Universidad Pontificia de Comillas, who have taught me for five years, and thanks to whom I can now carry out work of this caliber in which I can relate theory to practice. Especially, I would like to thank Magdalena Custodio, who has introduced me to the world of CLIL, who has led me in the TFG and has supported and encouraged me at all times. Without her, this syllabus would not have been possible. It has been a pleasure to have a TFG director like you. A person with such intelligence and who has given me so much knowledge in the career about CLIL. And finally, I would like to thank Rosa Ramos as well. She has helped me from the first moment by offering me the best help and has helped me with the editing part of the work. Thanks.

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## EDUCATIONAL LEGISLATION

Decreto 89/2014, de 24 de julio, del Consejo de Gobierno, por el que se establece para la Comunidad de Madrid el Currículo de la Educación Primaria. Boletín Oficial de la Comunidad de Madrid, 175, 25 de julio de 2014, pp. 10-89.

Ley Orgánica 8/2013, de 9 de diciembre, para la mejora de la calidad educativa. Boletín Oficial del Estado, 295, 10 de diciembre de 2013, pp. 97858-97921.

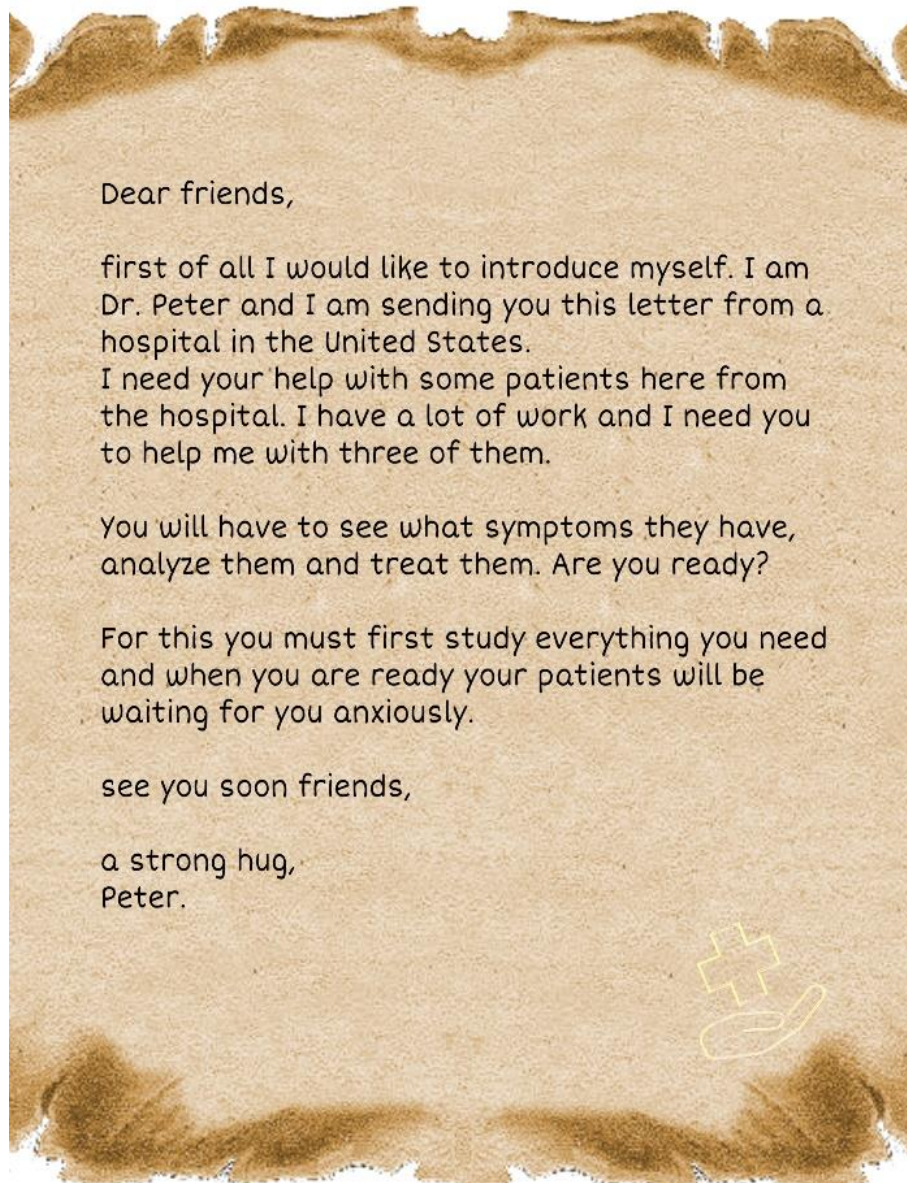
Orden 2049/2016, de 22 de junio, de la Consejería de Educación, Juventud y Deporte, por la que se establece el Calendario Escolar para el curso 2016-2017 en los centros educativos no universitarios sostenidos con fondos públicos de la Comunidad de Madrid. Boletín Oficial del Estado, 152, 28 de junio de 2016, 95- 152.

Orden ECD/686/2014, de 23 de abril, por la que se establece el currículo de la Educación Primaria para el ámbito de gestión del Ministerio de Educación, Cultura y deporte y se regula su implantación, así como la evaluación y determinados aspectos organizativos de la etapa. Boletín Oficial del Estado, 106, 1 de mayo de 2014, pp. 33827-34164.

Real Decreto 126/2014, de 28 de febrero, por el que se establece el currículo básico de la Educación Primaria. Boletín Oficial del Estado, 52, 1 de marzo de 2014, pp. 19349-19420.

## VI. APPENDICES

### 6.1 Appendix A: Letter from the American doctor

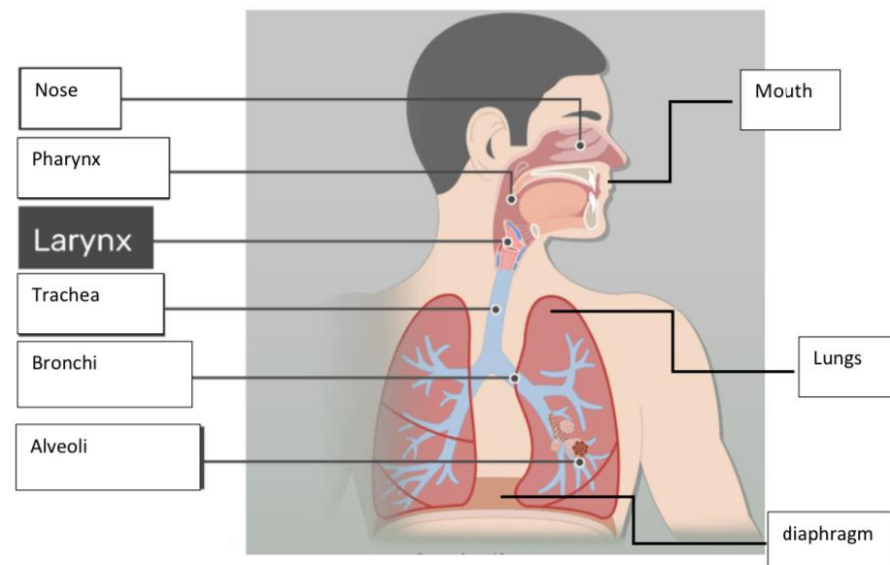


# BECOMING DOCTORS



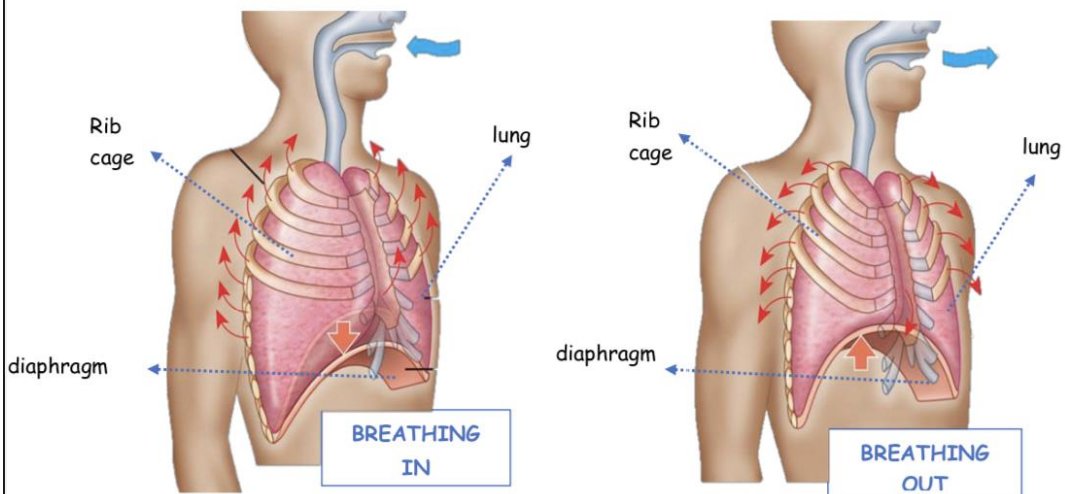
## RESPIRATORY SYSTEM

1. We breathe in air through our **nose** and **mouth**.
2. The **pharynx** opens and the air goes down a tube called **trachea**.
3. The trachea divides into two tubes called **bronchi**. The air passes down the bronchi and enters the **lungs**.
4. Inside the lungs, the bronchi divide into smaller tubes. At the end of the smaller tubes there are tiny sacs, called **alveoli**, which are covered in capillaries.
5. In the alveoli, oxygen from the air passes into the blood and carbon dioxide from the blood passes into the alveoli. This is called **gas exchange**.





## WHAT HAPPENS WHEN YOU BREATHE?



When you breathe in, your **diaphragm contracts** and moves down. This causes your rib cage to move up and out. The extra space in your chest allows air to come in and the **lungs to expand**.

When you breathe out, your **diaphragm relaxes** and moves up. This causes your rib cage to move in and down. The smaller space and the diaphragm force the air out and the **lungs to contract**.



## CIRCULATORY SYSTEM

The circulatory system consists of the **heart**, **blood vessels** (veins, arteries and capillaries) and **blood**. The circulatory system transports oxygen and nutrients to each cell in your body. It also takes waste products like carbon dioxide to the lungs, where the respiratory system expels it from your body.

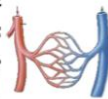
**VEINS** are vessels which carry blood **back to the heart** from the rest of the body.



**ARTERIES** are vessels that carry blood **from the heart** to the rest of the body.

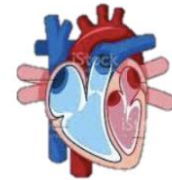


**CAPILLARIES** are very small vessels that **connect** our **arteries and veins**.

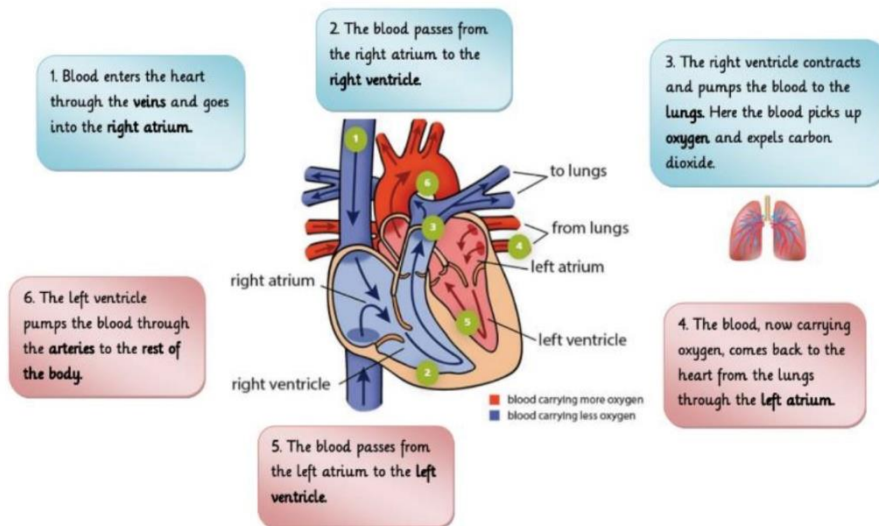


The **heart** is divided into four parts:

the left and the right **atria** and the left and the right **ventricles**.

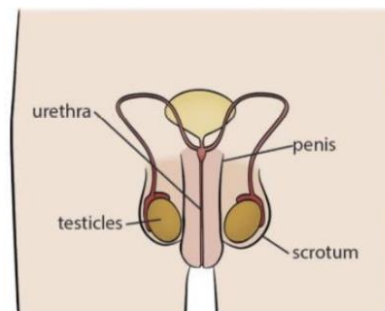
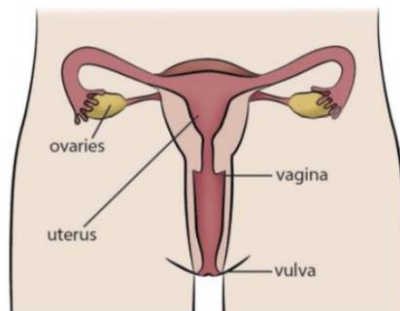


### HOW BLOOD CIRCULATES



## REPRODUCTIVE SYSTEM

Our reproductive system makes it possible for us to have babies. While the other body systems are the same for men and women, the reproductive systems are different. The two reproductive systems need to work together so that we can reproduce.



The two **ovaries** store and produce **ova** (eggs).

Ova are the female cells.

The **uterus** is connected to the ovaries by tubes. The uterus is where babies develop.

The **vagina** is a muscular tube which connects the uterus to the outside of the body.

The **vulva** protects the outside of the vagina.

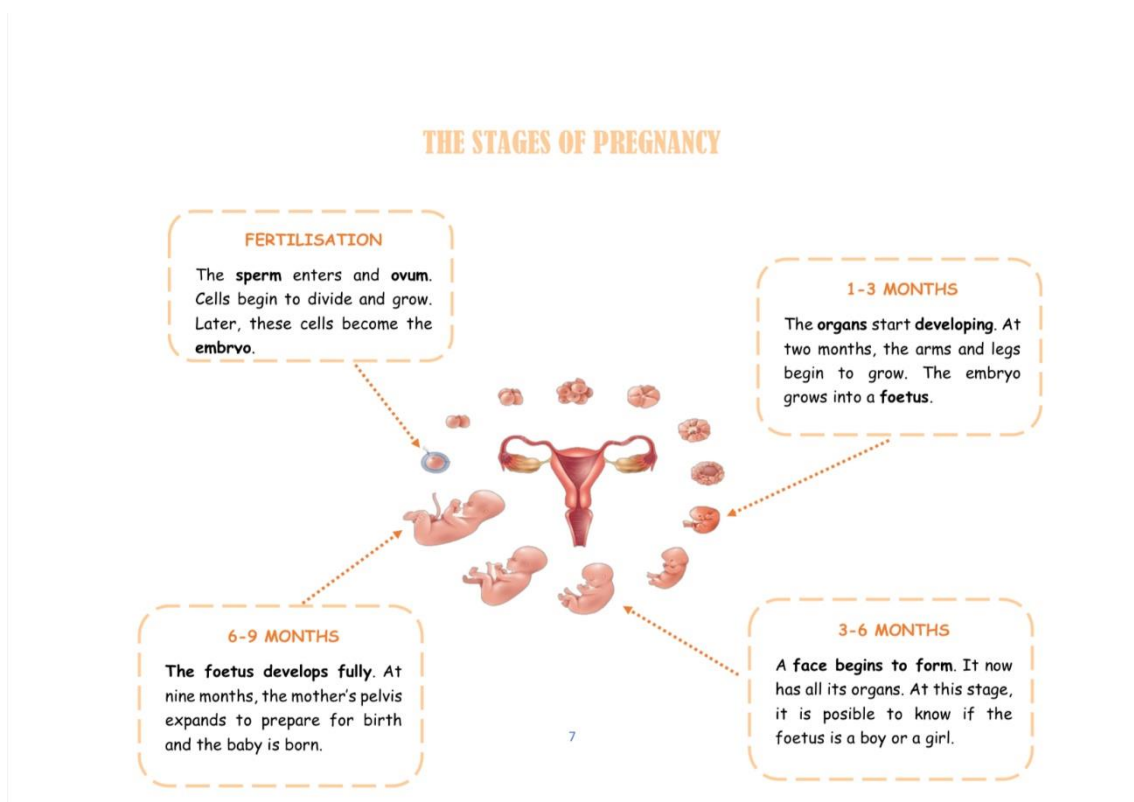
The **scrotum** is an external sac of skin which contains the testicles.

The **testicles** produce **sperm** which is the male cell.

The **penis** is connected to the testicles by small tubes.

The **urethra** is a tube in the penis.

The sperm travels through the urethra to the outside of the body.



# MEDICAL ACTION PROTOCOL



## PREVENTION



### REGULAR CHECK-UPS

Medical check-ups monitor our health and check that our body systems are working properly. It is a good idea to have regular check-ups with your dentist and optician too.



### HEALTHY HABITS

We can stay healthy by taking care of our bodies following these rules: eat healthily, do some exercise, sleep and keep clean.



### VACCINATION

You need vaccinations to protect you from certain diseases.



### AVOID UNHEALTHY HABITS

An unhealthy lifestyle, such as eating fast food and doing little exercise, can cause weight problems and heart disease. Remember to read the food labels on food products. These labels can help us choose between a healthy and an unhealthy product. Also, playing videogames and watch TV too often can result in weight gain, sleep loss...

## DIAGNOSIS



### X-RAYS

This machine makes an image of bones and organs inside the body. X-rays pass through the body and leave an image on photographic film.



### ELECTROCARDIOGRAPH

This machine monitors heart rate. It allows doctors to know if your heartbeat is strong enough.



### THERMOMETER

Temperature is measured by an instrument called a thermometer. Thermometers are used to see if you have a fever.



### BLOOD TEST

Blood is taken from the body through a needle to be tested in a lab. Sometimes, blood tests can be helpful to see how well an organ is working. Blood tests are also used in drug tests to detect drug abuse.



### ULTRASOUND MACHINE

This machine can be used to monitor the foetus inside the mother.

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**TREATMENT**

**EAT HEALTHY**

A healthy diet is a balanced diet. Different nutrients help our body systems.

- **Iron:** helps blood carry oxygen around the body.
- **Potassium:** helps your heart, muscles and nerves work properly. It also helps prevent high blood pressure.
- **Vitamin C:** helps strengthen your immune system.
- **Proteins:** build muscle and help us grow.
- **Carbohydrates:** provide fibre, which helps move food through the digestive system.

Remember to drink plenty of water. **Water** keeps the body systems functioning

**DO SOME EXERCISE**

Exercise makes our body stronger and it also helps our circulatory and respiratory systems. When we exercise, we breathe faster and our heart has to work harder to pump blood around the body. As a result, our heart gets stronger. The muscles that we use to breathe in and out also get stronger.

**SLEEP**


It is very important that we get enough sleep. Sleep allows our body to rest and grow. Sleep also helps the brain develop so that speech and memory function properly the next day.

**KEEP CLEAN**

We wash our body to remove dirt, bacteria and sweat. We should wash our hands before we eat and after going to the toilet to remove any germs. We also need to remove food and plaque from our teeth by brushing them at least twice a day.


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**TREATMENT**




**MICROSURGERY**

Microsurgery is a general term for surgery requiring an operating microscope.




**SPLINT**

A thin piece of wood or other rigid material used to immobilize a fractured or dislocated bone, or to maintain any part of the body in a fixed position.



**ORGAN TRANSPLANT**

Doctors remove an organ from another person and place it in your body.



**ANTIBIOTICS**

Antibiotics are used to treat or prevent some types of bacterial infection. They work by killing bacteria or preventing them from reproducing and spreading.

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### 6.3 Appendix C: Graphic organiser: the Respiratory System

# GRAPHIC ORGANIZER 1

## Respiratory system

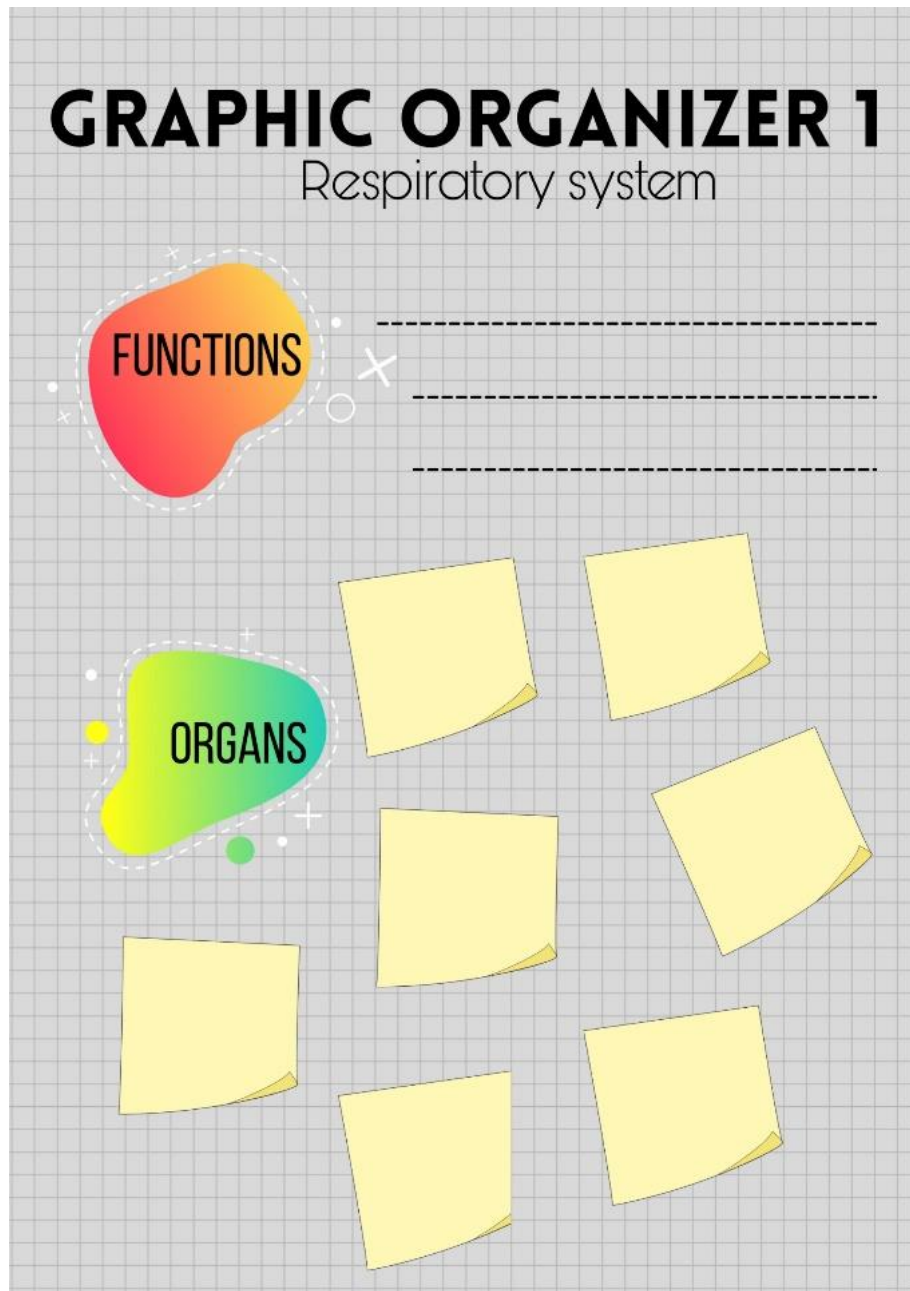
**FUNCTIONS**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**ORGANS**

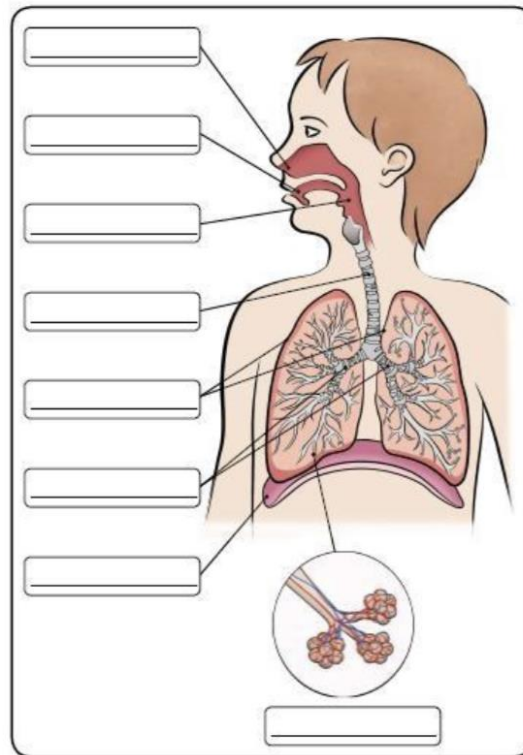




## 6.4 Appendix D: Activity booklet

### RESPIRATORY SYSTEM

1. Label the picture.



2. Complete the sentences about the respiratory system.

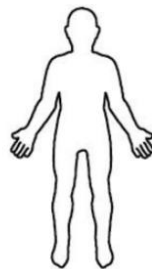
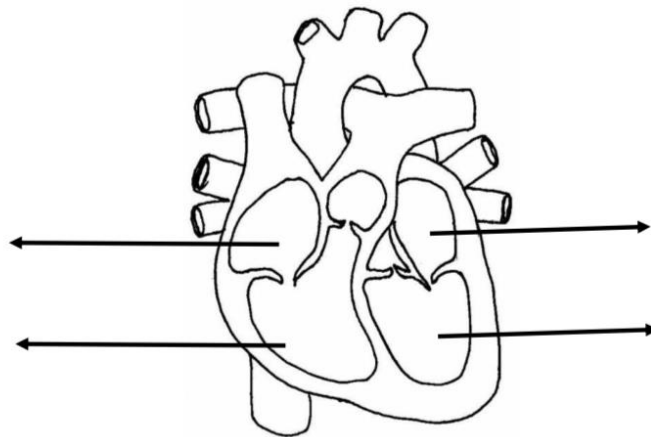
Trachea Bronchi Lungs Nose Capillaries Mouth

- You breathe in through your \_\_\_\_\_ and \_\_\_\_\_.
- The air goes down a tube called the \_\_\_\_\_.
- This tube divides into two smaller tubes called \_\_\_\_\_.
- The air then enters the \_\_\_\_\_.
- The bronchi divide again into smaller tubes, ending in \_\_\_\_\_.

## CIRCULATORY SYSTEM

1. Label the picture.

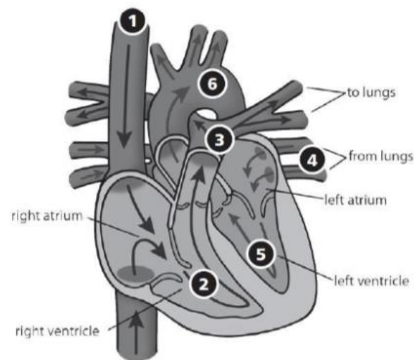
Right atrium    Left atrium    Right ventricle    Left ventricle



## 2. Match to make definitions.

Arteries ●	● Are very small vessels that connect arteries and veins.
Veins ●	● Carry blood from the heart to all parts of our body.
Capillaries ●	● Carry blood back to the heart from the rest of our body.

## 3. Order the sentences.



- 1 Blood enters the heart and goes into the right atrium.
- 2 The blood, now carrying oxygen, comes back to the heart from the lungs through the left atrium.
- 3 The left ventricle pumps the blood through the arteries to the rest of the body.
- 4 The blood passes from the right atrium to the right ventricle.
- 5 The blood passes from the left atrium to the left ventricle.
- 6 The right ventricle contracts and pumps blood to the lungs Here the blood picks up oxygen and expels carbon dioxide.

4. Listen to the song and fill in the blanks  
**CIRCULATORY SYSTEM SONG**

Well if you don't know your veins from your arteries.

Then you need to sing this circulation song with me.

It's about the way \_\_\_\_ gets pumped around

And why your \_\_\_\_ makes a funny lub-dub sound.

Through your \_\_\_\_\_ blood gets pumped away,

and through your \_\_\_\_\_ it comes back again.

Through your \_\_\_\_\_ blood gets pumped away,

and through your \_\_\_\_\_ it comes back again.

Did you know your \_\_\_\_\_ is nothing but a lump of muscle

which acts as a four chambered pump.

The right side pumps the \_\_\_\_\_ to the lungs for \_\_\_\_\_.

And the \_\_\_\_\_ side pumps it out to the body again.

Through your \_\_\_\_\_ blood gets pumped away,

and through your \_\_\_\_\_ it comes back again.

Arteries branch out from the arteries which divide again into \_\_\_\_\_.

Blood carries \_\_\_\_\_, nutrients and

up to your ears and down to your feet.

Regulating temperature homostatically

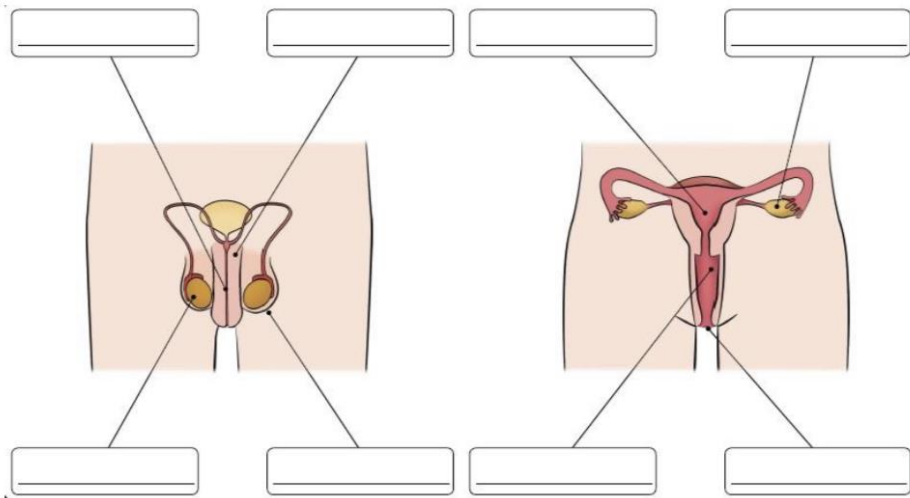
by controlling blood supply to your extremities.

Through your \_\_\_\_\_ blood gets pumped away,

and through your \_\_\_\_\_ it comes back again.

## REPRODUCTIVE SYSTEM

1. Label the pictures.



2. Classify the male and female reproductive systems.

~~Uterus~~ Scrotum Penis Ovaries Testicles Vulva Vagina Urethra

Male reproductive organs	Female reproductive organs
	Uterus

## MEDICAL GOLDEN RULE

Before we start treating our patients it's important to know the medical golden rule. You should apply this rule also with your family and friends. This rule should be very important in your life.

## EMPATHY – THE GOLDEN RULE

As doctors we need to **be aware of our responsibilities** towards our patients and their feelings.

Empathy is the **ability to understand how someone feels**. If we can understand how someone feels, or empathize with them, we can decide to say or do something that makes them feel better.

It is important that we can **recognize** our emotions and know when it's necessary to **control** them.

Our patients can feel these ways when they come to our medical offices:

- Confused
- Uncomfortable
- Worried
- Shy
- Angry
- Calm

## HOW DO I FEEL WHEN I 'M SICK AND I VISIT THE DOCTOR?

1. Write the emotion under each face and draw them. You have to complete the six faces.



I feel



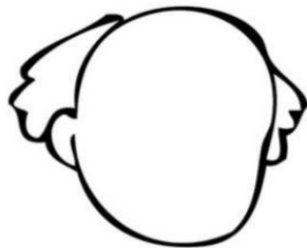
I feel



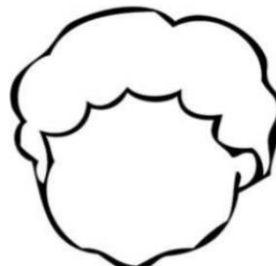
I feel



I feel







I feel








I feel

## MEDICAL ACTION PROTOCOL

1. Match the words and the pictures.






PREVENTION	Healthy habits	
	Vaccination	
	Avoid unhealthy habits	
	Regular check-ups	

2. Match the words and the pictures.

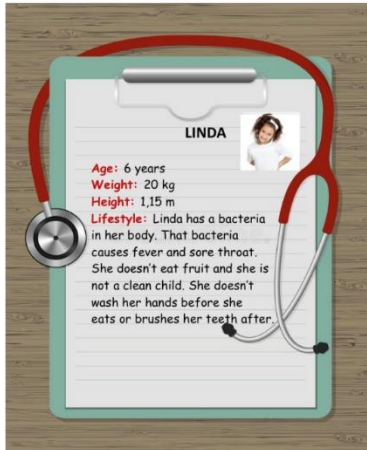
DIAGNOSIS	Blood tests	
	Ultrasound machine	
	Thermometer	
	Electrocardiograph	
	X-rays	



## 3. Match the words and the pictures.

TREATMENT	Healthy habits (eat healthily, do some exercise, sleep, keep clean)	
	Splints	
	Microsurgery	
	Organ transplants	
	Antibiotics	

## OUR PATIENT LINDA




<p><b>Diagnosis</b> What tools do we use to diagnose Linda?</p>	<p>X-RAYS / ELECTROCARDIOGRAPH / THERMOMETER / BLOOD TESTS / ULTRASOUND MACHINE We need to do _____ to detect bacteria in Linda's blood. We also need to use a _____ to check Linda's temperature.</p>
<p><b>Treatment</b> What can we do to make Linda recover?</p>	<p>DO SOME EXERCISE / EAT HEALTHY FOOD / SLEEP / KEEP CLEAN / MICROSURGERY / SPLINT / ANTIBIOTICS / ORGAN TRANSPLANTS We need to give Linda _____ to kill bacteria.</p>
<p><b>Prevention</b> What can we recommend Linda to do to stay healthy?</p>	<p>VACCINATION/ REGULAR CHECK-UPS/ EAT HEALTHY FOOD RICH IN VITAMINS AND MINERALS / KEEP CLEAN / SLEEP / DO EXERCISE / AVOID DRUGS/ AVOID VIDEOGAMES AND TELEVISION. Linda needs to _____ in order not to get any bacteria from dirt again, and _____, in order to have a stronger immune system. She needs to have _____ so the doctor can check that everything is going well.</p>

## OUR PATIENT ALICE



<p><b>Diagnosis</b> What tools do we use to diagnose Alice?</p>	<p>X-RAYS / ELECTROCARDIOGRAPH / THERMOMETER / BLOOD TESTS / ULTRASOUND MACHINE We use an _____ machine to see if Alice has a broken leg.</p>
<p><b>Treatment</b> What can we do to make Alice recover from her broken leg?</p>	<p>DO SOME EXERCISE / EAT HEALTHY FOOD / SLEEP / KEEP CLEAN / MICROSURGERY / SPLINT / ANTIBIOTICS / ORGAN TRANSPLANTS We need to _____ Alice's leg so it doesn't move and so the leg can be welded well.</p>
<p><b>Prevention</b> What can we recommend Alice to do in order to have stronger bones?</p>	<p>VACCINATION/ REGULAR CHECK-UPS/ EAT HEALTHY FOOD RICH IN CALCIUM / SLEEP / DO EXERCISE / AVOID DRUGS/ AVOID VIDEOGAMES AND TELEVISION. Alice needs to _____ in order to have stronger bones. She needs to have _____ so the doctor can check that everything is going well.</p>

### OUR PATIENT PETER



**PETER**

**Age:** 10 years  
**Weight:** 50 kg  
**Height:** 136 cm  
**Lifestyle:** he suffers from obesity. His heart beat is irregular. Peter eats only three times a day and he loves chocolate and chips. He loves videogames and hates doing exercise.

<b>Diagnosis</b> What tools do we use to diagnose Peter's heart problem?	X-RAYS / ELECTROCARDIOGRAPH / THERMOMETER / BLOOD TESTS / ULTRASOUND MACHINE We use an _____ machine to check Peter's heart rate.
<b>Treatment</b> What can we do to make Peter lose weight?	DO SOME EXERCISE / EAT HEALTHY FOOD / SLEEP / KEEP CLEAN / MICROSURGERY / SPLINT / ANTIBIOTICS / TRANSPLANT We need to ask Peter to _____ to make his heart stronger, and to _____ in order to lose weight and feel healthier.
<b>Prevention</b> What can we recommend Peter to do in order not to suffer from obesity again?	VACCINATION/ REGULAR CHECK-UPS/ EAT HEALTHY FOOD / SLEEP / DO EXERCISE / AVOID DRUGS/ AVOID VIDEOGAMES AND TELEVISION. Peter needs to _____ in order to be at his weight, and _____ to keep his heart strong. He also needs to avoid _____. He needs to have _____ so the doctor can check that everything is going well.

## 6.5 Appendix E: Observation of the group work using a checklist for active observation

### CLASSROOM OBSERVATION CHECKLIST

Teacher: \_\_\_\_\_

Observation number: 1 2 3 4 5 6 7

Date: \_\_\_\_\_

Respond to each statement using the following scale:

1= not deserved      2=more emphasis recommended      3=accomplished very well

Summarized major points of the lesson	1	2	3
Related today's lesson to previous/future lessons	1	2	3
Explained major/minor points with clarity.	1	2	3
Used good examples to clarify points.	1	2	3
Emphasized important points.	1	2	3
Listened actively to classmates questions.	1	2	3
Was responsible with colleagues and materials	1	2	3

### 6.6 Appendix F: Analogical model of the respiratory system



### 6.7 Appendix G: Plasticine and toothpick




Resource: <http://segundociclobetica.blogspot.com/2019/10/experiment-time.html>

### 6.8 Appendix H: Tick words

Circle the words that you hear in the video

Doctor	Oxygen	Alveoli
Stethoscope	Chambers	Liver
Heart	Atriums	Body
Organ	Ventricles	Trachea
Middle-left	Deoxygenated	Nose
Pump	Beat	Diaphragm
Blood	Lungs	



### 6.9 Appendix I: Graphic Organizer Circulatory System

# GRAPHIC ORGANIZER 1

Circulatory system

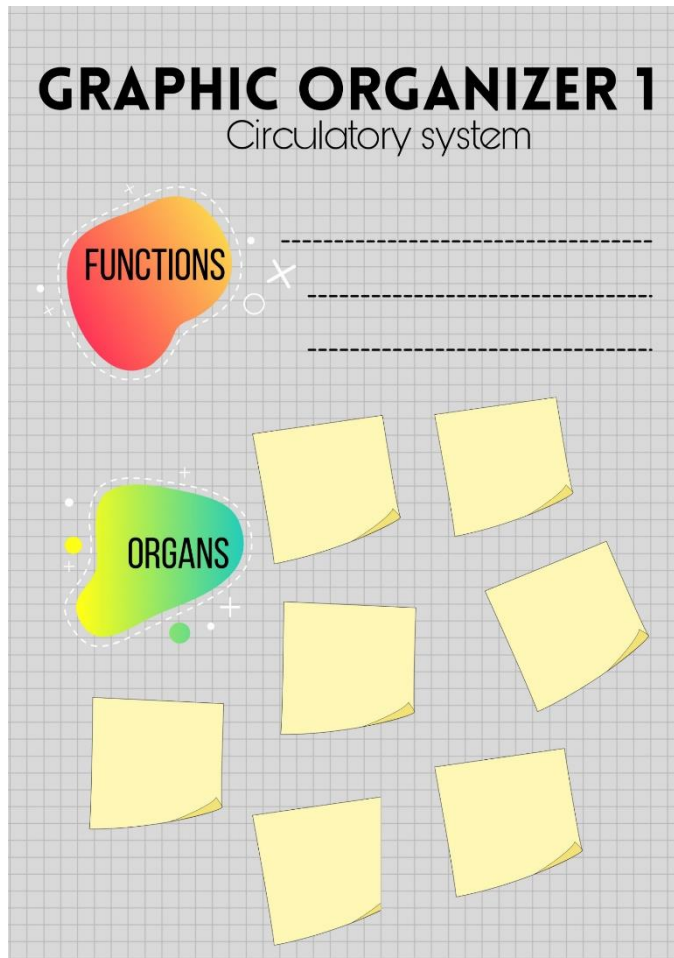
**FUNCTIONS**

\_\_\_\_\_

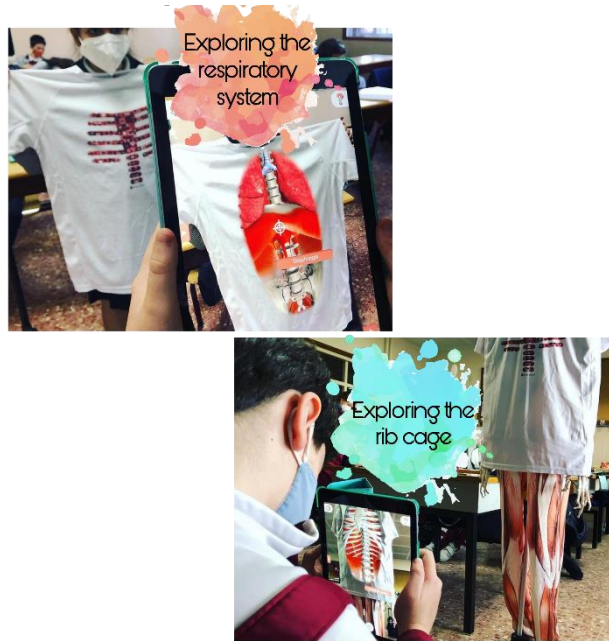
\_\_\_\_\_

\_\_\_\_\_

**ORGANS**



### 6.10 Appendix J: Magic T-shirt



### 6.11 Appendix K: group self-assessment checklist

#### RESPIRATORY SYSTEM PRESENTATION CHECKLIST



TEAM MEMBERS: \_\_\_\_\_

- Our team understands how the respiratory system works.
- Everyone is involved in the planning and the presentation.
- The information in the presentation is 100% accurate.
- Our team presents the analogical model including all the vocabulary words.
- All parts of the respiratory system are talked about and their function is explained.
- Our team has been able to carry out the analogical model.



CIRCULATORY SYSTEM ACTIVITY  
AND PRESENTATION CHECKLIST



TEAM MEMBERS: \_\_\_\_\_

- Our team understands how the circulatory system works.
- Everyone is involved in the planning of the activity/studystack and in the presentation.
- The information in the presentation is 100% accurate.
- Our team clearly presents the activity/studystack to the rest of the class.
- All parts of the circulatory system are talked about and their function is explained.
- Our team has been able to carry out the activity/studystack.

6.12 Appendix L: The analogical model with recycled materials will be assessed by the teacher with a rubric

## Group Activity Rubric

Name \_\_\_\_\_ Date \_\_\_\_\_

Chapter Number \_\_\_\_\_ Activity \_\_\_\_\_

**Directions**

Check one box in each row to finish each sentence. Give each check mark the assigned number of points. Add the points in each column. Then, add across the bottom row to find the total score.

POINTS	10	9	8	7	6	
<b>For this activity, (student's name) _____</b>	<b>all of the time</b>	<b>most of the time</b>	<b>half of the time</b>	<b>less than half of the time</b>	<b>none of the time</b>	
Followed directions						
Participated in group discussions						
Listened carefully to others						
Used appropriate resources and materials						
Completed assigned tasks						
Showed an understanding of the content						
Presented materials without errors						
Explained thinking with support						
_____						
_____						
<b>POINTS</b>	<b>+</b>	<b>+</b>	<b>+</b>	<b>+</b>	<b>=</b>	<b>TOTAL SCORE</b>



6.13 Appendix M: Unit test

## The circulatory system

FINISH CERTIFICATE

Name \_\_\_\_\_ Date \_\_\_\_\_

**1** Use the colour key to circle the words.

give us energy ▶ red

help us grow ▶ blue

keep us healthy ▶ green

fish - meat - grapes - eggs - rice - olive oil - pasta - bacon -  
 pulses - carrots - bread - butter - strawberries - lettuce - cheese

**2** Colour the parts of the circulatory system in red.

heart

lungs

arteries

ears

veins

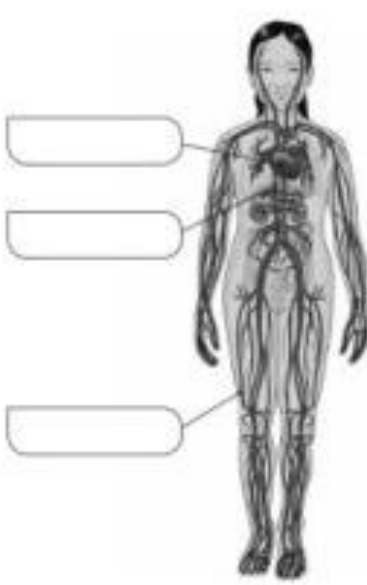
mouth


blood

stomach

capillaries

**3** Label the circulatory system with the correct words from Activity 2.





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## The circulatory system

11/51

Name \_\_\_\_\_ Date \_\_\_\_\_

- 1 Nutrition provides your body with...
  - a. air and nutrients.
  - b. nutrients and energy.
  - c. air and energy.
- 2 The four processes of nutrition are...
  - a. digestion, respiration, sensitivity and excretion.
  - b. digestion, reproduction, circulation and excretion.
  - c. digestion, respiration, circulation and excretion.
- 3 Carbohydrates, fats, proteins, vitamins and minerals are...
  - a. nutrients.
  - b. energy.
  - c. food.
- 4 Each process of nutrition takes place in...
  - a. an organ.
  - b. a system.
  - c. the whole body.
- 5 The circulatory system is made up of...
  - a. blood, blood vessels and the heart.
  - b. blood, arteries and veins.
  - c. blood, capillaries and the heart.
- 6 Blood is mainly made up of...
  - a. nutrients.
  - b. red blood cells.
  - c. water.
- 7 Blood vessels include...
  - a. arteries, veins and tubes.
  - b. arteries, veins and capillaries.
  - c. arteries, tubes and capillaries.
- 8 The heart is a powerful organ made up of...
  - a. blood.
  - b. bones.
  - c. muscles.
- 9 Blood circulation is the constant movement of blood through the...
  - a. heart.
  - b. arteries.
  - c. blood vessels.
- 10 In order to keep our circulatory system healthy, we need...
  - a. to eat a diet high in carbohydrates and do regular exercise.
  - b. to eat a healthy diet and do occasional exercise.
  - c. to eat a healthy diet and do regular exercise.

## Respiration

REINFORCEMENT

Name \_\_\_\_\_ Date \_\_\_\_\_





**1** Unscramble the letters and label the diagrams.

snugi

cahaler

sone

nhrbco

**2** Complete the sentences about respiration.

lungs - exhalation - inhalation - leaves - expands - contracts - enters - oxygen

- a. Air reaches our lungs through respiration. When we breathe in, the thorax \_\_\_\_\_ and air \_\_\_\_\_ the lungs. This breathing movement is called \_\_\_\_\_.
- b. When we breathe out, the thorax \_\_\_\_\_ and air \_\_\_\_\_ the body. This breathing movement is called \_\_\_\_\_.
- c. Inhaled air reaches the \_\_\_\_\_, and the \_\_\_\_\_ in this air passes into the blood.

**3** Read the clues and complete the parts of the excretory system. Then, put them in order.

- a. It stores the urine until it is expelled from the body. \_\_\_\_\_ d \_\_\_\_\_
- b. It is the tube through which urine is expelled. \_\_\_\_\_ r \_\_\_\_\_
- c. They filter the blood and make urine. \_\_\_\_\_ d \_\_\_\_\_

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- a. When we inhale / exhale, the thorax expands / contracts and air enters the lungs. This is called inhalation / exhalation.
- b. When we inhale / exhale, the thorax expands / contracts and air is expelled from the body. This is called inhalation / exhalation.

**Respiration**

TEST

Name \_\_\_\_\_ Date \_\_\_\_\_

- 1 To obtain energy from nutrients, we need...
  - a. oxygen.
  - b. nitrogen.
  - c. air.
- 2 The respiratory system is made up of...
  - a. the nasal cavity, the trachea, the bronchi and the lungs.
  - b. the nose, the trachea, the bronchi and the lungs.
  - c. the nose, the trachea, the bronchi and the kidneys.
- 3 In the lungs, oxygen from the air passes into the...
  - a. bronchi.
  - b. blood.
  - c. ribs.
- 4 The thorax contracts during...
  - a. inhalation.
  - b. exhalation.
  - c. respiration.
- 5 Blood travels through our body and collects...
  - a. oxygen.
  - b. nutrients.
  - c. waste substances.
- 6 The cleaning of blood takes place in the...
  - a. respiratory system.
  - b. circulatory system.
  - c. excretory system.
- 7 The production, storage and elimination of urine take place respectively in the...
  - a. kidneys, bladder and urethra.
  - b. bladder, kidneys and urethra.
  - c. kidneys, urethra and bladder.
- 8 Sweat is mostly made up of...
  - a. mineral salts.
  - b. water.
  - c. waste substances.
- 9 Harmful substances for our respiratory system include...
  - a. pollutants, toxic substances and cigarette smoke.
  - b. pollutants from factories, paint and glue.
  - c. pollutants from cars, cleaning products and cigarette smoke.
- 10 Drinking enough water helps to look after our...
  - a. circulatory system.
  - b. excretory system.
  - c. respiratory system.

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## VII. ANNEXES

## 7.1 Annex 1. Methodological Principles in CLIL (Custodio Espinar, 2019b).

<b>METHODOLOGICAL PRINCIPLES IN CLIL</b>	
Didactic programming	Must include the 4C's (content, cognition, communication, and culture). Those aspects of the teaching/learning process enable teachers to generate strategies, activities, and resources for an effective learning.
Language	Must be approached from two different areas: content and cognitive processes (CALP), and interaction and the communicative use of language (BICS).
Content	Determined by the students' level of linguistic competence, language teaching must respect the balanced development of the four basic language skills (listening, reading, speaking and writing). The Common European Framework of Reference (CEFR) is a fundamental tool for levelling and assess language learning (Council of Europe, 2001).
Linguistic demands	The development of language learning strategies adapted to the linguistic competence of students lead to "scaffolding".
Attention to diversity	Bloom's taxonomy (1956) facilitates the creation of activities adapted to the level of cognitive development of each student and it allows going from one activity to one of a lower or higher cognitive order, according to the student's needs (Custodio Espinar, 2013).
Methodological strategies	The inclusion of different methodological strategies must be consistent with CLIL theoretical models on language learning, as the ones referred to autonomous learning, communication, the development of the key competences, and learning by doing.
Activities	According to Pérez Torres (2015), activities must: <ul style="list-style-type: none"> <li>• connect with the curricular objectives.</li> <li>• start from an approach to content and meaning.</li> <li>• be open and flexible, easily adaptable to higher or lower levels of difficulty.</li> <li>• be realistic and motivating and connect with the students' interests.</li> <li>• evaluate both processes and results.</li> <li>• must be programmed to work on a specific aspect of the text if designed to approach to oral and written texts.</li> </ul>
Resources	Should promote interaction and autonomous learning. Apart from being highly motivating activities, tasks that imply the use of ICT promote the integration of Coyle's "4 Cs" (1999) and the autonomous learning and encourage the development of academic-scientific learning strategies.

## 7.2 Annex 2. Content and standards for year 4 in Natural Science (Decrete 86/2014)

CONTENT BLOCK	CONTENT	LEARNING STANDARS
The human being and health	The circulatory system	1. Identify the main characteristics of the circulatory system. 2. Explain the functions of the heart, veins, and arteries.
	Respiratory system	3. Identify the main characteristics of the circulatory system. 4. Explain the functions of the heart, veins, and arteries.
	The reproductive system	5. Identify the main characteristics of the circulatory system. 6. Explain the functions of the heart, veins, and arteries.
	Health and sickness	7. Knows some diseases that affect the apparatus and systems of the human organism studied. 8. Identify and assess healthy habits to prevent these diseases. 9. Recognize the harmful effects of alcohol and drug use
Living things	Vertebrate animals	10. Explain feeding, respiration and reproduction in mammals, birds, reptiles, amphibians and fish
	Invertebrate animals. Classification	11. Identify, observe and explain the characteristics of the different groups of invertebrate animals
	The plants	12. Explain the nutrition and reproduction of plants. 13. Photosynthesis. Explain its importance to life on Earth.
Matter and energy. Technology, objects and machines	Study and classification of some materials.	14. Observe, identify, describe and classify some materials by their properties (hardness, solubility, state of aggregation and thermal conductivity)
	The weight of a body	15. Use different procedures to measure the weight of a body.
	Floating bodies in a liquid medium	16. Identify and explain the main characteristics of buoyancy in a medium liquid
	Changes in the movement of	17. Perform simple experiences that allow predicting changes in movement,

bodies due to the effect of forces.	in the shape or state of bodies as a result of the forces
Machines that make life easier for man. Important inventions and discoveries.	18. Observe and explore the usefulness of the lever, pulley, and incline. 19. Identify some inventions of Archimedes. 20. Identify Isaac Newton as the discoverer of gravity.

### 7.3. Annex 3. The Decree 86/2014 24<sup>th</sup> of July

Decreto 89/2014, de 24 de julio, del Consejo de Gobierno, por el que se establece para la Comunidad de Madrid el Currículo de la Educación Primaria. Boletín Oficial de la Comunidad de Madrid, 175, 25 de julio de 2014, pp. 10-89.

[https://www.bocm.es/boletin/CM\\_Orden\\_BOCM/2014/07/25/BOCM-20140725-1.PDF](https://www.bocm.es/boletin/CM_Orden_BOCM/2014/07/25/BOCM-20140725-1.PDF)

### 7.4 Annex 4. The Real Decree 126/2014 28<sup>th</sup> of February

Real Decreto 126/2014, de 28 de febrero, por el que se establece el currículo básico de la Educación Primaria. Boletín Oficial del Estado, 52, 1 de marzo de 2014, pp. 19349-19420.

<https://www.boe.es/buscar/pdf/2014/BOE-A-2014-2222-consolidado.pdf>



