

Master's Dissertation/
Trabajo Fin de Máster

TASK-BASED LEARNING IN CLIL: A DIDACTIC PROPOSAL FOR NATURAL SCIENCE IN PRIMARY EDUCATION

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ABSTRACT

Learning a foreign language is essential to meet the needs of our current multicultural and multilingual world. In this context, the CLIL approach appears as a solution to learn a content subject through a foreign language in Primary Education. In that regard, the literature suggests incorporating other active learning methodologies such as Task-Based Learning (TBL) into CLIL lessons. In order to do so, first, the CLIL textbook was analysed to check whether this material was adequate for its context, a state school in Zaragoza. In light of this analysis, an integrated didactic proposal combining CLIL and TBL was designed overcoming the limitations encountered in the analysis. Then, the designed materials were evaluated. The results of this evaluation illustrate how this proposal combining CLIL and TBL can improve learners' communicative competence in the target language and the other key competences outlined in the Primary Education curriculum.

Key words: CLIL, TBL, materials design, English, L2, primary education

RESUMEN

Aprender un idioma extranjero es esencial para satisfacer las necesidades del mundo multicultural y multilingüe en el que vivimos. En este contexto, el enfoque AICLE aparece como una solución para aprender una asignatura de contenido a través de una lengua extranjera en Educación Primaria. En ese sentido, la literatura sugiere incorporar otras metodologías de aprendizaje activo como el Aprendizaje Basado en Tareas (ABT) en las clases de AICLE. Para ello, en primer lugar, se analizó el libro de texto AICLE para comprobar si este material era adecuado a su contexto, un colegio público de Zaragoza. A la luz de este análisis, se diseñó una propuesta didáctica integrada que combina AICLE y ABT superando las limitaciones encontradas en el análisis. A continuación, se evaluaron los materiales diseñados. Los resultados de esta evaluación ilustran cómo esta propuesta que combina AICLE y ABT puede mejorar la competencia comunicativa del alumnado en la lengua extranjera y otras competencias clave descritas en el currículo de Educación Primaria.

Palabras clave: AICLE, ABT, diseño de materiales, inglés, L2, educación primaria

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1. INTRODUCTION

In this new era of globalization, learning English is essential as people need to learn a foreign language to meet the demands of our current society and get access to better opportunities to study or work. In this line, the Spanish Ministry of Education has favoured multilingualism, cultural diversity and mobility inside and outside Europe invited by the Council of the European Union (2014:3) to “adopt and improve measures aimed at promoting multilingualism and enhancing the quality and efficiency of language learning and teaching, including by teaching at least two languages in addition to the main language(s) of instruction from an early age and by exploring the potential of innovative approaches to the development of language competences”.

One of the main goals of education consists in providing learners with the tools to develop the skills, knowledge, attitudes and behaviours that will allow them to adapt in a constantly changing society (UNESCO, 2014). In this way, foreign language learning is especially significant as the development of communicative skills is a necessary requirement that individuals must achieve to work effectively in a multicultural and multilingual world.

Regarding instruction, there has been numerous shifts in language teaching methods such as the Grammar Translation Method, the Total Physical Response approach, the Natural Approach, and many others. It is generally assumed that there is not a best teaching approach that satisfies the needs of all learners and educational programs. However, a change of focus seems crucial to try to face the challenges of the 21st century.

In this context, the CLIL approach emerges as a “European solution to a European need” (Marsh, 2002:1) to learn the content of non-linguistic subjects and improve the communicative skills of a foreign language through bilingual education. In other words, in CLIL settings, foreign language and content play an equally relevant curricular role. (Íbidem).

There are, however, some challenges regarding this approach, one of the greatest being the lack of suitable CLIL materials (Mäkiranta, 2014). Therefore, evaluating textbooks to find appropriate materials should be a priority among CLIL teachers. In addition, they should also be able to adapt those materials or create new ones to meet the needs of their learners. In that regard, Task-Based Learning should be incorporated into CLIL

lesson planning as it is “a methodological strategy which can be of use in the integrated learning of language and subject matter” (Pavón, Prieto and Ávila, 2015:75).

In consonance with all the above, the **main objective** of this dissertation is to design a CLIL didactic proposal that follows CLIL and TBL principles aimed at the fourth grade of Primary Education. This objective includes another **specific objective**: to evaluate CLIL materials (textbooks and own materials) in order to assess their adequacy.

In the initial section of this Master’s dissertation, the theoretical and curricular bases for CLIL and Task-Based Learning (TBL) are going to be analysed as a methodological strategy to achieve interdisciplinarity and pupils’ motivation in an appropriate CLIL implementation. Then, in the following section, some modules of a Natural Science CLIL textbook will be evaluated to check the quality of these materials. Next, a proposal of an integrated CLIL didactic unit is going to be presented aimed at fourth grade for the Natural Science and English areas. This designed proposal will incorporate some improvements that have been seen as limitations in the analysed CLIL textbook and, in the following section, this designed proposal will be critically analysed. Finally, conclusions will be drawn in the last section, where implications and possible limitations of this Master’s dissertation will be explored considering all the aspects that have been developed throughout this work combining CLIL and TBL in CLIL classrooms.

2. THEORETICAL FRAMEWORK

In the following sections the major theoretical aspects relevant for this Master’s dissertation will be explained: the first section will explore how content and language are learnt through CLIL as well as the implications of this integration in the cognitive theory, and the second section will introduce the Communicative Approach and will describe the conceptual background of Task-Based Learning.

2.1. Content and Language Integrated Learning

The term “Content and Language Integrated Learning” (CLIL) was coined by Marsh in 1994 and refers to a “dual-focused educational approach in which an additional language is used for the learning and teaching of both content and language” (Coyle, Hood and Marsh, 2010:1). In CLIL settings, a foreign language is a tool for content learning where “both language and the subject have a joint curricular role” (Marsh,

2002:58). Since its birth, this approach has gained an exponential acceptance (Järvinen, 2006; in Pérez Cañado, 2013) and implementation across Europe (Martínez Agudo, 2012).

The main difference between CLIL and other bilingual education models is its “planned pedagogic integration of contextualized content, cognition, communication and culture into teaching and learning practice” (Coyle et al., 2010:6). The 4Cs Framework (see Figure 1) represents the integration of these four elements to develop quality CLIL materials (Coyle, 2007). These materials should encompass *content*, understood as the “subject matter”, *cognition*, related to “learning and thinking processes”, *communication*, as “language learning and using”, and *culture* as “intercultural and global citizenship” (Íbidem, p. 551).

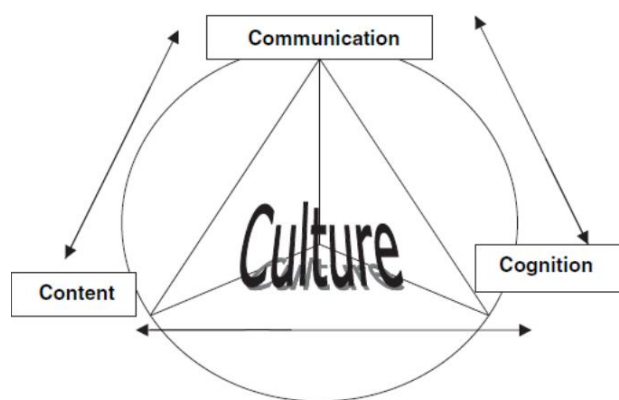


Figure 1. The 4Cs Framework (Coyle, 2007: 551)

2.1.1 Content and language learning in CLIL

The CLIL approach is student-centred and one of the roles of the teacher is to facilitate cognitive challenge. Coyle et al. (2010:29) claim that “effective content learning has to take account not only of the defined knowledge and skills within the curriculum or thematic plan, but also how to apply these through creative thinking, problem solving and cognitive challenge.” Thus, teachers should involve students in the lesson by using active-learning methods.

In a CLIL classroom, learners need to progress in learning the language they use and the content itself. In Coyle et al.’s (2010: 35) words “using language to learn is as important as learning to use language”. However, this could hinder the learning of content if learners do not have the language skills to understand and learn the content. This potential problem can be overcome by providing learners with strategies to deal with the learning of the content and the language through a second language. These strategies or

“temporary supporting structures that will assist learners to develop new understandings, new concepts and new abilities” (Hammond, 2001:12) are known as scaffolding (Mehisto, 2008). Therefore, CLIL teachers should plan language and contents anticipating what learners will need to acquire both the contents and the language to support them in the learning process, and CLIL materials should include “enhanced scaffolding and other learner support mechanisms to help students reach well beyond what they could do on their own” (Mehisto, 2012:17).

Coyle et al. (2010) proposed “The Language Triptych” (see Figure 2), a diagram that reveals how content and language objectives are interconnected. The “language of learning” (top vertex) is the language students need to access basic concepts and skills associated with the content subject. The “language for learning” (left vertex) is the language required to function in a foreign language context. The last type of language, the “language through learning” (right vertex), appears when learners participate in class, ask questions or simply new language comes up during the lesson. According to Coyle et al. (2010) both “language of” and “language for learning” should be planned, whereas “language through learning” is spontaneous.

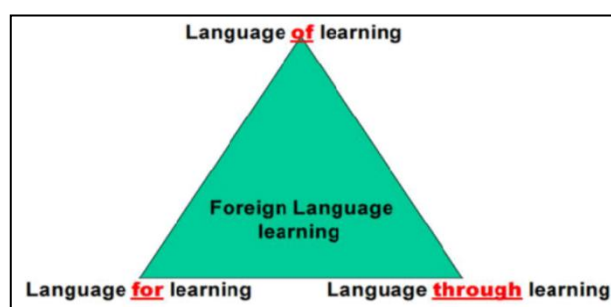


Figure 2. “The language Triptych” (Coyle et al. 2010: 60)

Another tool to observe language in CLIL contexts is the distinction between Basic Interpersonal Language (BICS), which refers to everyday language, and Cognitive Academic Language Proficiency (CALP), which implies more specific academic language that is needed in the classroom (Cummins, 1999). This dichotomy is thought to be a valuable legacy from Canadian immersion programs research (Cummins, 1984).

2.1.2. Cognitive Theory in CLIL

A typical problem of CLIL settings is related to learners’ information processing. So that a linguistic structure can be processed and thus become intake, learners need first to notice it (Schmidt, 2010). However, the capacity of the human brain for processing

information is limited; therefore, it may be challenging for students to focus their attention on both content and language so that they are processed concurrently.

In order to solve this problem, CLIL teachers and materials designers must take into account the distinction between LOTS and HOTS. Bloom (1956) proposed a taxonomy of educational objectives, later revised by Anderson and Krathwohl (2001), which comprises six levels of understanding (see Figure 3). The three lower levels describe Low Order Thinking Skills (LOTS) and include actions such as recalling or ordering information, identifying, labelling or defining, whereas Higher Order Thinking Skills (HOTS) refer to more cognitively demanding activities like hypothesising, reasoning, evaluating or creating.

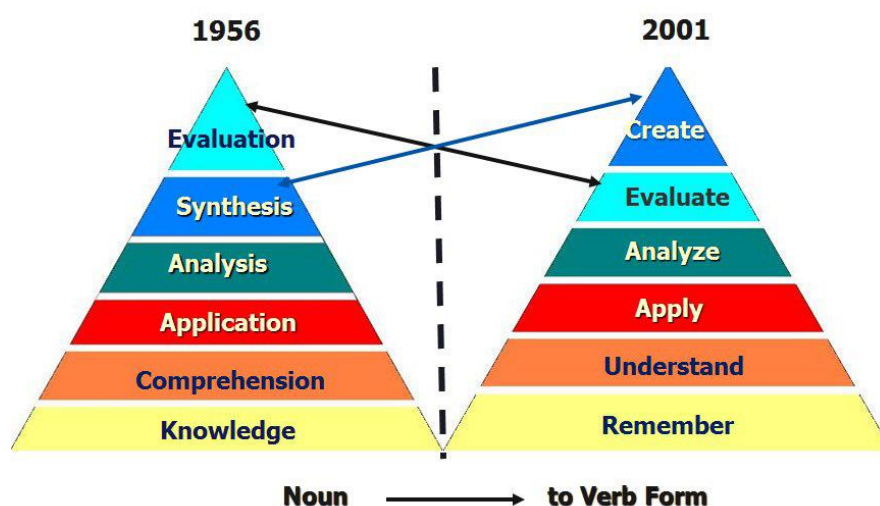


Figure 3: Bloom's (1956) taxonomy revised by Anderson and Krathwohl (2001)

CLIL teachers should reduce the cognitive load of the tasks to enable students to learn despite their processing limitations (Sweller, Van Merriënboer and Paas, 1998). So that can be achieved, learners should be required to develop LOTS in the initial stages to enable them to process language and content. Then, there should be a progression to HOTS at the end of the lessons since students are already familiar with the language they need. These activities that demand HOTS should be done in pairs or groups because students can achieve more “in collaboration with more capable peers” according to the “Zone of Proximal Development” (ZPD) Theory (Vygotsky, 1978:86). Finally, acquisition of content and language can also be scaffolded by using multimodal resources as the message can reach students through different points simultaneously (Kupetz, 2011).

These multimodal resources can come from Information and Communication Technologies (ICTs) and, as Comfort and Tierney (2007) suggest, ICTs can also foster learners' motivation providing images to support understanding of the text. In line with this, using videos in the CLIL classroom seems to be appropriate. As Tomalin (1991) asserts, they contribute significantly to language acquisition as they combine education with entertainment, being very motivating for young learners. Stoller (1993) adds that videos provide not only stimuli but also relevant background information. For Canning-Wilson (2000), the most important aspect about the use of videos is that they provide learners with visual aids that can help them to make predictions by activating their schemata.

Teachers might worry about the cost of the technology and the amount of time and skills required to effectively use it (Brinton, 2001). However, Youtube offers free and easy access to videos without requiring special skills (Snelson and Perkins, 2009). Consequently, some YouTube videos were selected to be exploited in the developed didactic proposal.

With all these considerations in mind, a CLIL proposal should meet different requirements that need to be considered for the design of the didactic units, activities and materials. These requirements are: student-centred methodologies where students play an active role, a communicative approach that fosters different language skills, scaffolding for both content and language and the development of cognitive skills.

2.2. The Communicative Approach and Task-Based Learning

The Communicative Approach (CA) started in the seventies as an alternative to more traditional approaches such as the Audiolingual Method. This traditional approach focused on the acquisition of grammar and vocabulary corresponding to the linguistic competence proposed by Chomsky (1965). Alternatively, the Communicative Approach emphasised that language teaching should develop the learners' competence to communicate in the L2, a set of skills and knowledge that allows speakers to be understood, which constitute the communicative competence (Hymes, 1972).

As stated by Lasagabaster and Sierra (2010: 370), this approach "is fundamental to all immersion programmes" as its objective is "to obtain effective communication". Similarly, all current language teaching methods originated from it due to its focus on communication (Cortina-Pérez and Andúgar, 2018), including both TBL and CLIL. In

the following subsections TBL will be presented as an approach and methodological principle for the Communicative Approach and as a methodological strategy in CLIL contexts.

2.2.1. TBL as approach and methodological principle for the Communicative Approach

Communicative language teaching (CLT) applies the perspective of the CA by acknowledging that communication and language are intrinsically linked and the aim of language teaching is the development of the communicative competence. As stated by Larsen-Freeman (2000), the most relevant CLT principle is that language is always used for a communicative purpose.

With the start of CLT, second language lessons started to incorporate real-like situations such as interviews or talk shows. Authentic materials played a vital role in this type of activities, since they allowed learners to encounter real-life items and, thus, recreate the environment where they could achieve real communication.

Task-Based Learning is generally regarded as one of the natural developments of CLT, as involving learners in the use of real language in class requires designing tasks in which they need to use the language on their own (Willis and Willis, 2007). Willis (1996: 23) defines *task* as an activity “where the target language is used by the learner for a communicative purpose (goal) in order to achieve an outcome”. In other words, in TBL language is a communicative tool learners use when they participate in tasks.

The main aim of TBL is the use of tasks for fostering second language acquisition. These tasks can vary from shopping, booking a hotel room or going to a doctor’s appointment, among others. Unlike more traditional methods, evaluation processes focus mainly on meaning and completing real-life tasks, rather than on grammar rules or accuracy. TBL fosters students’ active participation and requires that they perform tasks that are real-world like, so that they are meaningful to them.

Following Long (1985: 89), a task is:

A piece of work undertaken for oneself or for others, freely or for some reward. Thus examples of tasks include painting a fence, dressing a child, filling out a form, buying a pair of shoes...In other words, by ‘task’ is meant the hundred and one things people do in everyday life, at work, at play and in between.

The main characteristic of TBL is that learners need to learn and use the foreign language so that they can acquire it. In this regard, tasks provide learners with comprehensible input, essential for second language acquisition (Krashen, 2009), as

well as force them to produce output stretching their linguistic resources, which is also paramount in order to acquire a second language (Swain, 1985). However, this method also focuses on grammar when it facilitates communication and on language forms that appear in the context of the tasks.

In TBL, learners are engaged in motivating and meaningful activities that are provided in context so that they are relevant to them instead of following a coursebook that is not adapted to the students' context and does not meet their needs. In addition, it is also key to use a variety of different tasks for language learning as such variety of tasks gives positive results in the classroom (Ruso, 2007).

Willis (1996) proposed a framework that explains how TBL lessons should be developed. She suggested that, first, there should be a focus on meaning and, then, the focus should shift to form. Correspondingly, these TBL lessons should be divided into three stages: the pre-task, the task cycle and the post-task (see Figure 4).



Figure 4: Willis's (1996:34) TBLT framework

- Pre-Task

Activities at this stage should enable learners to do the task. In other words, they should activate their prior knowledge and prepare them for the vocabulary of the task. This can be accomplished by exposing students to the L2 and allow them to “notice particular features of the language, to draw conclusions from what they notice and to organize their view of language in the light of the conclusions they have drawn” (Willis and Willis, 1996:64).

- Task cycle or task

This stage is subdivided into other three: “task”, “planning” and “report”. The first one is the task itself. Next, there is a “planning” stage, in which learners prepare what they

will produce (orally or in written form) in the “report”. In this last stage, learners will present what they prepared in the task. Additionally, the teacher will provide them with feedback, if necessary, at this last stage, prioritising the use of implicit feedback.

- Post-task

Willis’ (1996) framework is completed with the post-task stage, which comprises activities that focus on language so that some specific features are made more salient, or just to provide learners with opportunities to practise them to foster their acquisition.

2.2.2. TBL as methodological strategy in CLIL contexts

According to Ellis (2009:242), the advantages of TBL are numerous. First, it is student-centred. Second, this approach offers the chance to learn in a natural way in the classroom. Third, students will be exposed to richer and more authentic input from a wide variety of sources in context. Finally, it fosters the development of the communicative competence without neglecting accuracy.

Another benefit of this approach is that it allows to cater for diversity since for the same task design, all learners can complete the task but with different levels of accuracy and complexity. The main goal is to complete the task and to be able to communicate, so there is scope for different levels of language.

One of the problems of implementing CLIL is the lack of suitable materials. As cited in Mäkiranta (2014:13-14), this is considered a disadvantage as teachers have to “devote time searching for materials that are suitable [...] and to elaborate learning activities on these materials” (Coonan, 2007:628). In other words, teachers often need to invest a considerable amount of time to design or adapt pre-existing materials.

As stated by Berton (2008:146), TBL is the perfect fit for the CLIL paradigm as “the understanding and assimilation of content matter is realised through the foreign language”. TBL and CLIL can be combined as they share some principles: both combine language and content learning, focusing primarily on meaning but also on form, and they also provide students with a good amount of meaningful exposure to the target language, among others. For Barbero (2012), this TBL structure is optimum for implementing CLIL, as students are encouraged to practise the content from the non-linguistic subject while they are using their own linguistic resources. This is so because tasks require that learners use and work on the contents by using the language on their own.

It should also be noted that tasks in CLIL should focus not only on the foreign language, but also on the contents that are provided by the non-linguistic subject. According to Llinares and Dalton-Puffer (2015:70), “it is important to understand the nature of tasks in CLIL classrooms in order to identify to what extent they also contribute to language use and learning while students are engaged in the expression and understanding of academic content”.

On the whole, having analysed the main characteristics of TBL and explored the main advantages of this teaching method, it can be concluded that TBL is an extremely useful and adequate methodology to implement CLIL. Thus, TBL and CLIL must, indeed, be combined to promote content and language learning in bilingual classrooms. These two methodologies will be, therefore, integrated to develop the didactic proposal presented in this Master’s dissertation.

3. CURRICULAR FRAMEWORK

In this section, the Spanish and Aragonese curricular legislation for Primary Education will be analysed. Specifically, the current order that establishes the teaching of English and CLIL in Aragon.

In Spain, since the “Ley General de Educación de 1970” (LGE) the learning of a foreign language from an early stage has been promoted. This promotion was highly reinforced when the “Ley Orgánica de Educación de 2006” (LOE) was implemented because bilingual programs increased. This law highlights the use of a second language as a priority in education as a consequence of globalisation and according to the requirements established by the European Union and its desire to foster plurilingualism. The current law of Education, “Ley Orgánica para la Mejora de la Calidad Educativa” (LOMCE) in 2013 continues this trajectory of fostering plurilingualism, technology and communication. This latter law incorporated some measures to teaching foreign languages consisting in prioritising oral comprehension and expression of the second language, increasing the hours of foreign language, implementing bilingual programmes and a methodological shift which focused on communicative skills and the use of ICTs.

Since the proposal that will be developed within this dissertation is contextualised in an Aragonese state school, the Aragonese legislation for Primary Education will be evaluated. In Aragon, the Order of 16th June 2014 regulates the curriculum and the Order of 21st December 2015 regulates the assessment in Primary Education in Aragon.

As for bilingual programs in this area, the Order of 14th February 2013 regulated a Comprehensive Program of Bilingualism in Foreign Languages in Aragon called PIBLEA, which has been implemented from the 2013/2014 academic year until the 2020/2021 academic year. However, in 2018, following the Common European Framework of Reference for Languages (CEFR), Aragon published the Order ECD/823/2018 of 18th May, which regulates the BRIT-Aragón Model from an inclusive approach. This latter order will be fully implemented in the 2021/2022 academic year for all public centres that follow a bilingual program in this autonomous community. Consequently, all the information for the curricular framework of this dissertation will be extracted from that order.

Regarding the methodologies chosen to develop the didactic proposal, Communicative Language Teaching, Task Based Learning and CLIL, some explicit references to them can be found in the aforementioned order:

La innovación educativa, como línea prioritaria en educación, se extiende al ámbito de la competencia comunicativa y, en particular, a la competencia lingüística en lenguas extranjeras de nuestro alumnado. Por este motivo, la mejora en la adquisición de competencias en lengua extranjera para el fomento y en el uso de la comunicación oral, unido al empleo de las metodologías activas en el aula y a un compromiso social para todo el alumnado de nuestras aulas, son estrategias que deben estar presentes a lo largo de todo el proceso educativo. (Order ECD/823/2018 of 18th May, p. 16284).

This order emphasizes the development of the communicative competence in a foreign language and mentions that it follows the CEFR, which shares the communicative approach principles describing “language learning outcomes” in terms of “language use” (Council of Europe, 2020:27-31).

Concerning TBL, it should be mentioned that there are not explicit references to the use of this methodology. However, it can be found that some TBL principles are explicitly described as fostering the use of authentic materials in the classroom: “Preferentemente se usarán materiales en versión original en la lengua extranjera” (Order ECD/823/2018 of 18th May, p. 16287). In addition, the CEFR encourages to base courses and curricula on “real-world communicative needs, organised around real-life tasks” (Council of Europe, 2020:28).

Finally, numerous references can be found in connection to CLIL as the Brit-Aragón Model is based on this approach: “La metodología empleada en el aula deberá considerar el Aprendizaje Integrado de Contenidos y Lenguas Extranjeras” (Order ECD/823/2018 of 18th May, p. 16286).

This Master's dissertation aims to foster the development of the communicative competence and the key competences outlined in the Aragonese curriculum for Primary Education through a CLIL didactic proposal for the class of Year 4 of Primary Education, as it will be further discussed in the subsequent sections.

4. CLIL TEXTBOOK ANALYSIS

As stated in the introduction of this dissertation, the main goal is to design a proposal for a didactic unit that follows CLIL, CLT and TBL principles. Once the theoretical and curricular frameworks have been reviewed, the textbook students use for the Natural Science area will be analysed. I will first explain the procedure and tools used to analyse the chosen textbook. Subsequently, I will evaluate the textbook applying those tools to check its adequacy as well as its possible limitations.

4.1. Procedure and tools

In order to obtain reliable data about the quality of CLIL lessons students receive, I analysed two modules of the Natural Science textbook of 4th grade from Oxford Education. The selected modules to be evaluated are “Living things” and “Our bodies and health” (see Appendix 1). For this analysis, I decided to use a checklist specifically designed for this purpose. This tool will allow to assess the quality of the CLIL materials provided by the textbook and the didactic proposal that will be then developed.

A checklist was selected as the most suitable tool for this purpose. This is so because checklists are useful instruments to select, adapt and evaluate textbooks for teachers (Sheldon, 1988; Mac Grath, 2006; in López Medina, 2016). In addition, these instruments can be tailored by adding some more criteria or ignoring the ones that are not suitable for the context where they will be used (*ibidem*).

The checklist used is based on López Medina's (2016: 172-173) “Tentative checklist for CLIL textbooks” which comprises 54 criteria divided in seven sections: General, Content, Cognition, Communication, Culture, Language and Integration. In this sense, the designed checklist will incorporate up to three criteria for each of the sections considered to be the best fit for the purpose of this project except for the Integration section. This last main section was removed as it is considered (as its name indicates), that it refers to the integration of all other sections, which will be discussed in the

analysis. Regarding the number of criteria selected, only two or three per section were included in the checklist, so that this tool was more operative. This selection was done bearing in mind that those criteria could related to the specific methodology that has been followed for the proposal, that is TBL.

This checklist will include those chosen criteria, the reason why they were selected and an explanation of how these criteria are met or not in the analysed CLIL materials (see Chart 1). This checklist will be used to analyse both the selected textbook and my CLIL learning proposal.

BLOCK	RELEVANT CRITERIA	REASON	BRIEF DESCRIPTION OF THE CLIL MATERIALS
I. GENERAL	A. Structure 3. It includes self-evaluation at the end of the modules	It is essential to make students reflect on their own learning. It relates to the learning to learn key competence.	
	B. Supplementary materials 12. It contains appropriate pictures, diagrams, tables ...	Special attention should be given to the use of visuals to facilitate understanding by making rich input comprehensible to the learners. For Krashen (2009), exposure to comprehensible input in the L2 is essential to acquire a language. This input can be made comprehensible through visuals, diagrams, tables, etc.	
II. CONTENT	21. It provides support to simplify content (scaffolding)	Scaffolding is important as it enables learners to assimilate and learn the new content beyond what they could do on their own. This is based on Vygotsky's (1978) ZPD.	
	23. The activities suggested for practising the content are varied	According to Ruso (2007), using variety of tasks gives positive results in the classroom and, for Helgesen (2003), it increases the students' interest in the listening activities. In addition, learners of this age have a short attention span. Therefore, different activities will generate more interest and help them focus their attention.	
III. COGNITION	29. It caters the needs of different learning styles	Not all people learn in the same way. All students are different; therefore, it is essential to cater for different learning styles so that all students can learn the contents.	
	30. Activities activate previous knowledge	Activating prior knowledge is essential to foster meaningful learning. Learners can show what they already know so that they build their learning from that. In addition, this activation facilitates students' understanding.	
IV. COMMUNICATION	34. It provides support to simplify language (scaffolding)	Scaffolding plays an important role in CLIL. Students need to understand most of the information that is provided to be able to understand the texts.	
	38. Activities are balanced between individual response, pair work and group work	Different groupings allow different social interactions. Individual activities allow students to learn at their own pace and be aware of what they know. Pair and group activities allow students to share opinions and ideas as well as take advantage of	

		every member's strength. This is also positive to foster the development of the social competence.	
V. CULTURE	39. It relates content to the learners' culture and environment	It is important that learners can apply what they learn in class to their close environment. In addition, connections should be made between what is done in class and the real world.	
	43. The content is free from stereotypical images	Show an ethic and no discriminative attitude is primordial. Teachers should be able to assess the resources at their disposal to ensure the value of cultural diversity.	
VI. LANGUAGE	46. The language is authentic	Authentic materials allow students to be exposed to contextualised and real-life input. As stated by Mejia and O'Connor (1994), the best materials used for teaching comprise authentic samples of speech even for very low-level learners.	
	47. It gives guidance in the presentation of vocabulary	Presenting the vocabulary is crucial in CLIL as students need to develop both BICS and CALP. In order to acquire a language, students first need to understand the message (Krashen, 2009). Vocabulary plays an important role in understanding both oral and written texts. Therefore, introducing it properly seems vital.	
	50. It gives practice in guided composition in early stages	Production is more challenging than comprehension, especially in lower levels. It is important to provide learners with opportunities to practise and develop their writing skills. This practice should be guided so that they do not feel overwhelmed and can do it in a rather autonomous way.	

Chart 1. Checklist for evaluating materials adapted from López Medina (2016)

4.2. Results of our textbook material analysis

To analyse the textbook modules, I applied the checklist I designed for that purpose to evaluate the quality of this CLIL materials and then I interpreted all the data collected with this instrument.

Once the designed checklist to evaluate the textbook has been applied (see Appendix 2), all data extracted has been revised to critically analyse the chosen CLIL textbook. As it has been described in the previous section, the checklist includes criteria divided into seven main sections: general, content, cognition, communication, culture and language.

Regarding the first section, “general”, the data shows that the textbook contains self-assessment activities so that students check whether they have acquired the contents of the modules. However, there is a lack of assessment for learning that makes them reflect on their own learning. It should be pointed out that this assessment focuses on what students know rather than what students can do, which would be more consonant with the competences they have to acquire. As for supplementary materials, they seem enough and varied to facilitate students' comprehension. Most tasks include

paralinguistic and extralinguistic cues for understanding, this usually being images and diagrams.

In these evaluated modules, content, cognition, communication and culture, corresponding to CLIL 4Cs Framework proposed by Coyle et al. (2010:41), are covered. However, not all of them are developed to the same extent. As for content, it can be observed that the textbook modules include activities that are varied enough to practice the content such as fill-in-the-gaps, drawing or true or false activities. This is crucial as using such variety of tasks gives positive results in the classroom (Ruso, 2007) and increases students' interest (Helgesen, 2003). Content scaffolding is also provided by using different techniques to simplify content mainly visuals, which are paramount to enable students to reach beyond what they would be able to achieve alone. However, most of the content is not relevant to the learners' experiences as it is not related to their interests.

Considering cognition, the textbook offers activities to activate prior knowledge mainly by general questions to make students think about the contents that are going to be developed. As for catering for the needs of different learning styles, this module seems limited as it includes visuals but disregards other learning styles that are only present in the projects at the end of the modules where students work in teams and do more hands-on-learning activities.

With regard to communication, more limitations are encountered in the evaluated textbook modules. Some support is provided to simplify language especially through pictures and simple structures such as the imperative form. However, learners might find it difficult to use the language they need to do the activities and they may need more scaffolding in this regard. In addition, it can be observed that the activities are predominantly individual, finding a lack of pair but especially group work activities. The latter are only present in the final project of the modules.

In CLIL, culture connects the learning of language and content with the learners' culture as well as the target language culture. Therefore, contents learnt in the CLIL classroom should be related to the learners' culture and environment. In line with this, one of the evaluated modules displays settings and flora and fauna that are close to the students' context. However, none of the activities is connected to the learners' environment nor provides them with a context to learn the contents.

Language is another essential feature in CLIL, as learning a content subject through a second language requires that students use and understand that L2, English in this case, to be able to learn the contents and do the tasks in the target language. In the evaluated modules, new vocabulary items are often made salient and they are also associated with pictures to help students understand and assimilate the new lexis. However, the language found in these modules is not considered authentic as it has been specifically produced for language teaching purposes (Nunan, 1989). As stated by Mejia and O'Connor (1994), the best materials used for teaching comprise authentic samples of speech even for very low-level learners. In this respect, teachers should provide learners with input which is authentic or make it as realistic as possible by designing 'authentic' tasks regardless the students' level of proficiency so that they can encounter target language in real contexts.

Most activities of the modules focus on written comprehension and production. Composition is quite guided in early stages although it focuses on the writing at the word or sentence level and not so much on the text level.

In light of this analysis, it can be observed that the assessed modules integrate all CLIL features and provide learners with varied activities so that they can learn the language and the content with attractive pictures and diagrams that facilitate learning. However, some limitations have also been detected. In these modules, not all language skills are developed to the same extent. Speaking and listening are overlooked as most activities focus on reading or writing. In line with this, there is a lack of language scaffolding as it can be observed that learners are not given enough guidance for production activities. Finally, another weakness found in these modules is related to a lack of authentic texts. This is so because there are no pieces of authentic texts (oral nor written) in the analysed modules.

In conclusion, this textbook seems appropriate to implement CLIL but the teacher should add more communicative activities, some pieces of authentic texts and more adaptations to the students' own context.

5. DIDACTIC PROPOSAL

As stated in the introduction, the main goal of this dissertation is to design a proposal for a didactic unit that follows CLIL, CLT and TBL principles. Once the theoretical and curricular frameworks have been reviewed and the textbook analysed, I will design a

CLIL and TBL integrated didactic unit based on the results of that analysis, following the principles outlined in the theoretical framework and trying to overcome the limitations that had been observed in the analysed textbook.

5.1 Justification

This didactic unit is aimed at Year 4 of Primary Education and it is divided in six sessions (four sessions of one hour and two sessions of 45 minutes) combining contents from the areas of Natural Science, being English the language used for the teaching and learning processes.

This topic, living beings, came up at an assembly in class. Every month, students gather in an assembly and discuss what they would like to learn next. That is the reason why a unit of work about living beings and ecosystems was planned, so that students can learn more about them. The main goal of the developed unit is that students expand their cognitive and communicative skills and learn the selected contents from the Natural Science area using English as communicative tool to do the proposed tasks.

The methodology followed during this integrated unit will provide learners with opportunities to use the language to perform the tasks. In addition, this unit fosters participation and communication and provides students with different sources of input (teacher talk, students talk and videos) because the activities designed give them a context and a purpose to understand the contents and use the L2.

Through this unit of work, we intend to accomplish the aims proposed by the curriculum for both the Natural Science and the English areas and the specific objectives of this unit. This didactic unit adjusts to the legislation because key competences are targeted as well as the objectives of the aforementioned areas within the CLIL approach.

5.2 Context

The CLIL didactic unit is contextualised in a state bilingual school in Zaragoza. This centre offers infant and primary education. In this centre, there is a computer room, which must be booked in advance and every class counts with a white board and a computer and projector.

The didactic proposal that is going to be presented in this dissertation is an integrated didactic unit about living beings within the Natural Science and English areas aimed at

Year 4 of Primary Education. The Natural Science area is taught in two sessions of 45 minutes per week, on Mondays and Wednesdays and the English area in three sessions of 45 min on Mondays, Wednesdays and Fridays.

In the 2019-2020 academic year, the centre joined the new BRIT-Aragón educational model, which means that at least 35% of the teaching hours will be taught in English. It will be implemented gradually starting with Infant Year 1.

The targeted class is composed by 24 students who are 9 or 10 years old, except for one repeating student, who is 11. There are no children with curricular adaptations but they are very heterogenous regarding their English and their overall academic level. In addition, there are some conflicts about classroom management often. In terms of the class setting, the students are distributed in groups of six (see Figure 5) so they can interact and work in groups without reorganising furniture.

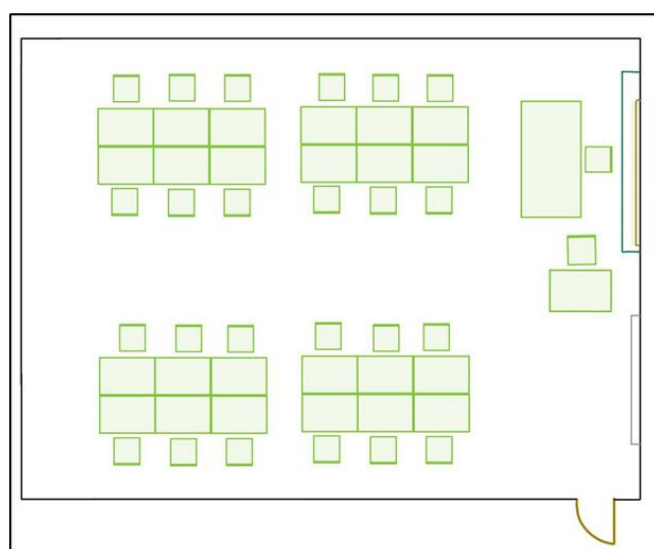


Figure 5. Classroom of Year 4 A students

In my own experience at this school as part of my teacher placement, I observed that although the teacher used different strategies when giving explanations and instructions, most learners had problems understanding simple instructions in English. In my personal opinion, that could be due to the fact that students are given instructions in their first language often and, generally, they do not make the effort to understand instructions in English because if they wait long enough, they receive the translation into Spanish.

Students in the classroom receive input mainly from the textbook and from the teacher and they do not generally perform tasks not included in the textbook materials. For this

reason, it was considered to be appropriate to analyse the input they receive to foster their comprehension and productive skills by analysing the activities and contents provided by the textbook, as this is the main source of input received in the second language.

5.3 Methodology

The didactic proposal presented in this dissertation has been developed according to the principles of CLIL and TBL studied in the theoretical framework.

The sequence of activities follows TBL, all sessions are divided into pre-task, task and post task except for the final task which is an oral presentation performed in groups. In the sessions, BICS and CALP (Cummins, 1999) are targeted. Students are given opportunities to develop both specific vocabulary related to the topic (CALP), introduced by the teacher or the materials, and everyday language (BICS), used for classroom management as well as for the tasks as students work in groups and they need to convey information and negotiate meaning.

In the pre-task, the main goal is to activate students' previous knowledge and schemata and prepare them for the tasks. The tasks are developed around authentic texts (oral texts or videos) that provide learners with exposure to authentic L2 input. This L2 input is made comprehensible by using visuals and contextual cues to facilitate understanding. This is essential for second language acquisition (Krashen, 2009) and this facilitation of language is also called "scaffolding" (Mehisto, 2008). Through the tasks, students are also "forced" to produce comprehensible output which is also paramount in order to acquire a second language (Swain, 1985). In all sessions, students develop products as a result of the tasks as they have to produce oral and written language.

In the pre-tasks, the focus is on lower order thinking skills. Learners are asked to recall what they already know, the language they are going to need in order to complete later more complex tasks. Although in some activities the attention is focused on LOTS, tasks are proposed to foster students' development of high order thinking skills such as reasoning or evaluating information, corresponding to the summit of Bloom's taxonomy (1956). Therefore, there is a progression from LOTS to HOTS along this didactic unit.

Content, cognition, communication and culture corresponding to CLIL 4Cs Framework proposed by Coyle et al. (2010:41) are integrated. As it can be observed, TBL and CLIL are the chosen methodologies to develop the designed didactic proposal where students

learn the content and the language simultaneously, while performing tasks that include different sources of input (teacher's talk, student's talk, written texts and videos) and meaningful interaction among their peers.

5.4. Objectives

The Royal Decree 126/2014 establishes the learning objectives for Primary Education. This unit will contribute to achieve some general objectives from the areas of Natural Science and English. They have been translated into English and presented below (see Table 1).

Table 1

Natural Science and English general objectives. [My own translation].

Natural Science	English
Obj.CN1. Know the fundamental aspects of Natural Sciences. Obj.CN2. Develop habits of individual and teamwork, effort and responsibility in studying, as well as attitudes of self-confidence, solidarity, critical sense, personal initiative, curiosity, interest and creativity in learning, and an entrepreneurial spirit. Obj.CN8. Identify, pose and resolve questions and problems related to significant elements of the socio-environmental environment, using information search and processing strategies, formulating conjectures, putting them to the test, exploring alternative solutions, communication and exposure to others and reflection about the learning process itself. Obj.CN10. Use Information and Communication Technologies to obtain information and as an instrument to learn and share knowledge, valuing the contribution they can have in improving the living conditions of all people, developing a critical spirit in the face of the messages they receive and elaborate.	ObjIN.1. Understand expressions and frequent vocabulary related to close situations that concern students, the family, their usual environment, ... ObjIN.6. Ask for and give simple information on familiar topics and activities. ObjIN.10. Write notes and simple and short messages: email, postcard, invitation, congratulation, ... ObjIN.13. Use simple syntactic structures correctly in short expressions, in order to communicate information related to familiar situations in their daily life. ObjIN.14. Answer questions with simple and familiar content. ObjIN.15. Understand the topic of a simple conversation to participate in it on their own initiative and using structures in a neutral or informal register. ObjIN.16. Match groups of words with simple connectors such as “and”, “or”, “y”, “but” or “because”.

Natural Science specific objectives

The students at the end of the unit will be able to (see the learning outcomes with their corresponding standards in Appendix 2):

- Identify ecosystems and its elements using the adequate vocabulary.
- Write a short description of an ecosystem using a self-assessment checklist.
- Create a food chain describing the trophic relationships between living beings in it.
- Do a PowerPoint presentation about an ecosystem, its elements and how they are related in groups and using ICT.
- Perform an oral presentation about an ecosystem in groups in English using ICT.
- Express what they think using expressions such as “I think/agree”.
- Reflect on their learning and explain what they know, what they will know and what they learnt by using a KWL.
- Get the general picture of oral texts (videos) about ecosystems and food chains.
- Extract and classify information about ecosystems and food chains using a mindmaps, charts or graphic organizers.

Language specific objectives

The students at the end of the unit will be able to (see the learning outcomes with their corresponding standards in Appendix 2):

- Get the general picture of oral texts (videos) about ecosystems and food chains.
- Extract and classify information about ecosystems and food chains using a mindmaps, charts or graphic organizers.
- Use vocabulary related to animals and their body parts to describe animals orally to a partner.
- Answer yes or no to yes-no questions such as “Do you have...?” and “Are you...?”
- Use the structures “It is...” and “It has...” to describe an animal orally to a partner.
- Write a short description of an ecosystem using a self-assessment checklist.
- Perform an oral presentation about an ecosystem in groups in English using ICT.

5.5. Key competences

As stated in the Order ECD/65/2015, the European Parliament and the Council urge the Member States to develop the supply of “key competences”. These are defined as “those that all people need for their personal fulfilment and development, as well as for active citizenship, social inclusion and employment” (p. 6986) [My own translation]. Eight key competences are identified as crucial for the development of the European societies. These eight competences are then reflected into seven in the Spanish Education System, namely, “Linguistic Competence”, “Social and Civic Competence”, “Digital Competence”, “Mathematical Competence and Basic Competences in Science and Technology”, “Learning to Learn”, “Cultural Awareness and Expression” and “Sense of Initiative and Entrepreneurship”. This didactic unit will contribute to develop some of the already mentioned key competences (see Table 2).

Table 2

The didactic unit contribution to key competences

Contribution to key competences
• “Linguistic Competence” This competence is connected to the development of the communicative skills which is one of the main aims of this specific didactic proposal. In this unit, students will need to use the language to learn the contents as well as to communicate and do the tasks. These tasks are sequenced to help students use and learn the language in a natural way since they will participate in communicative tasks that require the use of real language in context. This unit will help learners develop all the skills described in the CEFR: reception, production, interaction and mediation in both oral and written forms. • “Social and civic competence” Through this unit, students will be working in different groupings where they will take active roles. They will have to express their opinions as well as respect their classmates’ ones. In addition, in some sessions they will have to work in a team and be able to organise themselves in order to finish the tasks.

- “Mathematical competence and basic competences in science and technology”

Students will learn about ecosystems primarily through induction which is a basic competence in the science field. This consists in extracting some features from examples of ecosystems to draw conclusions about ecosystems in general.

- “Learning to learn competence”

This unit contributes to acquiring this competence as learning a language requires students to organise their own learning and information effectively. For example, they will need to use different strategies to facilitate comprehension and production despite their possible linguistic limitations. In this process, the teacher plays a key role to target these strategies in class.

- “Digital competence”

Learners will need to use ICTs to search about ecosystems and retrieve information that they will use to write descriptions of ecosystems or food chains. They will watch different videos and will prepare a PowerPoint presentation in groups using the ICTs in the classroom.

5.6. Contents

As it has been exposed in the curricular framework section, the Aragonese curriculum is the one that applies for the context of this dissertation; therefore, the contents and objectives will be extracted from the Order 16th June of 2014 and its Annex 2 for the areas of Natural Science and English.

The contents are organised around different blocks for each of the areas present in the curriculum and divided into the six years of primary education. As the designed unit is targeted at a group of fourth grade, all the contents will be extracted from this year.

With regard to the Natural Sciences area, this didactic proposal covers contents from block 3, “Los seres vivos” (living beings), and the four blocks of content from the English area are covered: “Comprensión de Textos Orales”, “Producción de Textos Orales: Expresión e Interacción”, “Comprensión de Textos Escritos” and “Producción de Textos Escritos: Expresión e Interacción.” as all four linguistic skills (listening, speaking, reading and writing) are developed through the unit.

5.7. Sequence of activities

Session 1 (60 min)	
Learning outcomes: At the end of this session, the learners will be able to: - Identify and enumerate different characteristics of animals. - Use vocabulary related to animals and their body parts to describe animals orally to a partner. - Use yes or no to yes-no questions such as “Do you have...?” and “Are you...?” - Use the structures “It is...” and “It has...” to describe an animal orally to a partner.	
Materials: - Introductory PowerPoint slides (see Appendix 4) - Target evaluation chart for the unit (see Appendix 5) - Pictures of animals and their corresponding descriptions (see Appendix 6) - Cheat sheet for animal body parts (see Appendix 7) published in the following page: https://www.thinglink.com/scene/484213976855478272 - Cheat sheet for asking questions 1 (see Appendix 8) - Students’ handout 1 (see Appendix 9) - Cheat sheet for asking questions 2 (see Appendix 10)	
Grouping: pair work and whole group	
Before the tasks Timing: 10 min Aims: To introduce the unit. To activate prior knowledge.	The teacher will ask learners what they know about the living beings and will project a slide (See Appendix 4) including some examples of living beings to activate their previous knowledge on the topic. Then, they are given a target evaluation chart so that they know what they are expected to learn by the end of the unit (see Appendix 5). - <i>Today we are going to talk about kingdoms. First of all, do you know how many kingdoms are there? Can you give me an example?</i> - <i>Can anyone name types of kingdoms?</i> <i>I prepared a slide with different living beings, maybe that will give you some ideas.</i> - <i>As we usually do, write the new words that we have learned in this unit at the end of your notebooks.</i>
Pre-task Timing: 15 min Aims: To activate prior knowledge. To prepare students for the vocabulary of the task.	The teacher will bring a set of pictures of different animals and short descriptions of those animals (see Appendix 6) and will put them in a hat upside down. Then, each student will take one piece of paper being a photo or a description randomly without showing it to anyone else. Next, all learners (individually) will have to walk around class asking questions to their peers until they find their matching picture/description. At the end of the activity, they will be grouped in pairs. In this activity, some cheat sheets (see Appendix 7 and 8) will be given to the students with the structures (Does it have...? Is it ...?) and the vocabulary of animals (elephant, crocodile, rhino, etc.) and parts of the animals’ bodies (trump, ears, nose, claws, legs, etc.) they will need. In this pre-task, they will already know some items of vocabulary, whereas others will be new to them, so they will revise vocabulary

	they know and learn new words as well. Students will write down in their notebooks the new lexis. - <i>Everyone will take one piece of paper from this hat.</i> - <i>Don't show it to anyone else!</i> - <i>With the help of your cheat sheets, ask around class to find your matching picture or description!</i>
Task Timing: 20 min Aims: To describe an animal to a partner. To negotiate meaning.	The teacher will provide students with a handout (see Appendix 9) and will also project it on the board. Students will be grouped in pairs (created in the pre-task) and will have to draw an imaginary and secret animal on their own without showing it to their partner. Then, they will take turns to describe their animal so that their partner can draw it with their description. Students will be able to ask and answer questions to negotiate meaning. They will use the language cheat sheet from the pre-task (see Appendix 8) and an additional one with two wh- questions and their corresponding answers (see Appendix 10). The steps to develop this task are the following: 1. Draw an imaginary animal. You can decide how many paws it will have; if it has claws or not, how many eyes, etc. 2. Now work with a friend. Describe your imaginary animal to her/him (do not show her/him your picture! It is a secret animal!) 3. Your friend will now describe his or her animal. Try to draw it without looking at the picture. - <i>Follow the steps in your handouts.</i> - <i>Remember! It's a secret animal.</i> - <i>Describe it to your partners without showing it.</i>
Post-task Timing: 15 min Aims: To orally report what they drew in the task and describe it to another classmate.	In this stage, students will switch partners. They will have to describe their partner's animal to their face partner orally. For that matter, they can use the cheat sheets that already have from the previous activities. Afterwards, they will share their drawings within their groups of six (as displayed in the usual classroom setting) and decide which secret animal they prefer and invent a name for it. - <i>Now, you have to describe your partner's secret animal to your face partner.</i> - <i>When you finish, decide in your groups which imaginary animal is your favourite.</i>

Session 2 (60 min)

Learning outcomes:

At the end of this session, the learners will be able to:

- Get the general picture of an oral text (video) about ecosystems
- Extract and classify specific information from a video about ecosystems using mindmaps
- Express what they think using expressions such as "I think/agree" to fill in a KWL chart.

Materials:

- Students' handout 2.1 (see Appendix 11)
- Blank mindmaps for the video "What is an ecosystem?" (see Appendix 12)

- Video transcription “What is an ecosystem?” (see Appendix 13) - Students’ handout 2.2 (see Appendix 14) - The video will be played from the 0:32 to 4:14 and can be found in the following link: https://www.youtube.com/watch?v=7cRgK0qG00E&ab_channel=TheWildReport	
Grouping: pair work and whole group	
Before the tasks <u>Timing:</u> 5 min <u>Aims:</u> To activate previous knowledge. To get students familiarised with vocabulary.	The teacher will ask learners what they know about ecosystems and she will provide them with the adequate words when needed. - <i>Today we are going to talk about ecosystems.</i> - <i>Can anyone name types of ecosystems they know? ”</i> - <i>What living beings can we find there?</i> - <i>As we usually do, write the new words that we have learnt in your notebook.</i>
Pre-task <u>Timing:</u> 15 min <u>Aims:</u> To activate prior knowledge. To prepare students for the vocabulary of the task.	We will use the collaborative technique <i>word game</i> . The teacher will write some key terms on the blackboard for students to try to guess the definition of the following concepts in pairs: ecosystem, living things, non-living things, terrestrial ecosystem, aquatic ecosystem, flora, fauna. She will also give them a handout (see Appendix 11). First, they will do it within their pairs, and finally one of each pair will present it to the class. The teacher will focus on form and will correct students’ mistakes, prioritising the use of implicit feedback (i.e., recasts). Then, the teacher will ask them to talk to their peers and tell them about their favourite ecosystems. - <i>Now, we will do a word game activity. I’m going to write some words on the blackboard and you have to guess the definition in pairs.</i> - <i>You can use this worksheet to help you.</i> - <i>Do you have a favourite ecosystem? Which one? Tell your shoulder partner.</i>
Task <u>Timing:</u> 20 min <u>Aims:</u> To watch a video to get the general picture To listen to a video to extract specific information	In the task, students will listen to a video about ecosystems and they will be asked to do a fill some blank mindmaps (see Appendix 12) while they listen. Then, they will compare with their mates and complete the information if necessary. Then, they will check with the transcription of the video (see Appendix 13) and complete or correct the information in the mindmap if necessary. Then the mindmaps will be projected on the whiteboard and will be corrected. The teacher will clarify doubts regarding language and content. - <i>We’ll watch a video about ecosystems.</i> - <i>I want you to fill in the mindmaps while you listen.</i> - <i>Now, you can compare with your partners. Complete it if necessary.</i>
Post-task <u>Timing:</u> 20 min <u>Aims:</u> To reflect on the	The teacher will propose some statements regarding the contents worked on during the lesson. Students will have to answer them in pairs using the <i>Think, pair, share</i> technique. They will be given a worksheet (see Appendix 14) that will be

key concepts dealt with during the lesson. To discuss and judge whether some statements about ecosystems are true or false.	used to take notes during the discussions with their partners. Students will have to first think about the statement individually, each student takes notes on his/her answers in the column “What I think”, as well as his/her partner's answers in the column “What my partner thinks”, then compare ideas with their partner and finally decide what is going to be shared with the rest of the class in the column “What we will share”. Fast finishers could develop research about the last statement “Human intervention (deforestation, pollution...) can be very negative for ecosystems.” Finally, students will share to the class the conclusions of this activity and the teacher will solve possible doubts regarding the topic. - <i>You are going to discuss with your partners about some statements. Remember to use the expressions we have been working on to express what you think like “I think this is true because...” or “I agree with you”, etc.</i> - <i>In the left column we have to write what I think, in the second what your partner thinks and in the last one what you will share to the class.</i>
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Session 3 (60 min)	
Learning outcomes: At the end of this session, the learners will be able to: - Identify ecosystems and its elements using the adequate vocabulary. - Get the general picture of an oral text (video) about ecosystems. - Look for specific information while listening to a video about ecosystems using a graphic organizer. - Write a short description of an ecosystem using a self-assessment checklist.	
Materials: - The video can be found using the following link: https://www.youtube.com/watch?v=x7jwJ2bI9Lg&ab_channel=HarmonySquare - Extracts from the video divided in groups (see Appendix 15) - Graphic organizer to fill in while watching the video “Habitats for kids” (see Appendix 16) - Self-assessment checklist (see Appendix 17)	
Grouping: pair work, small group and whole group	
Before the tasks <u>Timing:</u> 5 min To activate previous knowledge.	We will revise the contents of the previous session and focus on the physical factors of ecosystems. - <i>Is water important in an ecosystem? Why?</i> - <i>Does the climate have an impact on influence ecosystems? How?</i>
Pre-task <u>Timing:</u> 15 min <u>Aims:</u> To activate prior knowledge To prepare students for the vocabulary of the task.	First, we will do a brainstorming activity about the Arctic. Learners will have to say words related to this habitat and the teacher will write them in the white board. For example, words like “cold”, “polar bears”, “frozen water” or “north pole” are likely to come up. Then, learners will be asked to group these words into different sections, like “location”, “flora”, “climate” or “fun facts”. If necessary, the teacher will ask them questions related to the words that came up, such as “Where is it?”,

To generate and organize ideas for a (written) description. To provide students with an example of description done together.	“What plants are there”, “What’s the climate like in the Arctic?” or “Is there something else interesting about this habitat?” to facilitate this process and will write these categories (“location”, “flora”, “fauna”, “climate” and “fun facts”) in the white board. Then, learners will be asked to use the words in the white board to form sentences. Last, they will group those sentences into paragraphs. - <i>First, we’ll describe the Arctic together.</i> - <i>Please, raise your hand to say words related to this habitat.</i> - <i>Are these words related to the climate? Ok, then, we write them below “CLIMATE” (in the white board).</i> - <i>Polar bears and penguins are associated to the “CLIMATE”? No, they are associated to the “FAUNA”.</i>
Task <u>Timing:</u> 20 min <u>Aims:</u> To present what they have learned about an ecosystem. To extract and organize information to write a description using a graphic organizer.	Students will be divided in groups of three students and one group of four (half the group as displayed in the class setting). The teacher will provide each group of three with a different video extract (see Appendix 15). corresponding to a particular ecosystem. These extracts contain data about the ecosystem and learners need to obtain relevant information about their habitat. To facilitate this process, they will be given a graphic organizer to collect all that information (See Appendix 16). - <i>In your groups, you will watch a short extract of video about an ecosystem.</i> - <i>Fill in the graphic organizer with the information provided in the video.</i>
Post-task <u>Timing:</u> 20 min <u>Aims:</u> To organize ideas to form appropriate sentences. To organize sentences to write a short text using a self-assessment checklist.	Each group will have to write sentences using the information collected in their graphic organizers. Then, they will have to organize those sentences into paragraphs to write a description following the same process as in the pre-task. They will be given a self-assessment checklist (see Appendix 17) to check if they included everything and revise their work. - <i>With the information obtained in your graphic organizer, write some sentences.</i> - <i>Then, group them into paragraphs to create a text.</i> - <i>Remember to revise it using your self-assessment checklist.</i>

Session 4 (60 min)

Learning outcomes:

At the end of this session, the learners will be able to:

- Get the general picture of an oral text (video) about food chains.
- Classify information while listening to a video about food chains using a chart.
- Create a food chain describing the trophic relationships between living beings in it.
- Reflect on their learning and explain what they know, what they will know and what they learnt by using a KWL.

Grouping: whole group, pair work and small group.

Materials: - The video can be found using the following link: https://www.youtube.com/watch?v=x7jwJ2b19Lg&ab_channel=HarmonySquare - KWL chart (see Appendix 18) - Students' handout 4 (see Appendix 19) - Video transcription (see Appendix 20) - Language cheat sheet (see Appendix 21)	
Before the tasks <u>Timing:</u> 5 min <u>Aims:</u> To activate previous knowledge.	We will briefly review what we saw in the last session. We will focus on questions about some physical factors that may affect life in ecosystems. - <i>Is water important in an ecosystem? Why?</i> - <i>Does the climate have an impact in the ecosystem? How?</i>
Pre-task <u>Timing:</u> 15 min <u>Aims:</u> To activate prior knowledge To prepare learners for the vocabulary of the task.	Students will be asked about what they know/remember about ecosystems and food chains. Then, they will have to fill in the first column "What we know" and the second column "What we want to know" of a KWL chart (see Appendix 18) in pairs. - <i>Here, you have a KWL chart. Now, you have to fill in the first and the second column in pairs.</i> - <i>Do plants, animals and fungi need each other? Why? Discuss it with your partner using the language cheat sheet in your handouts (see activities 1 and 2 in Appendix 19).</i>
Task <u>Timing:</u> 20 min <u>Aims:</u> To collect and organize information in a chart. To scan specific information from a written text.	A video related to food chains will be played for the whole class. In this video, the concept of food chain will be explained and different examples of food chains will be shown. Learners will have to fill in a chart while watching the video in their groups (see activity 3 in Appendix 19). Then, they will complete the chart by reading the video transcription (see Appendix 20). - <i>We will watch a video about food chains.</i> - <i>In your groups, complete activity 3 while watching. It is a chart where you have to write the living beings that appear in the video and the relationships between them.</i> - <i>Now, you can read the transcription to complete the previous activity.</i>
Post-task <u>Timing:</u> 20 min <u>Aims:</u> To reflect on their learning using a KWL chart. To write sentences explaining the relationships between living beings using a chart.	Students will have to do their own food chain explaining the relationships between the different organisms using a language cheat sheet (see Appendix 21). They can add pictures or drawings. Finally, students will have to complete the KWL chart that they were given at the start of the session. Then, they will choose a food chain and will have to describe the relationships between the living beings in it. - <i>Now, think of living beings you know around you. Are they part of a food chain? Can you draw a food chain diagram of some of the living beings you know?</i> - <i>Next, try to write some sentences explaining the relationships between those living beings. You can use this chart (see Appendix 17) to help you.</i> - <i>To finish, please, complete your KWL chart and check how much you learnt today!</i>

Session 5 (45 min)	
Learning outcomes At the end of this session, the learners will be able to: - Do a PowerPoint presentation about an ecosystem, its elements and how they are related in groups and using ICTs.	
Grouping: Small group work.	
Materials: - Computer classroom - Power Point - Final presentation self and teacher assessment checklist (see Appendix 22)	
FINAL TASK (development)	Students divided in groups of four (and one group of five) will spend one session in the computer classroom to prepare a presentation using PowerPoint, where they will give further details about the information presented in the previous session about their selected ecosystem. In this final task, they will have to include information about at least six living beings with images or drawings and descriptions of those animals, info on the features of that habitat and they will also have to describe how those living beings interact. Students will be given a self-assessment checklist (see Appendix 22) to guide them in the preparation of the presentation (they will know what to include and revise their own work). Learners will also be required to prepare an oral presentation of four minutes based on their written PPT presentation.

Session 6 (45 min)	
Learning outcomes: At the end of this session, the students will be able to: - Perform an oral presentation about an ecosystem in groups in English using ICT.	
Grouping: whole group, pair work and small group.	
Materials: - Computer classroom - PowerPoint - Two stars and a wish chart (see Appendix 23)	
FINAL TASK (presentation)	In this final session, each group of learners will have to perform the oral presentation of four minutes that they have developed in the former session. Students will have to fill in a “two stars and a wish” chart (see Appendix 23) while other groups are presenting. They will have to give the other groups two stars (compliments) and a wish (suggestion for improvement). Finally, they will have to self-assess their own presentation using the checklist that they have been given in the previous session (see Appendix 22). After the presentations, they will have to fill in their individual target evaluation chart of this unit (see Appendix 5).

5.8. Evaluation and assessment

This subsection describes the didactic unit's approach to evaluation. For the evaluation and assessment, these evaluation tools will be used: observation rubrics and checklists for self, pair and teacher assessment.

Students' performance will be evaluated using two types of assessment: formative and summative. As this unit follows TBL, tasks require learners to produce oral and written texts. Therefore, those products will be part of the summative evaluation. In addition, continuous assessment has been integrated throughout the unit, mainly by checklists. This is so to foster students' reflection on their own learning.

As for percentages conceived for these two types of assessment, the continuous assessment will count for 70% of the final mark of the unit and will comprise a recompilation of learners' work throughout the unit including all written and oral activities (35%) as well as the final oral presentation (35%). Correspondingly, the remaining 30% of the mark will be assigned to the formative assessment and will consist mainly of learners' self-assessment checklists, the target evaluation chart and teacher's observations (participation, group work, attitude).

6. CRITICAL ANALYSIS OF THE DESIGNED PROPOSAL

In this section, I will critically analyse the designed CLIL proposal. In order to do so, I will first apply the checklist designed for this purpose, which is the same as the one used to analyse the textbook materials. Then, I will interpret the data collected with this evaluation tool.

The developed didactic unit aims to provide students with varied and sufficient input and tasks so that they can learn both the selected contents and the language simultaneously and develop their communicative competence in the L2, as they will need to use it as a means to learn the contents and complete the tasks within the unit.

After applying the checklist to evaluate my own CLIL didactic unit (see Appendix 24), all information has been reviewed to evaluate the quality of the selected and created CLIL materials included in my teaching proposal. This analysis will include information about seven main sections: general, content, cognition, communication, culture and language.

To start with the analysis, the criteria related to the general section applied to the learning proposal will be analysed. It can be observed that the unit meets both criteria as it includes a target evaluation chart that will be filled in by learners at the end of the last session of the unit. With this target evaluation chart (see Appendix 5), students can reflect on what they have learnt along the unit. Unlike the self-assessment activity included in the textbook modules, this target evaluation chart is focused on what learners can do, which is directly connected with the competences and learning outcomes they are expected to achieve at the end of the unit.

As for supplementary materials, they consist of pictures, diagrams, tables and charts aimed at facilitating learners' understanding and scaffold the learning process. These paralinguistic and extralinguistic cues, and the use of multimodal inputs help to make the input provided comprehensible for students, which is a fundamental requirement for language acquisition to occur (Krashen, 2009).

The next four main sections of this analysis correspond to the 4Cs Framework developed by Coyle et al. (2010:41), content, cognition, communication and culture, all targeted in the designed unit. Considering content, it should be noted that most tasks comprise different sources of input including varied multimodal inputs such as pictures, diagrams, tables and charts, which are highly recommended to “make students get easier to understand the content” (Suhandoko, 2019:158). There is also a wide variety of tasks so that students can practise the contents in various ways and to use the language creatively. In this unit, students are required to do different tasks that allow students to integrate different skills in order to complete them. Specifically, in the final task, learners will have to prepare and perform an oral presentation that will allow them to integrate all the knowledge and skills they have acquired through the development of the learning proposal.

Cognition is another main section within this analysis. Coyle et al.'s (2010) cognition concept shares common ground with Bloom's (1956) cognitive taxonomy, which implies that a “human can accomplish a task if arranged from the simplest (lower-order thinking skills) to the most difficult tasks (higher-order thinking skills)” (Suhandoko, 2010:146). In this case, in the “before the tasks” or “pre-tasks” stages, students are often required to recall, remember and understand, thus, LOTS are targeted. These stages' aim is to activate learners' prior knowledge and schemata and prepared them for the

tasks so that there is a progression from LOTS to HOTS in the next stages. This activation is done in various ways such as through questions and visuals, among others.

Additionally, this unit is thought to cater for the needs of different learning styles because it provides learners with opportunities to develop a set of different skills at different levels. In line with this idea, most tasks are to be performed in pairs or groups, which allows learners to complement their weaknesses and strengths within their pairs or groups and foster their motivation, as all may have something to contribute with.

Regarding communication, rich support is provided for language in this unit. The use of visuals, charts and tables is a continuous to promote students' understanding of the content. In addition to those resources, many language cheat sheets have been created to meet students' needs in terms of language use and vocabulary to perform the tasks and communicate in oral and written form. Accordingly, communication is extremely fostered among learners as most activities have to be done in pairs and in groups where they have to convey information, discuss or negotiate meaning; thus, practising both receptive and productive skills but also mediation. However, individual work is not neglected since many activities need to be done first individually and then completed in their pairs or groups.

In this unit, content is connected to the learners' culture and environment as they can establish relationships between what they know about their context and the contents that are presented in class. Most living beings that appear in the activities are close to the students' context. This can be observed, for instance, in the post-task of session 4, where students are required to draw a food chain including living beings belonging to their environment.

The learning proposal is designed bearing in mind that content should be free from stereotypical images. Accordingly, boys and girls are equally shown in the developed unit, as it can be noted in the selected YouTube videos where both girls and boys from different cultures appear indistinctively.

Language plays a key role in CLIL as it is a means that can either facilitate or hinder learning the contents. Both BICS and CALP are targeted in the unit. The vocabulary is presented in various ways and through different activities by activating students' previous knowledge. Namely, using visuals and language cheat sheets, among others.

New lexis is often presented in the first stages of the sessions to enable learners to do the subsequent tasks.

The language used in the input and the tasks is authentic. In other words, it has not been specifically created for teaching purposes nor has been adapted. Alternatively, it has been made comprehensible by using a variety of scaffolding techniques such as using visuals or activating learners' schemata. In addition, input is provided in oral and written form so that learners receive exposure to the target language in both forms. It should also be pointed out that some fragments of teacher talk are included in the activities as it is a ““major source of comprehensible target language input the learner is likely to receive” (Nunan, 1991:189). Therefore, CLIL teachers should also take into account the quality and quantity of their talk when implementing the tasks.

Finally, this unit comprises several written tasks, which are guided. Students, prior to facing the written tasks, are already familiar with the language and the contents they will need to do the proposed tasks. This is so because content and language have been previously presented and practised either in that same session or in former ones. In addition, they include some kind of language cheat sheet or checklist that they can use while they are writing.

As opposed to the analysed textbook, the designed didactic unit provides learners with more opportunities to develop the communicative competence. This is so because more activities are performed in pairs or groups and they are more communicative. In addition, it is more adapted to the students' own context and interests. Lastly, authentic input is included and made comprehensible as well as authentic pieces of language in the tasks and students and teacher talk.

Although there may be some limitations or shortcomings about the analysed unit, it is considered to be appropriate to be implemented in a Science CLIL classroom to help students learn the content and the language simultaneously as well as to develop their communicative competence.

7. CONCLUSIONS

In conclusion, this Master's dissertation has allowed me to review and illustrate how TBL and CLIL can be integrated into a didactic proposal to promote the learning of both the content and the language in primary education classrooms. In line with this

idea, it has also allowed me to develop strategies to select, create and evaluate CLIL materials, considering the principles of both CLIL and TBL to develop a didactic proposal of Natural Science and English in fourth grade of Primary Education.

The Aragonese Curriculum highlights the importance of students' development of the communicative competence and fostering the use of a foreign language in real-like situations. However, in the analysed textbook, there was a lack of those situations. The activities only focused on written skills (reading and writing), thus, neglecting oral communicative skills.

In that regard, teachers should be able to “evaluate, adapt and produce materials so as to ensure a match between the learners and the materials they use” (Tomlinson, 2003:1). Therefore, teachers should be able to analyse textbooks to find the most appropriate resources to be exploited in class. In this case, some limitations were encountered. These results have inspired the selection, creation and evaluation of new materials specifically designed for the target context. Thus, ensure that they are the best fit for the targeted learners.

In my research, I focused on the importance of CLIL and TBL, a student-centred methodology to enhance the learning of both the content and the language on the part of the learners by developing an integrated didactic unit that meets both CLIL and TBL principles. This proposal includes materials and tasks selected and designed considering that they could be of interest for the students and as real-life as possible. In addition, the proposed learning unit includes materials based on those principles. The evaluation of those materials shows how these principles contribute to the development of the communicative competence and the key competences. Unfortunately, it has not been possible yet to implement the designed unit. If the didactic proposal could have been implemented, this could yield valuable information about its design.

In terms of the implications of this Master's dissertation to my future career as a teacher, it has helped me to better understand TBL and CLIL and how they can be translated into a tangible proposal of lesson planning to achieve the goals of the curriculum and improve the teaching and learning of content and language in an integrated way.

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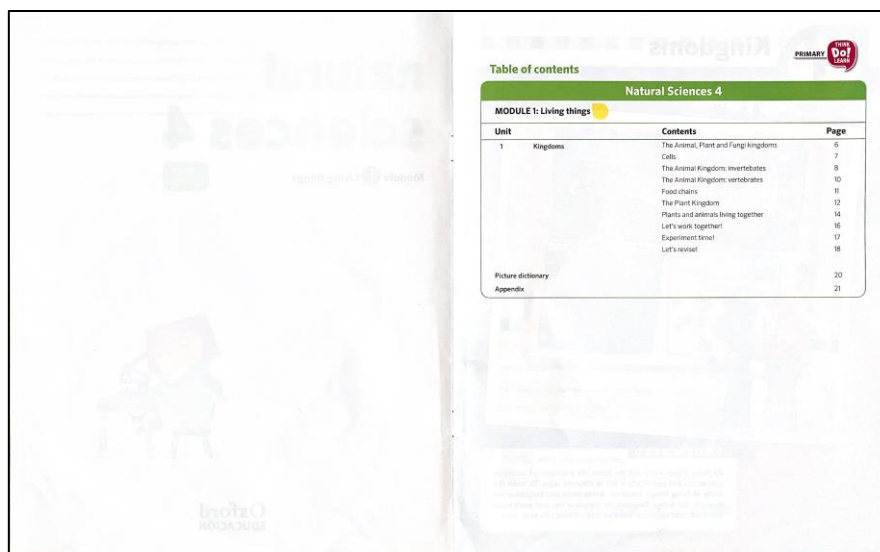
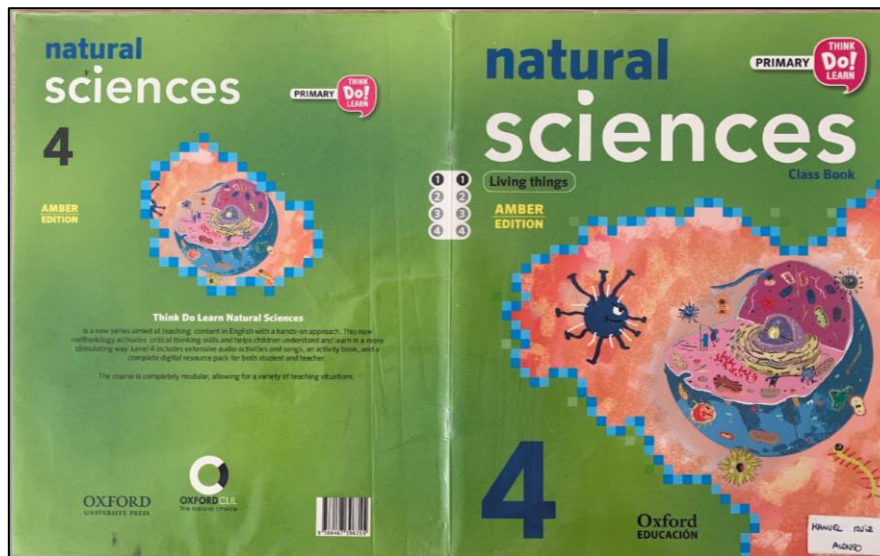
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9. APPENDICES

Appendix 1: Natural Sciences Class Book 4. Think Do! Learn (Oxford Educación)



UNIT

1

Kingdoms

LOOK & READ

All living things carry out the three life processes of nutrition, interaction and reproduction but in different ways. To make the study of living things easier we divide them into kingdoms, for example, the Animal Kingdom. By the end of this unit you'll know about different kingdoms and how they interact with each other.

GETTING STARTED

1 Look, read and think.

a) How are living things organised?

b) Find and name in the pictures:

1. three non-living things
2. a vertebrate and an invertebrate animal
3. three different types of plants.

2 Listen and say which picture.

3 In your notebook, circle the animal words in orange and the plant words in green.

spine leaves roots torso tail wings for stem legs petals fins stamen pistil shell scales

Draw pictures and label them with the words.

2 **Correct the crazy sentences.**

a) Sharks can fly.

b) Birds have scales.

c) Plants can move around.

d) Trees are shorter than bushes.

e) Lizards have fins.

f) Animals make their own food.

3 Look at the photos. Where do you think these animals live?

4 Now listen and answer the questions.

a) Are they vertebrates or invertebrates?

b) Are they dangerous?

c) How do they move around?

5 **THINK** Work with a partner to:

a) Write the functions of the following parts of a plant: the roots, the stem and the leaves.

b) Fill in the missing words:

Photosynthesis = + water + sunlight + = food =

The Animal, Plant and Fungi kingdoms

How are animals and plants different?

READ & THINK

1 Read and find out:

- How are plants similar to fungi?
- In what ways is nutrition in the three kingdoms different?

The Plant Kingdom

- They can move around.
- They make their own food.

grasses

bushes

trees

The Animal Kingdom

- They can move around.
- They eat other living things.

vertebrates

invertebrates

The Fungi Kingdom

As well as the Animal and Plant kingdoms there is the **Fungi Kingdom**. Fungi are similar to plants in that they can't move around. However, they don't make their own food. Fungi eat the remains of living things or grow and feed on things that are still living. **Mushrooms, mould and yeast** are all fungi. Look at the photos. Which fungi do we eat? Which ones should you not pick and eat by yourself?

mushrooms

yeast

tree living fungus

mould

Cells

What are animals and plants made of?

READ & THINK

2 Read and find out:

- How big are cells?
- What do they do?

All living things are made up of **cells**. The biggest is the size of the full stop at the end of this sentence. The smallest are so small you can only see them with a **microscope**. Different cells have different **functions**. For example, these red blood cells carry oxygen around the body. Most living things are made up of many types of different cells but some, like our **bacteria**, have just one cell.

ACTIVITIES

3 Listen and repeat. Now listen to the sentences and say the word.

kingdoms fungi mushrooms mould yeast cell microscope bacteria

4 Complete the table in your notebook.

Kingdom	Nutrition	Can interact with the environment by moving around
Animal	They eat other living things.	■
Plant	They eat food by photosynthesis.	■
Fungi	■	They can't move around.

5 Think In your notebook, answer the questions.

- Which kingdom do snails, octopuses and leopards all belong to?
- If there is a bear nearby, is it better for you to be a piece of fruit or a rabbit? Why?
- What happens if you don't eat food by its sell-by date?
- Plants are called 'producers'. Why do you think this is?

6 Draw a picture which includes at least one living thing from the Plant, Animal and Fungi kingdoms. How would you include cells in your picture?

7 Quiz Check your learning.

6

Living things

opg 100

The Animal Kingdom: Invertebrates

What do invertebrate animals have inside of a backbone?

READ & THINK

1 Read and find out:

- Which groups have a hard protective part?
- Which groups live only in water?
- Which is the biggest group?

97% of all animals are invertebrates and they live almost everywhere! Scientists are still finding new species of invertebrates, but here are the six most common groups.

Molluscs

They have a soft **muscular** body, often protected by a hard shell. Some, such as snails, live on land, but most, like mussels and octopuses, live in the sea.

Jellyfish

They live in the sea. They have a soft body called the **umbrella**. They climb on the **gelatinous** and take in oxygen and food through the holes. There are lots of brown species of sponges.

Sponges

They live in the sea. They have soft bodies covered with little holes. They climb on the **gelatinous** and take in oxygen and food through the holes. There are lots of brown species of sponges.

Echinoderms

They live in the sea. They're protected from **predators** by hard skin or **spikes** and are often brightly coloured. Earthworms are **annelids**. They usually have five arms but can have up to 40!

Annelids

Some of them live in the sea. They have a long, soft body divided into **segments**. A very important annelid is the **earthworm**. The earthworm helps to get air and nutrients into the soil. Can you say how?

Arthropods

Almost all animals on Earth are arthropods. The biggest group is **insects**. They live in water, on land, in the air and underground. They have a head, thorax and abdomen, **jointed legs** and a protective **exoskeleton**.

Oh, what am I? I'm not a jellyfish or a sponge or a mollusc but what group DO I belong to?

Am I an arthropod?

Not Sorry! You haven't got three pairs of jointed legs or an exoskeleton!

Am I an echinoderm?

Not Sorry! You haven't got hard skin and you don't live in the sea!

Oh dear! What AM I?

You're not an animal! You are!

Come and play and make friends in the soil with us!

ACTIVITIES

2 **Listen and repeat.** Listen again and say the invertebrate group each word is related to.

mollusks jellyfish sponges echinoderms annelids arthropods
mussel tentacles seabed spikes segmented

3 **THINK** In your notebook, match the half-sentences.

a) They are brightly coloured...	1. to take in oxygen and food.
b) They have shells...	2. to frighten away predators.
c) They have little holes...	3. to capture animals to eat.
d) They have tentacles...	4. to stop other animals eating them.

4 **Make a mind map of the invertebrate groups including examples of animals, where they live (land, air, water) and their main characteristics.**

5 **QUIZ** Check your learning.

Living things

The Animal Kingdom: vertebrates



How do vertebrates that live in water breathe?

READ & THINK

- Read and answer:
 - What are the ways in which a) reptiles and fish similar?
 - b) mammals different to other vertebrates?

Respiration

All animals need oxygen to live. Mammals, reptiles and birds get oxygen from the air. They breathe with **lungs**.



Fish use **gills** to get oxygen from the water. Amphibians have gills when they are young and live in water and later develop lungs to live on land.



Reproduction

All mammals are born directly from their mother. They are **viviparous**. All other groups reproduce by laying eggs. They are **oviparous**. Sometimes these eggs are hard, such as chicken's eggs and sometimes they are soft, such as frog and fish eggs.



Nutrition

Most vertebrate animals are **carnivores** or **herbivores**. Some mammals and fish and a few birds are **herbivores** but almost all reptiles and amphibians only eat other animals.



10

Living things

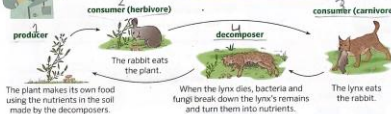
Food chains



Do animals, plants and fungi need each other? Why?

READ & THINK

- Read and find out why it's called a food chain.



ACTIVITIES

1. Say the Food chain chant.

2. In your notebook, copy and complete the table.

Animal	Group	Respiration	Reproduction	Nutrition
sheep		lungs		
crocodile			oviparous	
	amphibian			
		gills		
				carnivore

3. (Think) Choose the odd one out. In your notebook, write why.

- a) tiger, spider, eagle, bee
- b) fish, frog, bear, lizard
- c) cow, tiger, butterfly, whale
- d) pig, sheep, human, bear
- e) dolphin, snake, crocodile, fish
- f) eagle, squirrel, hen, duck

4. (Do) Draw and label a food chain.

5. (Quiz) Check your learning.

11

The Plant Kingdom



How do plants reproduce? How do they make their own food?

READ & THINK

- Read and answer:
 - What's the difference between sexual and asexual reproduction?
 - b) How do animals and the wind help in plant reproduction?
 - c) Why is photosynthesis so important?

Sexual reproduction

In sexual reproduction pollen goes from the stamen of one flower to the pistil of a different, or the same, flower. This is how most plants reproduce. But how does it happen?

Insect pollination



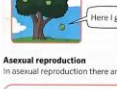
Wind pollination



Self-pollination

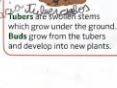


The pollen joins an **ovule** to make a **seed**. This is called **fertilisation**. The **pollen** grows around the seed into a **fruit**. The fruit falls to the ground and the seed grows into a new plant. But how does it happen?



Asexual reproduction

In asexual reproduction there are no flowers or fertilisation.



12

Living things

The importance of photosynthesis

Every animal, including humans, needs oxygen to live. Plants give us oxygen. Plants absorb nutrients and water from the soil and carbon dioxide from the air during the day and use these to make their own food. In this process they release oxygen into the air for us to breathe.



ACTIVITIES

1. Listen and repeat. Listen again and count the syllables.

sexual reproduction	wind pollination	self-pollination	buds
tubers	runners	asexual reproduction	photosynthesis

2. In your notebook, copy the true sentences and correct the false ones.

- a) In sexual reproduction, pollen is produced by the pistil and carried to the stamen.
- b) Pollination is helped by animals, especially insects, and by the wind.
- c) In asexual reproduction, the plant does not have a male and a female reproductive organ.
- d) In sunlight, plants give off **saccharose** into the air as part of the process of photosynthesis.

3. (Do) Observe the oxygen.

You need:

- a bowl
- water
- leaves

1. Put a leaf in water in a sunny place. Check after an hour.
2. What are the little bubbles on the leaf (especially on the underside) and on the sides of the glass?
3. Now put one leaf in water in a sunny place and one leaf in water in a dark place. Is there any difference?

4. (Quiz) Check your learning.

13

Plants and animals living together



In what ways are plants and animals important to each other?

READ & THINK

- Read and find out:
 - What is a population of living things?
 - b) What is a community of living things?
 - c) What is a habitat?
 - d) What is an ecosystem?

Living things of the same species which live in the same place are called a **population**. For example, in a temperate forest you can find a snail population, a fox population, a squirrel population, an oak tree population and a pine tree population.

All the different populations that live in the same place are a **community**.

The place they live is called a **habitat**. A habitat is defined by the amount of light and water, the temperature and the type of soil.

The combination of the habitat and its community of living things is called an **ecosystem**.

An **ecosystem** can be as small as a puddle of water, or as big as a desert or tropical rainforest!

Each ecosystem is a delicate balance between the habitat and its community of living things. It has many food chains. Look at the picture. How many food chains can you see?



14

Living things

I know how to ... look after living things!

To conserve ecosystems we must respect living things and their habitats. Look at the photos.

Which of these things should we do? Which shouldn't we do?



SCI-QUIZ



ACTIVITIES

1. Listen and sing The Ecosystem song.

2. (Think) Imagine all the oak trees have been cut down. Write in your notebook what would happen to the squirrel and fox populations.

3. Look at the picture. Write living things you see and which group they belong to.

Vertebrate animals	Invertebrate animals	Plants
snake (reptile)	earthworm (annelid)	bushes

4. (Think) In your notebook, circle the animals you find in a temperate forest. Write the ecosystem you think the other animals are from (tropical rainforest, desert or ocean).

crocodile	jellyfish	camel	fly	sponge	ant	starfish	butterfly
spider	lizard	monkey	scorpion	ladybird	parrot	octopus	jaguar

5. (Think) Know the ... lives in a/an ... ecosystem.

6. (Quiz) Check your learning.

15

Let's work together!

Food chain mobiles

Materials

- string
- coloured card
- tape
- magazines



- Think of a food chain from an ecosystem.
- Write the name of your ecosystem on the yellow circle. Choose a plant. Draw or stick a photo of it on the yellow square.
- Make the Sun and hang the name of your ecosystem from it. Hang the plant from the ecosystem. Choose a herbivore.
- Hang the herbivore from the plant. Choose a carnivore from your ecosystem and draw or stick a photo of it on the red square.
- Hang the carnivore from the herbivore. If there is another carnivore add an extra red card and hang it on your food chain. Present your food chain to the rest of the class.

Experiment time!

How do potatoes reproduce?



Materials

- plastic cup
- toothpicks
- water
- plant record sheet
- potatoes
- potting soil
- plant pot

- Write your name on a plastic cup and stick the toothpicks in a circle around the middle of the potato.
- Pour some water into the plastic cup. Put in your potato. Make sure the water is touching the bottom of the potato.
- Write your name on a plant pot. Add soil and put in your potato. Put the plant pot in a bright place and make sure the soil stays moist.
- Record what happens each week on your record sheet.
- Write your hypothesis and conclusions.

What's going to happen to the potato in the plastic cup? What does this tell us about the reproduction of potato plants?

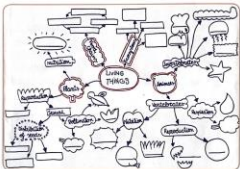
What's going to happen to the potato in the plant pot? What does this tell us about the reproduction of potato plants?

Let's revise!

- Complete the diagram in your notebook. Use the word bank.

Word Bank

decomposers,	producers,
viviparous,	arthropods,
lungs,	sunlight
mollusc,	sponge
self-pollination	carnivore,
forest	echinoderm,
gills,	oviparous,
jellyfish,	lake
herbivore,	wind
insects,	omnivore,
desert	annelid,
puddle	consumer



- Which is the odd one out? Write why.

a) habitat	community	population	human
b) pine tree	oak tree	zebra	fox
c) oxygen	carbon dioxide	minerals	water
d) sponge	mollusc	jellyfish	echinoderm

Now write some yourself and test your partner.
- Listen and say the name of the living things.



- Choose words to write correct sentences in your notebook. There are some extra words!

under soft exoskeleton self-pollination
viviparous three hard five carnivores along
oxygen herbivores six oviparous wind pollination carbon dioxide

- There are _____ common types of invertebrate animals.
- Some molluscs have a _____ shell for protection.
- Arthropods have _____ main body parts.
- Every animal needs _____ to live.
- Annelids have _____ bodies divided into segments.
- All mammals are _____.
- A minority of vertebrates are _____.
- In _____ the pollen from the stamen goes to the pistil of the same plant.
- Tubers are swollen stems which grow _____ the ground.
- In the process of photosynthesis plants take in _____ from the air.

- Write your own sentences with the extra words from activity 4.

- Copy and complete the sentences with decomposers, producers and consumers.

a) _____ make their own food.	b) _____ eat other living things.
c) _____ break down the remains of living things that have died.	

MY PROGRESS

Think Copy the sentences and draw a smiley next to each one.

I know how kingdoms are different. ☹️ No, I need to study more.

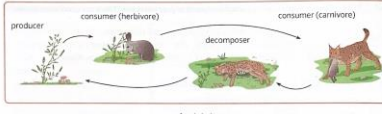
I know some of the characteristics of six groups of invertebrates. 😊 Yes, I do.

I know about the respiration, reproduction and nutrition of vertebrates. 😄 Yes, I know this very well.

I know about the reproduction of plants.

I know about populations, communities, habitats and ecosystems.

Picture dictionary



food chain


insect pollination


mould


mushrooms


runners


self-pollination


tubers


wind pollination


yeast

natural sciences 4



APPENDIX Living things

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Plants

Parts of a plant

The flowers make seeds for reproduction.

Water, minerals and food pass through the stem. The stem also holds the plant up.

Roots absorb water and minerals from the soil. They also fix the plant in the soil.

Parts of a flower

The **corolla** is made of coloured petals to attract insects.

The **calyx** is made of green sepals and protects the flower.

The **stamens** are the male reproductive organs. They produce **pollen**.

The **pistil** is the female reproductive organ. It has **ovules** inside.

READ & THINK

1. Read and find:

- which part of a plant makes food
- which part makes seeds for reproduction
- two types of non-flowering plants.

Plants that produce seeds

Conifers, for example, pine trees and fir trees, have **cones**. Some cones are male and produce pollen and other cones are female and have **ovules**. Seeds form in the female cones when the ovules are fertilised by the pollen.

Plants that produce spores

Mosses and ferns are non-flowering plants that produce **spores**. Spores are much smaller than seeds and each plant produces thousands of spores. The wind blows the spores around but only very few of them grow into new plants.

Some plants do not have flowers, but still reproduce sexually. These plants are called **non-flowering plants**. There are two main groups of non-flowering plants:

Plants that produce seeds

Conifers, for example, pine trees and fir trees, have **cones**. Some cones are male and produce pollen and other cones are female and have **ovules**. Seeds form in the female cones when the ovules are fertilised by the pollen.

Plants that produce spores

Mosses and ferns are non-flowering plants that produce **spores**. Spores are much smaller than seeds and each plant produces thousands of spores. The wind blows the spores around but only very few of them grow into new plants.

ACTIVITIES

2. **Correct the crazy sentences in your notebook.**

- A plant makes its food in the flowers.
- The reproductive organs of a plant are in the roots.
- All plants have flowers.
- Ferns and moss produce seeds.
- Pine trees have flowers.
- Seeds are much smaller than spores.

3. **Find a picture of a flowering plant, a conifer tree, a moss and a fern. Copy the right sentences under each one.**

This is a flowering plant.
This is a non-flowering plant.
This plant makes seeds inside its flowers.
This plant makes seeds inside its cones.
This plant doesn't make seeds; it makes spores.
This plant produces thousands of spores.

4. **QUIZ** Check your learning.

Rocks

How are rocks formed?

All rocks contain one or more **minerals** and make up the continents and ocean floor. Rocks are formed in three different ways. Depending on how they are formed, we can classify rocks into three main groups.

Sedimentary rocks

Most sedimentary rocks are formed under the sea. Small pieces of rock, sand, dead animals and dead plants sink to the bottom of the sea and form layers on the sea bed. Over millions of years these layers press each other down and the bottom layers harden and form rocks. In sedimentary rocks you can see these different layers.

How sedimentary rocks form

layers of sediment

Igneous rocks

The rock inside the Earth is so hot that it melts. This liquid rock is called **magma**. Sometimes magma comes out to the surface of the Earth through a **volcano**. On the outside it is called **lava**. When magma and lava cool they form igneous rocks.

How igneous rocks form

volcano

Lava cools quicker and forms **basalt**.

Magma cools and forms **granite**.

READ & THINK

1. Explain three different ways rocks are formed.

Sandstone and limestone are examples of sedimentary rocks.

Metamorphic rocks

Sometimes igneous rocks and sedimentary rocks change because of **heat** and **pressure**. The new rocks formed are called **metamorphic rocks**. For example, limestone changes into **marble** and granite changes into **gneiss**.

How metamorphic rocks form

pressure from the water

heat from the magma

metamorphic rocks

ACTIVITIES

2. In your notebook, copy the names of the rocks on this page into the right shape.

a volcano shape
a square with layers at the bottom
a circle with arrows pushing down from the top and up from the bottom

3. Find out how the following rocks form and copy them into the shapes of activity 2.

shale obsidian quartz pumice coal slate

4. Copy and complete the sentences in your notebook.

- Rocks consist of one or more _____.
- Rocks can be sedimentary, _____ or metamorphic.
- In sedimentary rocks you can see different _____.

5. **QUIZ** Check your learning.

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Living things

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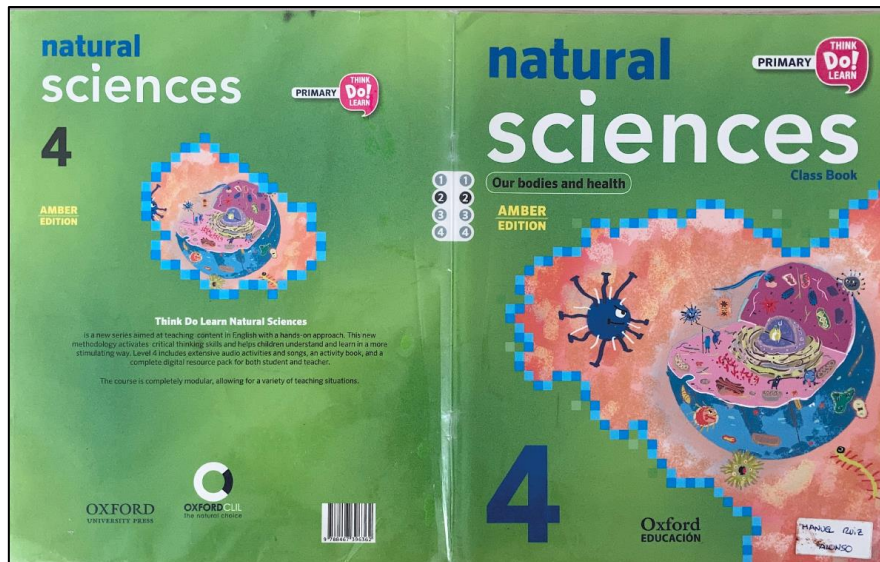


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UNIT 2 Body systems

LOOK & READ

Like all living things, we have three life processes: nutrition, interaction and reproduction. We use different body systems for each of these processes. In this unit you will learn about how body systems work together to provide the oxygen and nutrients our muscles and organs need, how they help us to interact with our environment and how babies grow from tiny fertilised eggs.

GETTING STARTED

1 Look, read and think.

For each picture, say which of these body systems are being used:

- nervous system and senses
- reproductive
- locomotor
- respiratory
- circulatory
- digestive
- excretory

2 Listen and say which picture.

3 In your notebook, match the organs with the systems in activity 1. Then write sentences.

The ... is/are part of the ... system.

- a) heart
- d) brain
- g) kidneys
- b) lungs
- e) skeleton
- f) uterus
- c) stomach

4 Work with a partner. Copy the diagram and label where you can find the organs in activity 3. Add any other organs you know.

5 Look at the image. What is this organ? Think about the shape.

6 Now listen and answer the questions.

- a) What two interesting facts did you find out about it?
- b) What three things can we do to help look after it?

7 Think. Work with a partner to make a list of which systems we use all the time and which systems we use at specific times.

Nutrition: The digestive and excretory systems

What is the digestive system? / And the excretory system?

READ & THINK

1. Look, read and say:

- what nutrients do
- six things that happen to food in the digestive system
- what urine is
- how we know when it is time to go to the toilet.

Our digestive system breaks food down into small particles called **nutrients**. All our muscles and organs need these nutrients. They give us energy and help us grow. Once the digestive system has extracted the nutrients, it gets rid of the waste.

The digestive system

Mouth
Here, food is broken up by the teeth and mixed with **saliva** by the tongue.

Small intestine
There are lots of blood vessels. Nutrients pass into the blood here.

Anus
The waste, called **faeces**, leaves the body here.

Esophagus
Food goes down this tube to the stomach.

Stomach
Here gastric juices make the food into a thick liquid.

Large intestine
The waste passes through here. Water goes out into the body and the waste becomes harder.

Did you know?
Digestion takes place mainly in the small intestine but some nutrients are digested in the mouth and stomach.

Do you know?
Some things are not digested. Water, minerals and vitamins are small enough to pass into the blood without being digested.

The excretory system

Kidneys
When the blood goes through here, excess water and waste products are dropped out of the blood and made into **urine**.

Ureters
The urine goes down these tubes to the bladder.

Bladder
The urine is **stored** here. When it is full it sends a message to our brain.

Urethra
The urine leaves the body through this tube.

ACTIVITIES

2. **Listen and repeat.** **Listen again and tap your head if the word is part of the digestive system, pull your ears if it is part of the excretory system.**

saliva esophagus anus small intestine bladder nutrients gastric juices faeces kidneys ureters blood vessels urethra

3. **Listen and hold up one or two hands according to how many of these organs we have in our excretory system.**

4. **Think** In your notebook, write the words in the order they appear in the digestive system.

faeces saliva gastric juices lots of blood vessels

Now write a sentence of your own with each word.

5. **Quiz** Check your learning.

Nutrition: The circulatory system

What does blood do?

READ & THINK

1. Look, read and answer:

- What does the heart do?
- What's different about a vein and an artery?
- What happens in a capillary?
- What can you find in blood?

Some body systems, like the circulatory system, function all the time, day and night. The circulatory system is a transport system that takes blood to all parts of the body. It is made up of the heart and the blood vessels. The heart is a pump and the blood vessels make a network that takes the blood around the body.

The heart is a hollow muscle. It pumps blood around the body. Each time it pumps is called a **heartbeat**. It usually beats 60 to 100 times a minute but it can beat much faster. The more oxygen we need the faster our hearts beat. How does your heartbeat change when you are sleeping? And when you are running? What about when you are calm? And when you are scared?

Veins return the blood back to the heart. What do you think the one-way valves are for?

Arteries carry blood from the heart to the rest of our bodies.

Capillaries are tiny blood vessels (you need a microscope to see them). They have thin walls. This is where the blood gives nutrients and oxygen to the cells and picks up waste products and carbon dioxide.

What blood is made of

Blood has a watery liquid called **plasma**. The plasma carries nutrients and also red cells, white cells and platelets. The red cells carry oxygen, the white cells fight infection and the platelets help the blood to **clot** and form **scabs**, for example, when you fall over and cut or scrape yourself.

SCIENCE

Where is blood made? In your heart, brain or bones?

ACTIVITIES

2. **Listen and repeat.** **Listen again and find the words on the pages.**

heartbeat artery vein capillary scab plasma red cells platelets clot waste products

3. **Match and write the sentences in your notebook.**

- The heart... 1. carry blood from the heart to all parts of the body.
- The veins... 2. are where oxygen and nutrients are exchanged for carbon dioxide and waste materials.
- The arteries... 3. carry blood from all parts of the body back to the heart.
- The capillaries... 4. is made up of plasma, red and white blood cells and platelets.
- The blood... 5. is a hollow muscular pump that pumps blood around the body.

4. **Do!** Look at your heart beat!

You need:
- clay
- toothpick

- Stick the toothpick into the clay and put it just below the base of your thumb.
- Watch how it moves. Count the beats for 15 seconds.
- Run on the spot for a minute and repeat.

5. **Think** Work with a partner to discuss what your circulatory system does in these situations.

- You are dancing.
- You are sleeping.
- You are watching TV. (think about what's on!)
- You cut yourself.

6. **Quiz** Check your learning.

How the circulatory system works

Why is our circulatory system important?

READ & THINK

1. Look, read and answer:

- How many times do the blood cells in the comic go to the heart?
- In what order do the blood cells go to the finger, the lung, the heart?
- Say three things you can do that are good for your heart.

What happens to the blood when our heart beats? Look and read the comic to find out. Keep looking back to pages 8 and 9 to see which part of the body the blood cells are in.

1. I'm new. Can I come with you?

2. Of course! Come on, we're on our way into the heart!

3. How we're in a capillary in a lung. Pick up some oxygen. I'm dropping off my carbon dioxide here.

4. Here we're back in the heart again. What happens next?

5. We're on our way out of the heart!

6. Now we're in a finger. Drop off your oxygen and pick up some carbon dioxide. We'll be back to the heart again!

1. We're on our way into the heart!

2. We're going whooshing off to a lung now.

3. We're on our way out of the heart!

4. We're on our way out of the heart!

5. We're on our way out of the heart!

6. We're on our way out of the heart!

I know how to... look after my heart!

The heart is a muscle and, like all muscles, needs exercise. When you run and play outside you are exercising your heart as well as the muscles in your legs! It's also important not to become overweight and to eat the right food. If you eat too much food with lots of fat, some of this goes onto the walls of your blood vessels and makes them narrower. This means it's more difficult for blood to flow and in the end it can lead to a heart attack.

ACTIVITIES

2. **Listen and tap your finger on the palm of your hand when you hear words that are part of the circulatory system.** **Listen to the definitions and say the words.**

3. **Think** Answer the questions with a partner.

- How does a weak heart affect how blood moves through the body?
- Name some ways a weak heart would change your daily life.
- Make a list of what you can do to keep your heart strong.

4. **Do!** Copy the diagrams in your notebook and complete them with: **body, lungs, heart and body, heart, digestive system.**

5. **Write a description of the movement of the blood to the heart, lungs and body in order using the phrases in the box. Start with: The blood goes to the heart.**

the heart pumps the blood goes to the heart the heart pumps the blood picks up oxygen the blood goes to the lungs the blood goes all around the body it drops off carbon dioxide

6. **Quiz** Check your learning.

Nutrition: The respiratory system

READ & THINK

1. Read and answer the questions:

- What are the different parts of the respiratory system?
- What happens in the alveoli?
- Is there more oxygen in the air you breathe in or in the air you breathe out?
- What happens to your chest when you breathe in? And out?

All our muscles and organs need oxygen to function. We know that blood picks up the oxygen our body needs from the air in the lungs, but how do the lungs get the air in the first place? Put your hands on your chest and tummy. Take a deep breath and concentrate. What happens to your chest and stomach? Our respiratory system is made up of the nostrils in the nose, the windpipe, the two bronchi and the two lungs.

The nose has two nostrils. These have lots of little hairs and are narrow at the back. This is to stop foreign objects (like flying insects!) entering our respiratory system. When dust or a foreign object enters our nose we blow or sneeze it out.

The trachea divides into two tubes that go into the lungs. These tubes are called the bronchi.

The lungs are like big sacks. They fill up almost all your chest. They are squishy, like a sponge. They are made up of lots of little bags called alveoli surrounded by blood capillaries. The air goes into the alveoli.

Carbon dioxide goes out. Oxygen goes in.

Our bodies and health

How we breathe

We breathe faster when our bodies need more oxygen, for example, when we are running. When we are relaxed or sleeping however, we breathe more slowly.

ACTIVITIES

2. Listen and say the Let's breathe chant. Touch the correct part of your face, neck and chest as you say the chant.

3. In your notebook, correct the crazy sentences.

- We have one nostril and one trachea.
- The little hairs and the narrow entrance at the back of the nostrils help insects and dust enter the respiratory system.
- The bronchi go from the nostrils to the lungs.
- The lungs are hard and rigid.
- The diaphragm relaxes when we breathe in and contracts when we breathe out.

4. Do! With a partner, focus on your breathing and answer these questions.

- What takes longer, breathing in or breathing out?
- Why is it better to breathe in through your nose than your mouth?
- What kind of breathing do you think you can use to calm down when you are upset or excited?

5. Think! With a partner, think which of these activities is aerobic (you need lots of oxygen so lots of air): running, washing the dishes, jumping, playing chess, riding a bike (think of where you are riding!), skipping, walking (again, think of where you are walking), lifting heavy things.

6. Quiz! Check your learning.

Interaction: The nervous and locomotor systems

READ & THINK

1. Look, read and answer the questions:

- What is the most important organ in the nervous system? Why?
- Can you name three parts of the locomotor system?
- What senses are involved in the story on page 15?
- What messages are sent to the brain?
- What instructions does the brain give?

Like all living things, we interact with our environment. In the same way as the roots of a plant move towards water or penguins stand close together to keep warm, we stop crossing a road if a car is coming. The nervous system, the five senses (sight, hearing, touch, taste and smell) and the locomotor system all work together to make sure we do this.

The nervous system

The brain is like the computer of our bodies. It controls everything that we do. Sometimes this is involuntary (we don't think about it), like breathing, digesting food or the beating of our heart. Other times it's voluntary, like feeling cold and deciding to put on a jumper.

One or more of the senses send a message to the brain along the nerves. The brain then sends instructions along the nerves to the locomotor system.

The locomotor system

The locomotor system allows us to move. It is made up of bones, muscles and joints. Bones and muscles work together at the joints to allow our body to bend and move.

When the locomotor system receives an instruction from the brain it goes into action! Some bones in the skeleton also protect important organs. The ribs protect the lungs and heart and the skull protects the brain.

Our bodies and health

An example of interaction

Look at the comic and say which picture for each case:

- Message: Oh no! A Dog!
- Instruction: Stretch out your paws and catch the mouse!
- Instruction: Jump back into the basket.
- Message: There is a little mouse!

ACTIVITIES

2. Listen and repeat. Listen again and touch the correct part of your body.

involuntary voluntary brain spinal cord nerves bones muscles joints ribs skull

3. Read the clues and write the word in your notebook. Write more clues for a partner to solve.

- We have five of these.
- It makes decisions.
- They can bend.
- It protects the brain.
- They are elastic.
- They carry messages.

4. Think! Remember something that happened to you today. Think of the senses you used, what messages were sent to the brain and what instructions were sent to the locomotor system. Write a short paragraph describing what happened.

I saw a biscuit. My sight sent a message to my brain. My brain sent an instruction to my locomotor system. My hands took the biscuit and I ate it!

5. Do! Work with a partner. Ask them to bend and straighten their arm. Discuss how the muscles pulled the arm up and down. Draw your partner's arm and label the joints and muscles.

6. Quiz! Check your learning.

The reproductive system

READ & THINK

1. Look, read and answer the questions:

- What happens in the months between fertilisation and birth?
- How does the embryo get the nutrients and oxygen it needs?
- How are the reproductive organs different in males and females?

Like all living things, humans reproduce to make more living things of the same type. A tiny egg becomes fertilised and over nine months grows into a new human being.

From fertilised egg to new born baby

An egg is fertilised by a sperm.

An embryo develops. At six weeks old it is about the size of a small seed. Nutrients and oxygen travel from the mother to the embryo along the umbilical cord.

The embryo becomes a fetus at nine weeks. It's about the size of an olive. It has arms and legs and it starts to have a face.

At three months it has all its organs. It's about the size of an avocado.

At nine months it is ready to be born... is it a boy or a girl?

The egg divides again and again and becomes attached to the wall of the uterus.

The baby moves head first down the vagina and comes out into the world. It is born. The umbilical cord is cut and becomes the belly button and the baby breathes on its own and gets nutrients from its mother's milk.

The female reproductive organs

They are mainly inside the body.

The male reproductive organs

They are mainly outside the body.

Every month an egg travels from the ovaries along the fallopian tubes, uterus and vagina to the outside. If it is fertilised by a sperm it stays in the uterus.

Sperm travels from the testicles along the urethra and the penis to the outside.

ACTIVITIES

2. Sing the From egg to baby song.

3. Copy the signs and write the organs according to which reproductive system they belong to. Where there are two of the organs, write the plural. For example, ovary = ovaries.

Female: ♀ Male: ♂

4. In your notebook, put these words in order and match them to the descriptions.

- fertilised egg
- baby
- embryo
- fetus

- It develops from the egg. It has a head and body.
- It sticks to the wall of the uterus and divides many times.
- It has arms and legs and a face. It grows fast.
- It is born around nine months after fertilisation.

5. Think! What other animals reproduce in the same way as humans? In what ways do other animals look after their babies in similar/different ways to humans?

6. Quiz! Check your learning.

Let's work together!

Body systems Fictionary

Materials

- blank cards
- pens



1. Work in groups of four.



2. Each person takes a card and writes 1, 2, 3, on it as a list.



3. Each member of the group chooses a statement from the unit and writes it on a card.



4. Now invent two more statements that are similar to your statement but are not correct. Write them on your card.

5. Play the game with another group. Read out the statements and the other group says which one is correct.

Experiment time!

How does the diaphragm work?

Materials

- a 2 litre plastic bottle with the bottom cut off
- a rubber band
- a balloon
- a piece of plastic bag
- plasticine



1. Put the balloon into the neck of the bottle, and stretch the top of the balloon over the neck of the bottle so the balloon is hanging inside.



2. Hold the piece of plastic bag loosely over the bottom of the bottle. What does the balloon represent? And the plastic bag?



3. Ask a partner to help you secure the plastic bag over the bottom of the bottle with the elastic band.

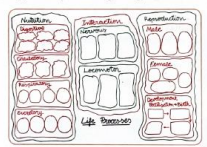


4. Push the plastic bag up into the bottle and pull it down. Watch what happens to the balloon.

Hypothesis:
What is going to happen to the balloon?
What does this tell us about the diaphragm and the lungs?

Let's revise!

1. Copy and complete the diagram in your notebook.



2. **Think** Choose the correct answer.

a) We get nutrients from...

1. the digestive system.
2. the locomotor system.
3. the nervous system.

b) The circulatory system...

1. allows our body to bend.
2. works with the senses to help us interact.
3. carries nutrients and oxygen around our bodies.

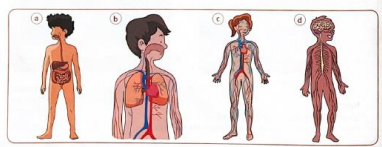
c) How fast we breathe depends on...

1. how much food we have eaten.
2. how much oxygen our body needs.
3. how long our windpipe is.

d) The reproductive system...

1. is the same in men and women.
2. works all the time.
3. allows us to have children.

3. **21** Listen and say the body system the people are talking about.



Our bodies and health

4. **Think** Look at the cartoons at the beginning of the unit. What can you say now about the body systems that are being used in each cartoon?



5. **Correct the crazy sentences in your notebook.**

- a) The reproductive system and the nervous system work together to help us interact with our environment.
- b) One or more of the four senses send messages to our heart. Our heart then sends instructions to our respiratory system.
- c) The circulatory system gets air into the lungs and the respiratory system takes oxygen to all parts of our bodies.
- d) The digestive system allows us to have children.
- e) The circulatory system works with the locomotor and nervous system to make sure our body gets the nutrients it needs.

6. **20** Write new words you learnt in this unit. Draw pictures to illustrate them.

MY PROGRESS

Think Copy the sentences and draw a smiley next to each one.

I know the four systems of nutrition and how they work.

I know how the circulatory and digestive systems work together.

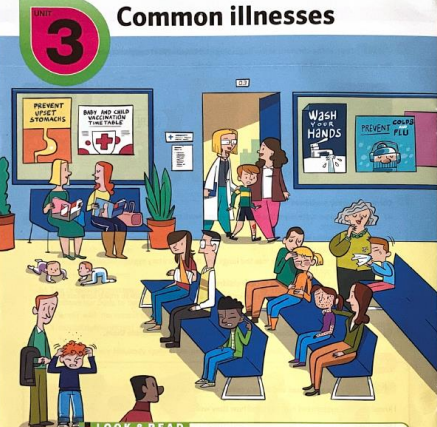
I know how the circulatory and respiratory systems work together.

I know the two systems of interaction and how they work.

I know how a fertilised egg grows into a baby.

☐ No, I need to study more.
☐ Yes, I do.
☐ Yes, I know this very well.

Unit 3 Common illnesses



LOOK & READ

There are many common illnesses we can help to prevent by eating the right food and having healthy habits. In this unit you will learn about different ways to keep healthy and prevent illnesses. You will also learn about some scientific discoveries and machines which help to prevent or cure illnesses. Lastly, you will find out about first aid you can use to help other people.

GETTING STARTED

1. **Look, read and think.**

- a) Look at the children in the picture. What do you think is wrong with each one of them?
- b) Look at the posters in the picture. What are their messages?

We should...

2. **22** Listen and say which person is talking to the doctor.

3. **In your notebook, match the symptoms with the illnesses.**

a) a runny nose, sneezing, coughing	1. an earache
b) a high temperature, aching body	2. head lice
c) pain in your stomach	3. a cold
d) pain in your ear	4. an upset stomach
e) an itchy head	5. flu

4. **Think** Work with a partner to make a list of the common illnesses you have had recently. Compare them with the rest of the class.

5. **Look at the photo. Have you ever had one of these? What is it?**

6. **23** Now listen and answer the questions.

- a) Are they caused by bacteria or a virus?
- b) Where can you find them?
- c) How can we prevent catching them?

7. **24** Make a mind map of things you can do every day to prevent illnesses. Add to the mind map as you study the unit. Think about: diet, hygiene, sports and activities, rest and healthy habits.



Healthy eating

READ & THINK

Read and answer the questions for each group of nutrients.

a) What food contains them?
b) Why should we eat them?
c) How much should we eat every day?

What food should you eat often to be healthy? What food should you eat only occasionally?

We are what we eat! Therefore, our diets need to be healthy and balanced, which means eating a variety of foods with lots of different **nutrients**. Eating the right food can help our body fight off illnesses and make us feel good.

As a general rule, avoid sugary and salty foods, like soft drinks, crisps, sweets, biscuits and cakes. Remember to drink lots of water!

Minerals and vitamins

Eat vegetables and fruit that contain lots of minerals and vitamins that are essential for health. For example, eating food with vitamin C can prevent you from getting colds. Eat some food from this group five times a day.



Carbohydrates

Carbohydrates give us energy, so eat lots especially if you do lots of exercise. Don't eat sugary cereals and try to eat **wholemeal** bread and rice instead of **processed**. Eat some food from this group at every meal.



Proteins

Foods with protein, such as milk and cheese, contain the mineral **calcium** that can help you have strong bones and teeth. Protein also helps us grow. Eat some food from this group at every meal.



Fats

We store fats for extra energy for when we need it. But be careful! If you don't need the extra energy, fats just make you overweight and unhealthy. Eat a little every day.



I know how to ... eat healthily!

Which of these things do you do? Which should you do less or more of?

SCI-QUEST

How many teaspoons of sugar does a can of soda have?

ACTIVITIES

2. Listen and blend the sounds. Listen and guess the word.

sugary salty vegetables carbohydrates proteins
fats minerals vitamins wholemeal processed

3. Listen and say the food group. Listen and give examples.

4. Think! Work with a partner to design a healthy menu for a day (breakfast, mid-morning snack, lunch, tea, dinner). Now compare this with what you ate yesterday.

5. Do! Processed food often uses different dyes to make a particular colour. Do this experiment to find out what dyes are used to make a brown sweet.

You need:

- a brown sweet
- a glass of water
- coffee filter paper

1. Wet a brown sweet and put a bit of the colour on a piece of coffee filter paper.
2. Put the paper in the glass of water and watch the water go up the paper.
3. Leave it for an hour. What colours can you see?

6. Check your learning.

A healthy lifestyle

READ & THINK

Read and answer:

a) What is important about exercising?
b) What should you do before going to sleep?
c) How can you protect your body against viruses and bacteria?

Be active

Do some energetic exercise at least three times a week. Not everybody likes basketball or football but there are other sports and activities you can do. Remember this means you exercise your heart and lungs as well as the muscles of your locomotor system.



Limit screen time

How many activities do you do looking at a screen? How long do you spend doing them? And what is your body doing? Try not to spend more than two hours a day (not counting when it's part of your homework or course).



Sleep

It's important to sleep at least nine hours a night so that you can be awake and active during the day. Also, there are different kinds of sleep. Studies show that people who don't use a screen before they go to bed sleep better.



Watch out for those bugs!

You can protect your body from bacteria and viruses by making sure you:

- Wash your hands before eating, after going to the toilet and after touching an animal.
- Brush your teeth after eating.
- Don't eat food past its use-by date or that has mouldy bits.
- Wear plastic shoes when you go to a swimming pool.
- Use a tissue to blow your nose or when you sneeze. And throw it away in the bin afterwards.



ACTIVITIES

2. Listen and mime.

3. Listen and sing the 'I'm feeling good! I'm feeling great!' song.

4. Think! Make a list of energetic activities. Use the pictures on the previous page to help you. Put a tick beside the ones you do, a circle beside the ones you would like to do and a cross beside the ones you don't like.

5. In your notebook, copy the sentences that are correct and correct the ones that are wrong.

- a) Wear plastic shoes at the swimming pool.
- b) Brush your teeth before eating.
- c) Do an energetic activity once a week.
- d) Go to bed at 12 o'clock and get up at 7 o'clock.
- e) Read a book before you go to sleep.
- f) Don't check the use-by date before eating a yogurt.

6. Do! With a partner, say what you are going to do to improve your lifestyle. Choose three 'resolutions' and write them in your notebook. Look at them again in a week. Have you kept to them?

7. Check your learning.

Health and medicine

READ & THINK

Read and answer the questions:

a) What was invented to cure infections caused by bacteria?
b) When do people have vaccinations?
c) What machines have been invented to help prevent or cure illnesses?

Discoveries and inventions

Through history, scientists have made discoveries and invented machines that help to prevent and cure illnesses. Here are just a few of them:

Penicillin was discovered in the 1920s. Penicillin and other **antibiotics** help to cure infections caused by **bacteria**.

The **first vaccination** was discovered in 1796. Vaccinations help to prevent very serious illnesses, such as polio and tetanus, caused by **viruses**. Now, babies and young children go through a vaccination schedule to protect them. There are also special vaccinations for older people or when you visit a country with different common illnesses caused by viruses.



The **X-ray machine** was invented in 1895. It allows doctors to see if bones or joints are damaged, for example, after a fall or an accident.



The **ultrasound machine** was invented in 1963. It is a very complex machine that allows doctors to see inside our bodies, for example, to observe how a baby is growing in the uterus or if our heart is working properly.



First Aid

When someone is bleeding, press down on the cut with a soft cloth. This will help to stop the bleeding. Remember to clean a cut well to prevent infection.



When someone has a burn, cool it under cold running water for 10 minutes. When it is cool, cover it with kitchen film to keep it clean and help the pain.



When someone is choking, hit them firmly on the back.



If someone is badly hurt, tell an adult immediately or call the emergency services.



ACTIVITIES

2. Listen and say the **First Aid** chant.

3. Put these discoveries and inventions in the order they were discovered or invented.

penicillin the X-ray machine the ultrasound scanner the first vaccination

4. Think! Work with a partner to answer the questions.

- a) What helps to prevent the flu virus, an antibiotic or a vaccination?
- b) What should you do if a friend chokes on a sweet?
- c) When you fall over, what machine is used to see if there are any broken bones?
- d) If you see someone having an asthma attack, what should you do?

5. Do! Find out about what vaccinations are given in your country. With a partner, make and decorate a vaccination schedule.

6. Check your learning.

Let's work together!

Eat me! / Don't eat much of me! posters

Almost all food that is not fresh has been processed. This means it has been packaged or tinned in a factory. Sometimes this is not a problem, but often colouring, sugar, salt and fat is added to food to make it taste better. You can tell this by reading the ingredients on the food label.

Materials

- card
- food labels
- glue
- scissors




- Put all the food labels in the middle of the table. Write the titles of your posters.
- Read all the labels and decide which side of the poster they should go on.
- Stick your food labels on the posters.
- Present your posters to the rest of the class.

Experiment time!

Sugar in soft drinks

Are soft drinks corrosive?



Materials

- 3 cans of different soft drinks
- a bottle of water
- milk
- 5 old and dirty coins
- 5 plastic cups
- a camera

- Label each of the cups with the name of one of the soft drinks, the milk and the water.
- Put the right soft drinks, the milk and the water into the right labeled cups.
- Drop one of the dirty coins into each cup. Leave the cups for 24 hours.
- Write in your notebook which coins are cleaner. This will tell you which drinks are corrosive. Which of the coins hasn't changed?

Hypothesis
Are soft drinks corrosive?
What does this tell you about the effect of drinking soft drinks on your digestive system?

Let's revise!

- Copy and complete the diagram in your notebook. Don't forget to complete the mind map on page 23.



- Complete the crossword and find the hidden word.
 - Hit someone on the back when they are doing this.
 - Do this at least three times a week.
 - This prevents you from catching diseases caused by viruses.
 - You should do this at least 8 hours out of every 24.
 - These help to cure infections caused by bacteria.
 - Ultrasound machines help doctors to see this organ is working properly.

The hidden word is _____.

Steve



diet 5/10
exercise 8/10
healthy habits 10/10

Philip



diet 8/10
exercise 5/10
healthy habits 5/10

Michael



diet 5/10
exercise 10/10
healthy habits 8/10

Darren



diet 8/10
exercise 5/10
healthy habits 10/10

- Think** Which is the odd one out? In your notebook, write why.
 - a) mango apple carrot milk
 - b) crisps soft drinks yoghurt sweets
 - c) judo playing computer games playing football dancing
 - d) computer X-ray machine ultrasound machine antibiotic
- In your notebook, match the words and write sentences.

We should wear plastic shoes at the swimming pool.

a) vegetables	1. hands
b) plastic shoes	2. carbohydrates
c) brush	3. bin
d) butter	4. fats
e) wash	5. vitamins
f) chicken	6. teeth
g) tissue	7. swimming pool
h) brown bread	8. proteins
- Copy and complete the sentences using the following words:

vaccination schedule infections viruses antibiotics

 - We can use _____ to protect them from _____.
 - Babies go through _____ to protect them from _____.

MY PROGRESS

Think Copy the sentences and draw a smiley next to each one.

I know what different nutrients do.

I know where to find different nutrients.

I know which nutrients I need a lot/only a little of.

I know other ways to keep healthy.

I know about some medical inventions.

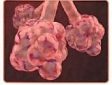
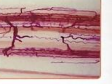
I know how to do some first aid.

😊 No, I need to study more.

😄 Yes, I do.

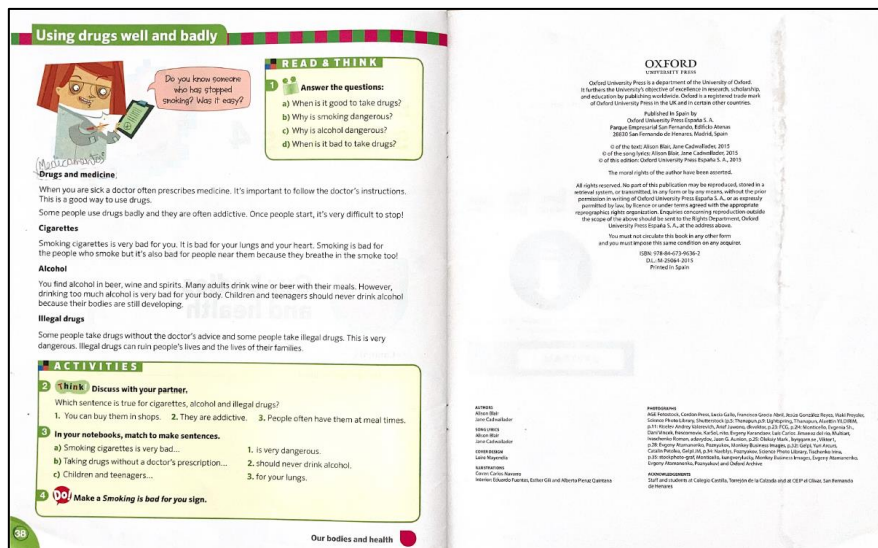
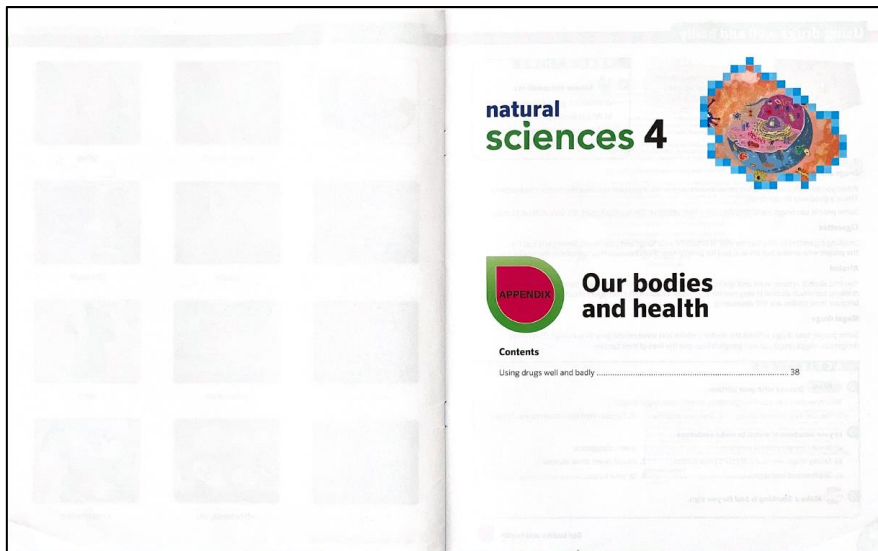
😁 Yes, I know this very well.

Picture dictionary

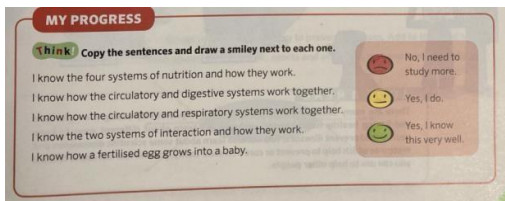
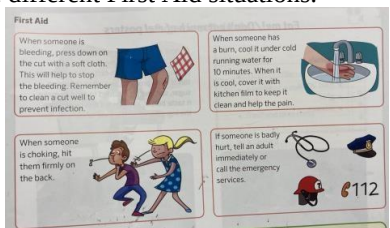
		
alveoli	antibiotics	arteries
		
bacteria	calcium	capillaries
		
clot	embryo	nutrients
		
penicillin	plasma	platelets

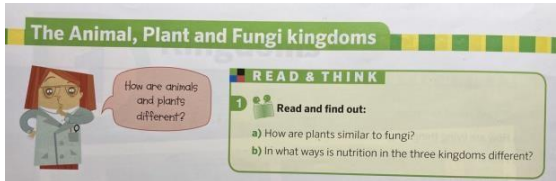
Picture dictionary

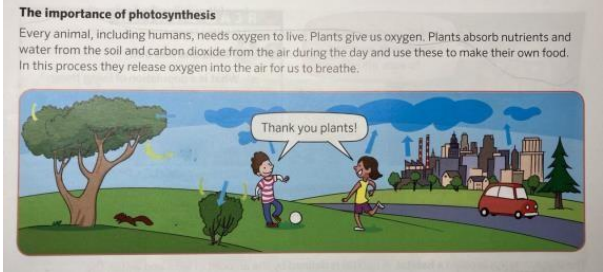
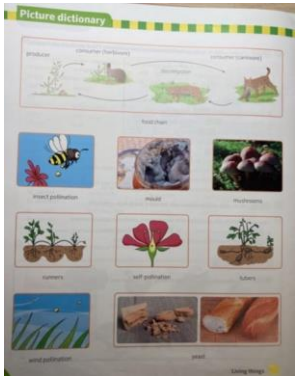
		
processed	red blood cells	saliva
		
scab	sneeze	ultrasound
		
umbilical cord	vaccination	veins
		
virus	white blood cells	X-ray machine



Appendix 2. Analysis of the CLIL textbook checklist

BLOCK	RELEVANT CRITERION	A BRIEF DESCRIPTION OF THE CLIL MATERIALS
I. GENERAL	A. Structure 3. It includes self-evaluation at the end of the modules	At the end of each module, there is an activity for self-assessment where students must check whether they have acquired the contents of the modules up to three different levels (see Picture 1).  Picture 1. My progress However, I think that the statements should be formulated as “I can” statements and, therefore, they should be linked to what students “can do” and not just to what they “know”.
	B. Supplementary materials 12. It contains appropriate pictures, diagrams, tables ...	All the modules within this book are full of pictures, diagrams, tables and other visual resources. This facilitates learners’ comprehension as it helps them understand and organize the information provided in the texts. As it can be observed (see Picture 2), the visuals are very appropriate for the contents.  Picture 2. The Plant and the Animal Kingdoms
II. CONTENT	21. It provides support to simplify content (scaffolding)	In these modules, there is an extensive use of scaffolding techniques to simplify content mainly through the use of visuals. To name an example (see Picture 3), learners can easily understand the text when looking at the pictures of the different First Aid situations.  Picture 3. First Aid
	23. The activities suggested for practising the content are varied	In each module there are varied activities to practise the contents. Learners can practise the four language skills (writing, speaking, reading and listening) while learning the contents. There are fill-in-the-gaps activities, drawing activities, true or false activities, etc. There is also a small project as well as an experiment (see Picture 4) to be done in groups. These activities are more experimental and manipulative. This is important as it fosters students’ motivation towards the science and they can learn by doing.

		 Picture 4. Experiment time!
III. COGNITION	29. It caters the needs of different learning styles	As it has been mentioned above, visuals are present in almost all activities and contents. There is a wide variety of activities: every module combines listening, visual (most activities include visuals and there is also use of visual strategies like making key vocabulary salient by using different colours and fonts) and more kinaesthetic activities (projects, experiments). This can be seen in all the pictures present in previous sections. Multiple intelligences are also developed but not all of them in every unit. Except for the musical intelligence, all intelligences proposed by Gardner (1983) are developed within this book in different levels. The dominant ones are the linguistic and visual ones.
	30. Activities activate previous knowledge	All contents are introduced with a few questions to get students thinking about the contents that are going to be developed (see Picture 5). There are also different pictures that could facilitate this purpose as when learners look at a picture, they start thinking about what they are looking at (what it is, what they know about it) prior to reading the text or doing the activities.  Picture 5. Read and think
IV. COMMUNICATION	34. It provides support to simplify language (scaffolding)	There is a logic sequence of contents of activities which go from easier to more difficult ones. Different examples can be found in the book where language is simplified (see Picture 6). Sentences are short and in imperative, in simple structures.  Picture 6. Things we should or shouldn't do.
	38. Activities are balanced between individual response, pair work and group work	There is a good balance of individual and pair work, but group work is very reduced compared to the other two types of groupings. All the contents in every module include all three types of grouping but the only group activity throughout each module is the “Let’s work together” section where students do a sort of mini project related to the contents of the corresponding module. However, I think that pair activities can be easily done in groups. Therefore, it is up to the teachers to adapt and change the groupings when they see it fit.

V. CULTURE	39. It relates content to the learners' culture and environment	All the plants, animals and other things shown in the different modules are close to the environment of the learners. The settings displayed are also close to the environment of the targeted learners (see Picture 7) so that they can relate to the contents more easily. In this picture, it can also be observed that we should be thankful for the role plants play in releasing oxygen for us to breathe. 
	43. The content is free from stereotypical images	This book shows non stereotypical images regarding gender, both boys and girls do different activities indistinctively. However, it shows a prevalence of young, white and slim bodies. The presence of not slim people is non-existent and there are almost no images of people that are not white. This can be observed in all the pictures included in the different sections, where all the people that appear are white and thin. On the other hand, not showing fat bodies could be due to the fact that it fosters healthy habits but there are people with weight problems not because of their habits but because of health issues. In addition, all this lack of diversity does not represent the diversity present in today's society. All in all, the content is not completely free of stereotypical images.
VI. LANGUAGE	46. The language is authentic	None of the modules include any pieces of authentic texts. All input provided by the textbook is considered to be created from scratch for the purposes of instruction. In addition, there are not oral texts. The few listening activities that are found focus on pronunciation and merely consist of word repetition on the part of the learners.
	47. It gives guidance in the presentation of vocabulary	The new vocabulary items are often made salient (appear in a different colour and in bold) and are often associated either with a picture, a definition or both. This helps students understand and assimilate the new lexis related to the contents. In addition, there is a picture dictionary at the end of each module (see Picture 8) to review the new lexis of the corresponding module. 
	50. It gives practice in guided composition in early stages	Throughout each module there are several written activities (i.e., activity 6) that are quite guided (see Picture 9). This is so because most of the information that students have to include in it has been presented in the previous activities. This way, students already know the language and the content that they need to write.

		ACTIVITIES 2 Listen and mime. 3 Listen and sing the <i>I'm feeling good! I'm feeling great!</i> song. 4 think Make a list of energetic activities. Use the pictures on the previous page to help you. Put a tick beside the ones you do, a circle beside the ones you would like to do and a cross beside the ones you don't like. 5 In your notebook, copy the sentences that are correct and correct the ones that are wrong. a) Wear plastic shoes at the swimming pool. b) Brush your teeth before eating. c) Do an energetic activity once a week. d) Go to bed at 12 o'clock and get up at 7 o'clock. e) Read a book before you go to sleep. f) Don't check the use-by date before eating a yogurt. 6 With a partner, say what you are going to do to improve your lifestyle. Choose three 'resolutions' and write them in your notebook. Look at them again in a week. Have you kept to them? 7 Q U I Z Check your learning.
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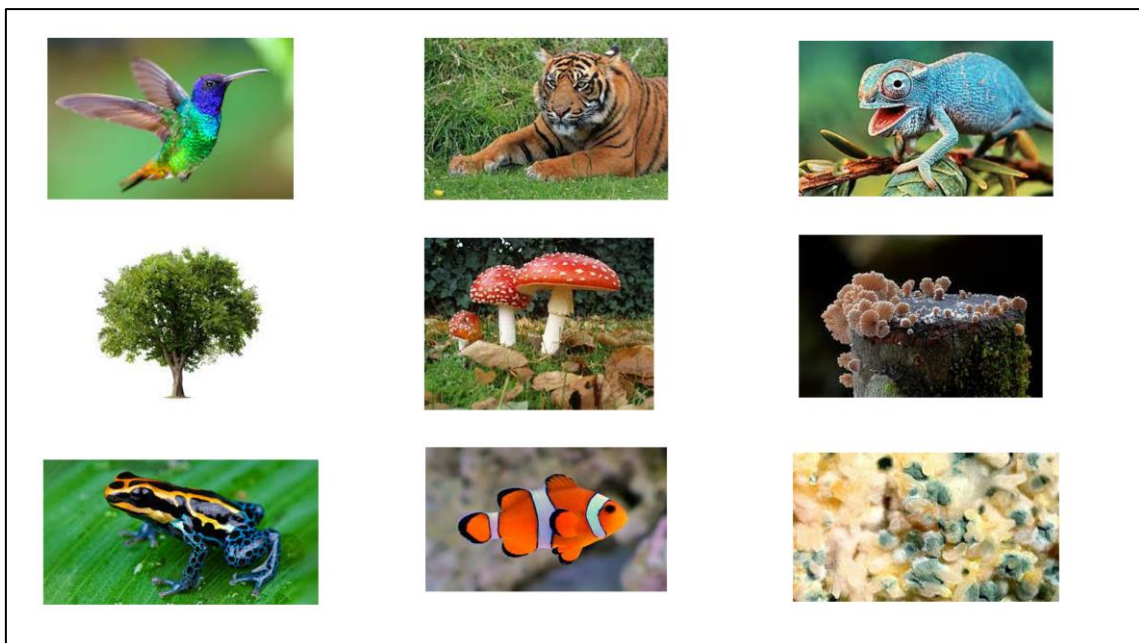
Picture 9. Activity 6

Appendix 3: Relation of learning outcomes with evaluation standards

Natural Science	
Objectives	Standards [My own translation]
Extract and classify specific information from a video about ecosystems using mindmaps. Write a short description of an ecosystem using a self-assessment checklist.	Est. CN. 1.1.1. He/She searches for and selects specific and relevant information about events, facts or natural phenomena, analyzes it, reaches a conclusion, and communicates the report orally and / or in writing, with clarity, cleanliness, order ..., using an appropriate specific vocabulary.
Identify ecosystems and its elements using the adequate vocabulary. Create a food chain describing the trophic relationships between living beings in it.	Est. CN. 3.2.2. She/He identifies the basic differences and relationships between living beings (cooperation, competition, food chain) and inert beings in the habitats of an ecosystem: pond, forest, desert, river, park ...
Perform an oral presentation about an ecosystem in groups in English using ICT. Do a PowerPoint presentation about an ecosystem, its elements and how they are related in groups and using ICTs.	Est. CN. 1.1.1. He/She searches for and selects specific and relevant information about events, facts or natural phenomena, analyses it, reaches a conclusion, and communicates the report orally and / or in writing, with clarity, cleanliness, order ..., using an appropriate specific vocabulary. Est. CN. 1.2.1. She/he Cooperatively carries out tasks, simple projects and small investigations on the human being, health, living beings, matter, energy, machines, technology, events ..., beginning in the posing of problems, enunciating some hypotheses and drawing conclusions to make a final report simple. Est. CN. 1.2.2. He/She uses information technologies, such as word processors and presentations, to present a report.
Classify information about ecosystems using a mindmap. Classify information while listening to a video about food chains using a chart. Look for specific information while listening to a video about ecosystems using a graphic organizer.	Est. CN. 1.1.1. She/He searches for and selects specific and relevant information about events, facts or natural phenomena, analyses it, reaches a conclusion, and communicates the report orally and / or in writing, with clarity, cleanliness, order ..., using an appropriate specific vocabulary. Est. CN. 3.2.2. He/She identifies the basic differences and relationships between living beings (cooperation, competition, food chain) and inert beings in the habitats of an ecosystem: pond, forest, desert, river, park ...

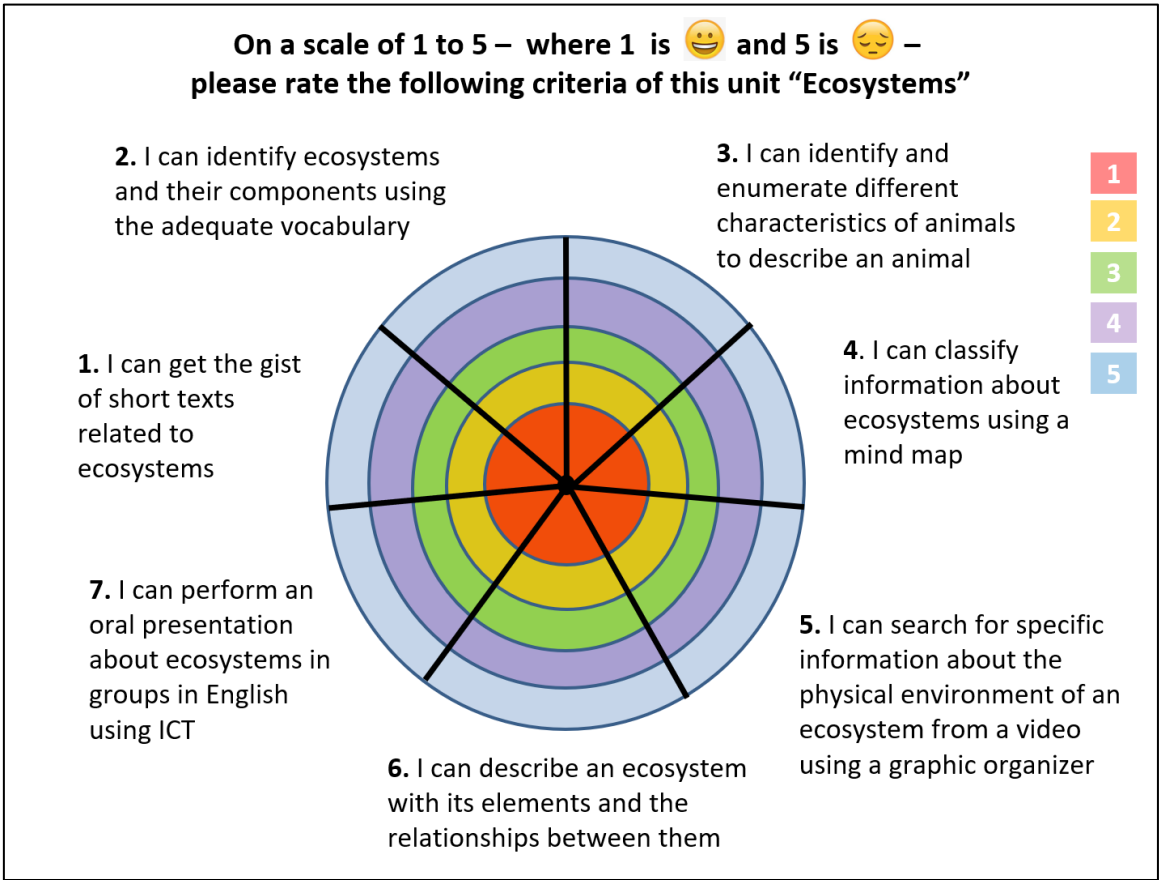
English as a Foreign language	
Objectives	Standards [My own translation]
Get the general picture of an oral text (video) about ecosystems. Get the general picture of an oral text (video) about food chains.	Est.ING.1.2.6. He/She recognizes the main ideas in simple and well-structured presentations on topics of interest to him/her, relying on images and illustrations (e.g., oneself, family, school, hobbies, description of an object or place), applying listening comprehension strategies. Est. ING. 3.1.2. She/He understands the global meaning, main ideas and specific information in short articles in printed magazines or web pages adapted for children on familiar topics or of their interest and in short stories or stories adapted with repetitive structures where it identifies the main characters, as long as image and action drive much of the plot (adapted readings, comics, etc.).
Classify information about ecosystems using a mindmap. Classify information while listening to a video about food chains using a chart. Look for specific information while listening to a video about ecosystems using a graphic organizer.	Est. ING.1.1.3. She/He recognizes main ideas and specific information from simple and well-structured presentations on familiar topics or topics of interest (e.g., sports, games, etc.), and interprets the general meaning in television programs or other audio-visual material within their area of expertise or interest.
Express what they think using expressions such as “I think/agree” to fill in a KWL chart. Use vocabulary related to animals and their body parts to describe animals orally to a partner. Answer yes or no to yes-no questions such as “Do you have...?” and “Are you...?” Use the structures “It is...” and “It has...” to describe an animal orally to a partner.	Est. ING. 2.4.2. She/He participates in face-to-face conversations to fulfil a certain communicative function, in which instructions are given (e.g., in a craft), reproducing the intonation of the English language, although a clear influence of the first language is perceived.
Write a short description of an ecosystem using a self-assessment checklist.	Est. ING. 4.2.1. He/She writes short and simple personal correspondence (messages, notes, postcards, emails, congratulations), in which you thank, congratulate someone, make an invitation, give instructions, or talk about yourself and your closest environment (family or friends), making use of some basic strategy of text production, both planning and execution.
Perform an oral presentation about an ecosystem in groups in English using ICT.	Est. ING. 2.1.1. He/She makes very short and simple presentations, previously prepared and rehearsed on topics of interest to him, showing basic mastery of simple syntactic structures and widely used vocabulary, considering pauses and hesitations as normal and although errors continue to be made in tense or agreement.

Appendix 4: Introductory PowerPoint slides



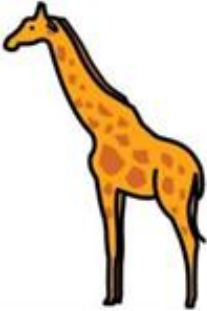
Source: Originally made using “Wordle” and “PowerPoint”.

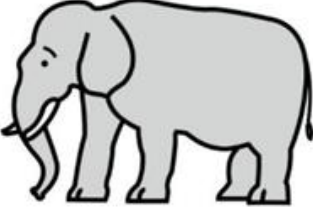
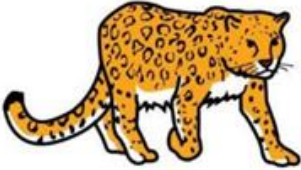
Appendix 5: Target evaluation chart



Appendix 6: Pictures of animals and their corresponding descriptions

I am small and grey. I have short legs and a short tail. I like carrots and vegetables.	I am a rabbit 
I am black and white. I can't fly. I can swim I have short legs. I eat fish.	I am a penguin 
I am big and grey. I have a big head and horns. I can swim.	I am a rhinoceros 
I am dangerous and big. I have sharp teeth and a big mouth. I can swim.	I am a shark 
I am small. I don't have legs. I have a shell. I am very slow.	I am a snail 

I am very long. I don't have arms or legs. I slide.	I am a snake 
I am black and yellow. I am very small. I have short legs and wings. I like flowers.	I am a bee 
I am very tall. I have long legs, a long neck and a tail. I can run fast.	I am a giraffe 
I am very strong and dangerous. I have wings. I can fly.	I am an eagle 
I am very large. I live in the ocean. I breathe air through a hole in my back.	I am a whale 

I am very big. I have a trunk and large ears. I have a small tail. I am very heavy.	I am an elephant 
I have colourful feathers. I have a strong beak. I can talk.	I am a parrot 
I have a long tail, sharp claws and small ears. I have spots. I am very fast.	I am a cheetah 
I am black and white. I have black eyes, small ears and big paws.	I am a panda bear 

Source: Originally made with pictograms from ARASAAC:

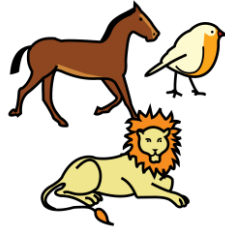
<https://arasaac.org/pictograms/search>

Appendix 7: Cheat sheet of Animal Body Parts



Source: Retrieved from <https://www.thinglink.com/scene/484213976855478272>

Appendix 8: Cheat sheet for asking questions 1



Find your matching picture or description!
(You can use this chart below to ask around)

Does it have _____?

- Yes, it has.
- No, it hasn't.

Example: Does it have **ears**?

- Yes, it has.
- No, it hasn't.

Is it _____?

- Yes, it is.
- No, it isn't.

Example: Is it **yellow**?

- Yes, it has.
- No, it hasn't.

Ask your partners!

Does it have _____?

- Yes, it has.
- No, it hasn't.

Example: Does it have **big ears**?

- Yes, it has.
- No, it hasn't.

Is it _____ and _____?

- Yes, it is.
- No, it isn't.

Example: Is it **black** and **white**?

- Yes, it is.
- No, it isn't.

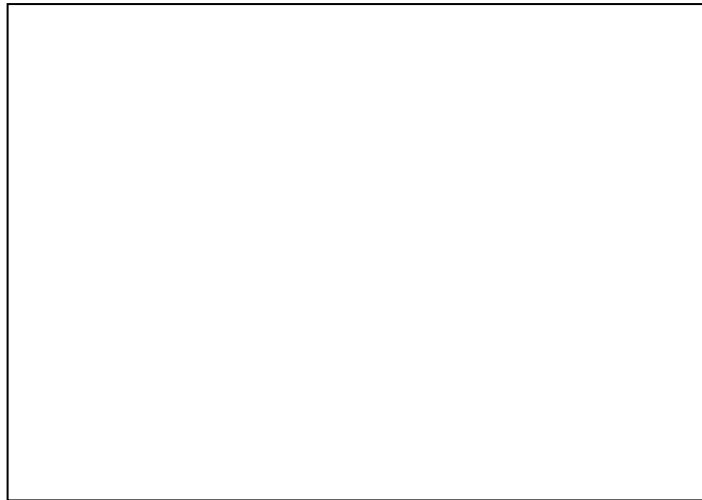
Source: Originally made using "Word".

Appendix 9: Students' handout 1

Draw your secret animal!

1. Draw an imaginary animal. You can decide how many paws it will have; how many eyes, if it has claws or not, etc.
2. Now work with a friend. Describe your secret animal to her/him (do not show her/him your picture! It is a secret animal!)
3. Your friend will now describe his or her imaginary animal. Try to draw it without looking at the picture.

My secret animal



My partner's secret animal



Appendix 10: Cheat sheet for asking questions 2

What is it like?

- It is _____.

Example: What is it like?

- It is **big**.

How many _____ does it have?

- It has _____.

Example: How many **paws**
does it have?

- It has **four paws**.

Source: Originally made using “Word”.

Appendix 11: Students' handout 2.1

Write sentences using these words in pairs: FLORA, FAUNA, PHYSICAL ENVIRONMENT, ECOSYSTEM, LIVING THINGS...

You can use the following structures or other ones:

I think _____ is _____.

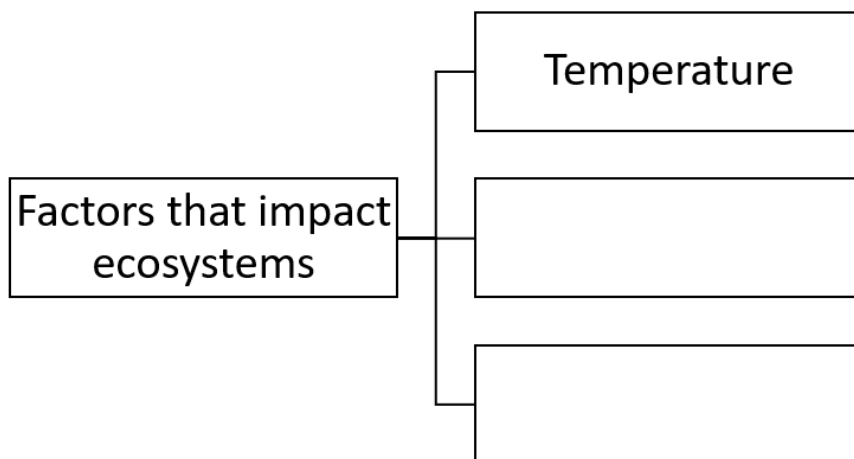
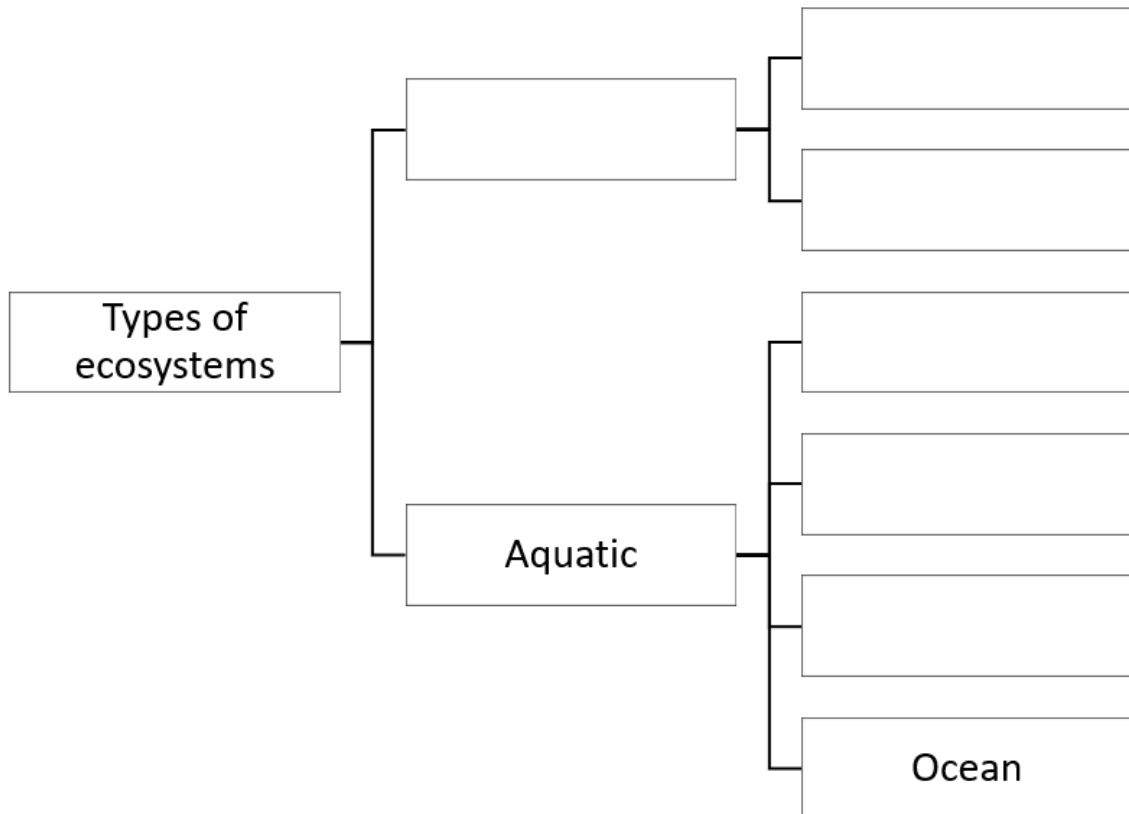
Fauna/Flora is _____.

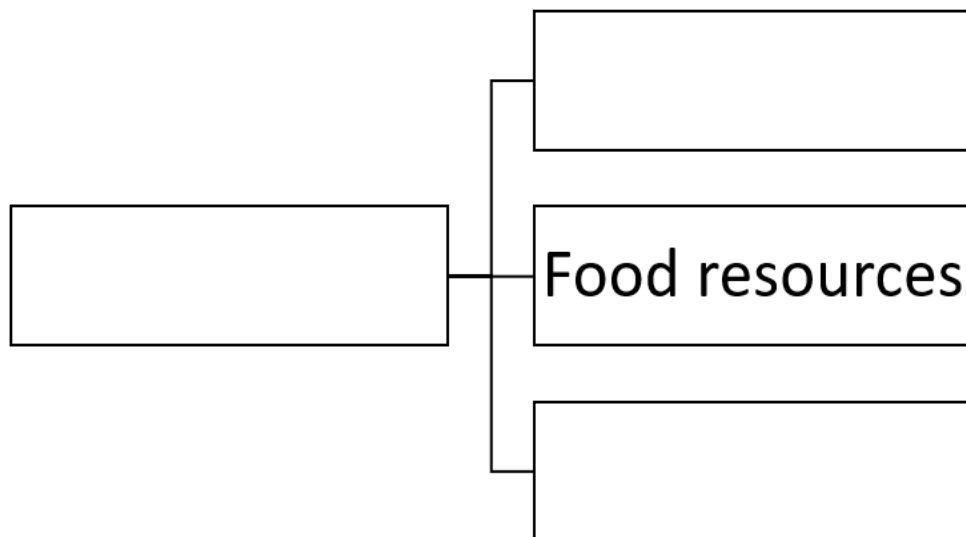
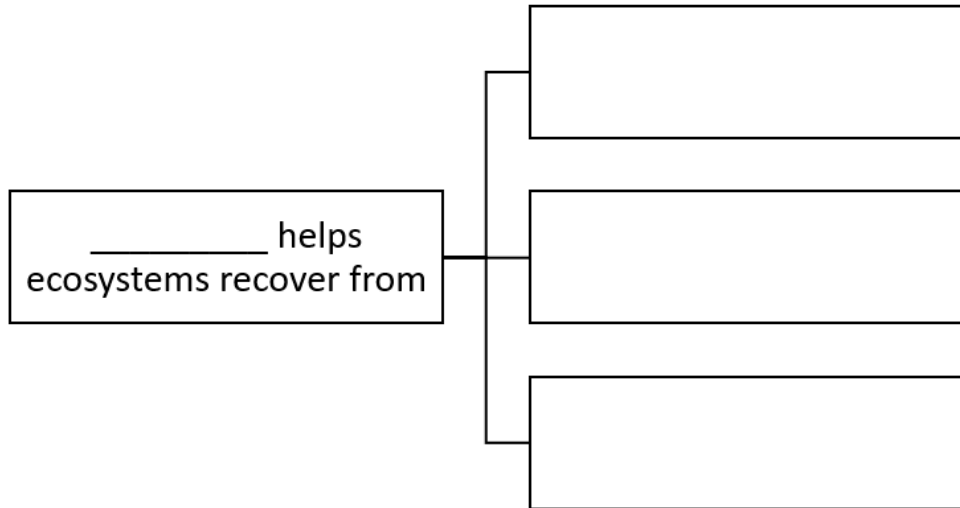
The physical environment is composed of _____.

Living things are _____.

Appendix 12: Blank mindmaps for the video “What is an ecosystem?”

What is an ecosystem?





Source: Originally made using “Word”.

Appendix 13: Video transcription “What is an ecosystem?”



WHAT IS AN ECOSYSTEM?

Today we'll be heading outside to learn what ecosystems are, how we classify them and why they matter to you and me. Let's get started!

Ecosystems are communities of interacting plants, animals and their surroundings. They can be as large as Yellowstone Park or as small as a single tree. Everything in the ecosystem is connected through a network of interactions which allow energy and nutrients to flow throughout the entire system. For example, let's think about a forest. Trees turn sunlight and nutrients into leaves, branches and fruits, which provide food and shelter for animals. These animals help the trees grow by spreading their seeds in pollen and create nutritious soil when they produce waste or die and decompose. We'll talk about this in more detail in future videos but for now the important thing to remember is that ecosystems are communities of many interconnected plants, animals and their surroundings.

We usually define ecosystems based on the types of plants and animals which can be found there. There are two main types of ecosystems: terrestrial and aquatic. Terrestrial ecosystems or land-based include habitats such as forests and grasslands. Aquatic ecosystems are water-based and include habitats such as lakes, rivers, estuaries and the ocean.

Both these types of ecosystems can occur in many different climates and include a wide variety of organisms depending on factors such as temperature, precipitation and geographic features. For example, a forest in North Carolina might be home to animals such as red-shouldered hawks or black rat snakes but a forest in Costa Rica could have scarlet macaws or bird snakes.

In different videos we'll learn about the different jobs that animals can have in an ecosystem but, for now, let's talk about why ecosystems are important to you and me. For one thing, healthy ecosystems ensure that a wide variety of plants and animals are able to survive and thrive. This variety of life is known as biodiversity. Biodiversity helps ecosystems recover from changes such as wildfires, diseases or invasive species which could seriously upset the natural balance. When an ecosystem becomes unbalanced, it is harder for animals to find food and shelter and plants to get the nutrients that they need to grow. This matters to you because healthy ecosystems keep our air and water clean and provide nutritious food for us and other animals. Also, studying these natural areas helps us learn how to protect them and keep them healthy. Can you think of an ecosystem that you enjoy spending time in? Maybe you like going on vacation to the beach or mountains or playing soccer at a park. What animals and plants do you find in those places? When you make observations about the natural world, you are learning about ecosystems just like scientists.

Source: My own transcription. Made with Canva:

https://www.canva.com/design/DAEuhwjhU1Y/share/preview?token=O-h7YEJJK993Tl88DKak7g&role=EDITOR&utm_content=DAEuhwjhU1Y&utm_campaign=designshare&utm_medium=link&utm_source=sharebutton

Appendix 14: Students' handout 2.2

Prompt or question	What I think	What my partner thinks	What we will share
Ecosystems don't help regulate climate.			
Ecosystems can be very tiny, or they can be as large as the Sahara.			
Ecosystems with greater biodiversity are healthier and more sustainable.			
If one type of organism was removed from an ecosystem, what would happen?			
Human intervention (deforestation, pollution...) can be very negative for ecosystems.			

Appendix 15: Extracts from the video divided in groups

Teams	Extracts (min of the video)	Type of habitat
Teams 1 and 2	4:21 to 5:49	Tundra
Teams 3 and 4	5:50 to 7:09	Desert
Teams 5 and 6	7:10 to 8:56	Grassland
Team 7	8:57 to 13:14	Forest habitats
Team 8	13:15 until the end	Water habitats

Appendix 16: Graphic organizer to fill in while watching the video “Habitats for kids”

Name of the habitat	Where is it?	What is the climate like?	How much water is there?	Flora and Fauna	Is there something else important about the habitat?

Appendix 17: Self-assessment checklist

My ecosystem description checklist



		Student check	Teacher check
Content	I write all the information in the think chart.		
Accuracy	I use vocabulary related to ecosystems.		
	I use the structure “because” when I explain the cause of something.		
	I write the words with the correct spelling .		
Punctuation	I use capital letters when I start a sentence . E.g. It is...		
	I finish a sentence with a full stop . E.g. It has four legs.		

Appendix 18: KWL chart

KWL Chart

Topic: _____

What I know	What I want to know	What I learnt

Appendix 19. Students' handout 4

1. Do you think the animals, plants and fungi need each other? Why? Talk to your partner.

✓ You can use some or other structures:

- **I think** they need each other **because** _____.
- **As I see it**, they don't need each other **because** _____.
- **In my opinion**, they need each other **because** _____.
- **I agree with you** ☒ **I don't agree with you** ☐

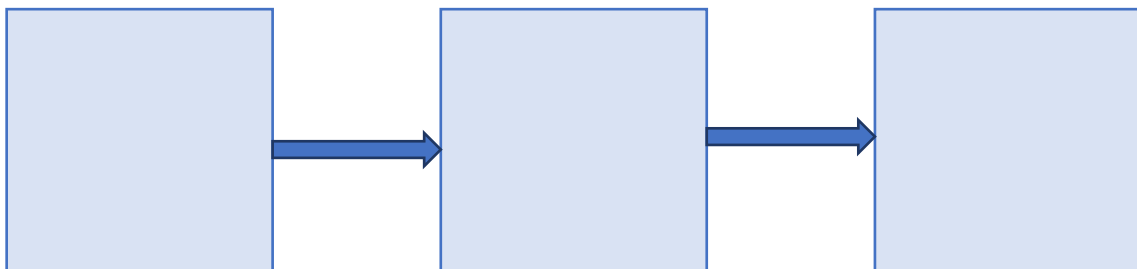
✓ You can give examples to support your opinion:

- **For example:** animals need _____ to eat.
- **For instance:** plants are important because _____.

2. In what order would you put these living beings in a food chain? Which one is a producer? Which one a consumer? Fill in the food chain diagram below. Then, compare with your partner.



FOOD CHAIN



3. Fill in this chart while you listen!

Living being (ex. grass)	Place in the food chain (ex. producer)

Appendix 20: Food chains video transcription



No matter where on earth you go, living things are connected to each other. From the tiniest of organisms to the largest of creatures, all living things need energy to survive. So where does that energy come from?

Well, matter and energy pass from one organism to another, connecting living things like links in a chain: a **food chain**! Of course, a food chain is not an actual chain. It's a way to talk about the relationships between organisms and show how matter and energy flow between living things. Every living thing on earth is part of a food chain, including you, and most things are part of more than one.

All of the energy in earth's food chains comes from the sun. The sun's energy reaches the earth as light and heat, and plants capture some of it and convert it into food through photosynthesis. Because plants make, or produce, their own food from the sun's energy, they are called **producers**. Every food chain must begin with a **producer**, for example, grass. That's because animals cannot create their own food. They must eat or consume, energy from other sources. That's why animals are called **consumers**.

The second link in a food chain is a **consumer** that eats plants, an herbivore. When an animal eats plants, some of the energy the plant captured from the sun is transferred into the animal's body, where it is used for things like moving, breathing and growing. An herbivore is called a **primary consumer**. Primary means first because an animal eating plants is the first consumer in the food chain. Let's add a rabbit to our food chain. Next comes a **secondary consumer**, the second consumer in the food chain. This consumer is a carnivore and gets their energy by eating other animals. Maybe our rabbit will get eaten by a fox.



When the fox eats the rabbit, part of the energy that the rabbit got from the grass is transferred to the fox. This is the end of this simple food chain. The rabbit eats the grass, then the fox eats the rabbit. The energy that came from the sun is captured by the grass, transferred to the rabbit, and then transferred to the fox.

Some food chains are longer than this one, but there can't be too many links in a food chain. Each animal in the food chain uses up a lot of energy from the previous level instead of passing it on, meaning that only about 10% of the energy consumed by an animal will be passed on to the next level.

Let's take a look at a longer food chain that also begins with grass. This time, let's make our **primary consumer** a grasshopper. The grasshopper eats the grass, and then gets eaten by a **secondary consumer**, a bluebird. Then the bluebird gets eaten by a **tertiary or third-level consumer**, a snake. The snake is eaten in turn by an owl. The owl is the **apex predator** in this food chain.

Apex predators are not hunted and eaten by any animals. We say that they are at the top of the food chain! You probably recognize a lot of apex predators like lions, sharks, eagles and crocodiles. Just because they don't get eaten doesn't mean that they don't contribute to the food chain, however!

When an animal dies their body is broken down by **decomposers**. Decomposers are usually bacteria and fungi that break down dead plants and animals into nutrients in the soil that in turn help the plants at the beginning of the food chain to grow. It's the circle of life!

Natural ecosystems usually have more complicated food chains, however. A network of interconnected food chains is called a **food web**. The arrows are used to show which direction the energy flows and help keep track of the connections between organisms. Now that you understand a little bit more about food chains, see if you can find the connections between living things around you!



Source: My own transcription. Made with Canva:

https://www.canva.com/design/DAEuh0MNMfo/share/preview?token=i7dz9ZRVdbTBnwjDh7PkFA&role=EDITOR&utm_content=DAEuh0MNMfo&utm_campaign=designshare&utm_medium=link&utm_source=sharebutton

Appendix 21: Language cheat sheet

- Think of living beings you know around you (plants, animals...). Are they part of a food chain? Can you draw a food chain diagram of some of the living beings you know?



- Try to write some sentences explaining the relationships between those living beings. You can use this chart to help you:

Rabbits	are	primary consumers	because they eat	grass

Appendix 22: Final presentation self and teacher assessment checklist

Our final presentation checklist 		Group	Teacher	Teacher comments
Content	We include at least 6 living beings .			
	Fauna and flora are described.			
	We describe the climate and how it affects living beings.			
	We explain how water affects the ecosystem.			
	We describe the relationships between all the living beings.			
	We include pictures or drawings of the living beings.			
Accuracy	We use the vocabulary we learnt in this unit.			
	We use the linkers “and” and “because”.			
	We write the words with the correct spelling .			
Oral presentation (3-5 min)	We don't read while presenting.			
	All group members speak during the presentation.			

Appendix 23: Two stars and a wish chart for peer-assessment

Group	 Star	 Star	 Wish

You can use these structures or others to fill in the two stars and a wish chart:



Star

- ✓ I enjoyed the part when...
- ✓ It was a smart idea to...
- ✓ I really liked the way you...
 - ✓ I noticed you...
- ✓ It was interesting how...



Wish

- ✓ Maybe you could add...
- ✓ A recommendation would be to
 - ✓ It would be great if...
- ✓ Next time you could try...

Appendix 24. Analysis of my CLIL didactic unit checklist

BLOCK	RELEVANT CRITERIA	A BRIEF DESCRIPTION OF THE CLIL MATERIALS
I. GENERAL	A. Structure 3. It includes self-evaluation at the end of the modules	In this unit, learners are evaluated with different tools for self, peer and teacher assessment. In addition, a target evaluation (see Appendix 5) was introduced at the beginning of the unit for students to see what they are expected to learn by the end of the unit. When the unit finishes, they will have to fill in the target evaluation chart to check whether they have achieved the expected learning outcomes. The statements included this target evaluation are formulated as “I can” statements to connect them with what students are able to do.
	B. Supplementary materials 12. It contains appropriate pictures, diagrams, tables ...	The designed materials contain pictures, diagrams, tables and charts to scaffold both the contents and the language students will need to perform the different proposed tasks. Additionally, input in these sessions is provided through different sources: teacher talk, student talk, written texts and oral texts in the form of videos, which is a multimodal input that provides students with images to help them understand the contents of the videos.
II. CONTENT	21. It provides support to simplify content (scaffolding)	Many tasks include multimodal input to scaffold the content so that learners can understand and assimilate the presented contents. In addition, language cheat sheets are designed to provide students with the language they need to do the tasks within this unit. These language cheat sheets include vocabulary and structures they may need for the development of the activities; yet, allowing them to rely on their own linguistic resources.
	23. The activities suggested for practising the content are varied	As it can be observed, the proposed unit comprises a wide variety of activities to provide students with different ways to practise and assimilate the contents as well as allowing them to use the language in a creative way. For example, there are activities to practise the four language skills (reading, listening, writing and speaking) as well as other skills such as drawing (i.e. in session 1, they have to draw a secret animal and then describe it to a partner so he/she can draw it his/herself), reflecting on the consequences of some facts (i.e. in session 3, they have to discuss about some statements related to issues that affect ecosystems) or extracting and selecting which information is relevant from both oral and written texts (i.e. in most sessions students need to select the information they need to be able to understand the texts and complete the tasks). Most activities require students to integrate different skills in order to complete them. This is especially true in the final sessions, where they must prepare and perform an oral presentation that will integrate all the contents and language they have been working on during the whole unit. In the unit, all the activities are designed to foster the development of cognitive skills and the acquisition of the key competences.
III. COGNITION	29. It caters the needs of different learning styles	This unit caters the needs of students with different learning styles as it provides them with opportunities to use and develop various skills such as drawing, writing, speaking, etc. and take advantage of their abilities regarding different intelligences (kinaesthetic, spatial, interpersonal, naturalist, among others). Most activities are also developed to foster their creativity and critical thinking. In addition, most tasks are designed to be done in pairs or small groups. This is so because it will allow students to complement each other with their different strengths and weaknesses. Videos and visuals are present in all sessions to facilitate the understanding of the content. Most activities include visuals and most activities include at least input in two different ways, being auditory and

		visual. Multiple intelligences proposed by Gardner (1983) are included to some extent except for the musical intelligence, being the linguistic and visual intelligences and the interpersonal, the main ones.
	30. Activities Activate previous knowledge	All sessions include a “before the tasks” activity whose aim is to activate students’ prior knowledge and briefly review what has been worked in class in the previous session. Moreover, in the pre-tasks, learners are often asked to recall what they know about the topic to connect their previous experiences to the new contents and thus foster meaningful learning. The focus is, thus, on LOTS at this stage. This activation is done through different tools and activities that often include visuals and paralinguistic cues to facilitate understanding and prepare students for the vocabulary of the tasks.
IV. COMMUNICATION	34. It provides support to simplify language (scaffolding)	Plenty of scaffolding techniques are used throughout the didactic unit. The use of visuals is a constant as well as the use of different diagrams, charts and tables to promote students’ understanding of the content. A lot of language cheat sheets have also been created to provide learners with the language structures and vocabulary they need to perform the tasks, but also to communicate both orally and in written form. For example, in activity 1 handout 4 (see Appendix 19), a box with examples of structures is provided so that they can use to express their opinions about the proposed questions.
	38. Activities are balanced between individual response, pair work and group work	There is a good balance between individual, pair and group work. During this unit, learners perform activities individually, in pairs and in groups, being the last configuration predominant. Many activities are done first individually and then completed with their peers as to foster that students know what they can do on their own and then what they can do with the help of others. This also allows students to practise both receptive and productive oral skills as they have to listen to their partners and speak to them in order to do the activities. Similarly, this happens within their groups. In this case, more abilities and skills can be combined to do the tasks and foster the inclusion of all learners, no matter their levels at content, language or their individual skills.
V. CULTURE	39. It relates content to the learners’ culture and environment	The contents are related to the learners’ culture and environment as students can connect their experiences and what they know about their context to the new contents introduced in the unit. Most living beings shown are closely related to the students’ context. In addition, YouTube videos are used to expose learners to authentic input that can be interesting and motivating for them. In the unit, learners are asked to connect the contents to their interests and their close environment. This can be seen, for example, in the post-task of session 4 (see Appendix 19, p. 2) where students are asked to draw a food chain about living beings around them.
	43. The content is free from stereotypical images	The content of this unit is free from stereotypical images. Both boys and girls are equally shown in the unit as it can be observed in the selected YouTube videos to be watched in class where boys and girls from different cultures appear indistinctively.
VI. LANGUAGE	46. The language is authentic	The language used both in the input provided and in the tasks is authentic. Instead of adapting the real input, this input has been made comprehensible by using different scaffolding techniques (preparing students for the vocabulary, using visuals, activating students’ schemata and making key vocabulary salient, among other techniques). In addition, this input is provided in oral and in written form so that students are exposed to the two types of real input from different sources (teacher talk, student talk, videos and oral and written texts).
	47. It gives guidance in the presentation of vocabulary	Both BICS and CALP are targeted in the designed unit. The vocabulary is presented in various ways through different activities by activating prior knowledge, providing images or video, language cheat sheets or making key vocabulary salient. New vocabulary items are often presented in the pre-tasks to enable

		students to recognize and understand them in the tasks in both oral and written form as well as to use them in context to do the tasks.
	50. It gives practice in guided composition in early stages	Throughout the didactic unit there are several written tasks that are guided. When students face written tasks, they are already familiar with the language and the content they need in order to do them because the content and language has been worked previously in the same session or in former sessions. In addition, there is a final task that serves to integrate all the knowledge that has been acquired in which students have to write a presentation to then present it orally in groups in front of the class. All these written tasks contain scaffolding to guide them through the process. To name an example, students are given a self and teacher assessment checklist (see Appendix 17) they can use while they write an ecosystem description.