

Master's Dissertation/
Trabajo Fin de Máster

COOPERATIVE LEARNING IN A CLIL BIOLOGY CLASSROOM

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ABSTRACT

In this master dissertation, the importance of knowing the English language and promoting the interest and motivation of students in their teaching-learning process has led us to design a didactic unit for CLIL biology in which cooperative learning is the foundation.

Designing this unit, we have tried to provide students with the necessary tools and opportunities so they can develop foreign language skills (English) through content learning, always in a CLIL context. The use of cooperative learning has helped us to achieve meaningful learning and has allowed the students to become the protagonists of their teaching-learning process, as well as improving attention to diversity.

In addition to a detailed description of all the main sections comprised in the didactic unit designed, in the first part of the dissertation, a literature review has been included. This section describes the main characteristics of CLIL. Subsequently, the main features cooperative learning are described in detail, in addition the main strategies and techniques to establish this methodology.

Keywords

Cooperative learning (CL), content and language Integrated Learning (CLIL), biology, Compulsory Secondary Education, foreign language.

RESUMEN

En este trabajo, la importancia de conocer la lengua inglesa y de fomentar el interés y motivación de alumnado en su proceso enseñanza-aprendizaje, nos ha llevado a diseñar una unidad didáctica CLIL para biología en la cual se incluye aprendizaje cooperativo.

Con el diseño de esta unidad, proveemos a los estudiantes con las herramientas y oportunidades necesarias para que puedan, en un contexto CLIL, desarrollar habilidades de lenguaje extranjero a través del aprendizaje de contenido. El uso del aprendizaje cooperativo nos ha ayudado a conseguir un aprendizaje significativo y a convertir a los estudiantes en los protagonistas de su proceso enseñanza-aprendizaje, además de mejorar la atención a la diversidad.

Además de una descripción detallada de todos los elementos de la unidad didáctica, en la primera parte de este trabajo, se ha llevado a cabo una revisión bibliográfica donde se describen las principales características de CLIL y del aprendizaje cooperativo, así como las principales estrategias y técnicas para establecer esta metodología.

Palabras clave

Aprendizaje cooperative, aprendizaje integrado de contenidos y lenguas extranjeras (AICLE), biología, Educación Secundaria Obligatoria (ESO), idioma extranjero.

1. INTRODUCTION

Nowadays, society is evolving at a frenetic pace due to various factors. Therefore, education must also adapt and evolve in order to respond adequately and satisfactorily to the new challenges presented by society.

Among the challenges posed in education, due to this fast evolution of society, we can highlight growing concern about the lack of motivation of the learners and the importance of learning and knowing at least one language in addition to the mother tongue (bilingualism). In this sense, teaching innovation plays an essential role, since it is necessary to try to adapt teaching strategies to the current demands and characteristics of the students.

For the reasons described above, student-centered methodologies are currently considered as part of the necessary answer to the present need for change in education, both non-bilingual and bilingual (which we will focus on here).

Student-centered methodologies (henceforth SCM) focus their attention on what the student is able to do, what outcomes students are able to achieve, how they are able to critically make decisions about results and how to evaluate their own progress. In short, students become the protagonists of their own teaching-learning process.

Furthermore, to respond to the knowledge needs of a second language (mainly English) CLIL has appeared (Content and Language Integrated Learning), in Spanish it is called AICLE (Aprendizaje Integrado de Contenido y Lenguas Extranjeras), which works as an innovative methodology, which is characterized by the use of language as an instrument or vehicle in order to teach non-linguistic content.

This Master`s Dissertation (henceforth MD) focuses on creating a didactic unit for CLIL biology that incorporates SCM, mainly cooperative learning. The MD consists of two main parts: a theoretical section which includes a literature review and the design of an the proposal of didactic unit.

2. LITERATURE REVIEW

The literature review consists in three main sections. In the first one, CLIL will be described in detail (definition, origins and development). In the second section, student-centered methodologies will be reviewed, focusing on cooperative learning. This will be

defined and we will explain the main characteristics, assets and pitfalls. We will also explain what strategies exist to work with cooperative learning in class. In the third and final section of this part, a brief explanation will be made in order to explain why cooperative learning is chosen as a methodology in the CLIL context.

2.1. Content Language Integrated Learning (CLIL)

2.1.1. *Origins and definition*

We could define CLIL as the descendant of a methodology that arose in the 1970s in Canada (Canadian immersion programs) and in the US (North American content-based language programmes) (Muñoz, 2007). In Europe, CLIL appeared in Finland in the 1990s as the result of curricular innovations for the teaching of second languages, and has spread rapidly throughout the European Union.

The reason for this gigantic and rapid expansion is the great importance attached, in recent years, to the learning of a second language (mainly English). That is due, in part, to the globalization of societies where it is essential to have labour-competent citizens (Coyle, Hood, & Marsh, 2010).

If we review the specialized literature, we can find many definitions for CLIL. Of all of them, the definition proposed by Coyle, Hood, and Marsh (2010) where they consider CLIL as “a dual-focused educational approach in which an additional language is used for the learning and teaching of both content and language. That is, there is a focus not only on content, and not only on language” stand out. Therefore, CLIL has a dual-focused component with two objectives: on the one hand the content, and on the other hand, the language (two for one). That is to say, the objective of CLIL methodology is integrating the foreign language learning in a transversal way in the curriculum. Thus, employing a different language from the native language (L1) of the student, this increases the exposure of the students to the new language (L2).

2.1.2. *General characteristics*

The most distinctive and innovative part of CLIL is its pedagogical interaction of what Coyle (2007) calls the 4 C’s framework (cf. Figure 1):

- 1) **Content:** It is the specific subject that will be taught through the target language, that is, a contextualized content will be taught through the foreign language. It should always be taken into account that content prevails over language and this content is the one that guides the learning planning. In addition, the content not only implies the acquisition of knowledge but also that the learners create their own knowledge (Coyle, Hood, & Marsh, 2010).
- 2) **Cognition:** It is related to the development of critical thinking and new skills. In this way, CLIL tries to get students to build their own knowledge (meaningful learning) through their reflections and reasoning. This avoids the transmission of decontextualized content between the teacher and the learner.
- 3) **Communication:** As we have said, the target language must be learned in relation to the learning context. Coyle et al. (2010) classify language as: language of learning (specific vocabulary of the content studied), language for learning (language needed to work and communicate in groups) and language through learning (when the contents are reorganized and our own knowledge is reorganized). These three "types" of language depend directly on each other for a proper communication.
- 4) **Culture:** The study of a foreign language encourages the knowledge of the distinctive elements and parts of that culture. This leads us to establish varied perspectives and thus promotes multiculturalism.

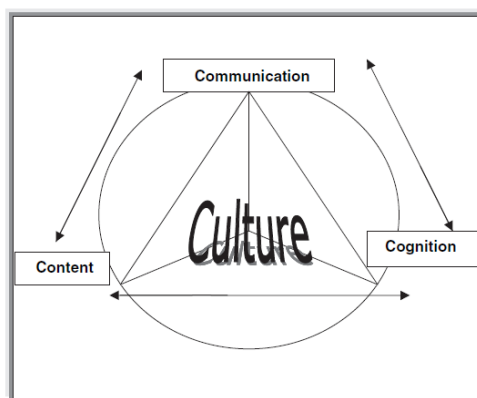


Fig. 1. The 4Cs Framework for CLIL (Coyle D. , 2007).

One of the challenges that CLIL proposes is to integrate all the parts that make up this approach to obtain good results in the teaching-learning process of language and content. However, CLIL is a flexible approach, with diffuse limits, where many models and methodologies of teaching content through foreign languages can be welcomed (Dueñas, 2004).

In this sense, some authors, like Bentley (2010), are able to distinguish between “hard” and “soft” CLIL. In “hard” or “strong” CLIL, professors that are not language teachers can use L2 to teach the contents. On the other hand, the “soft” or “weak” CLIL, language teachers include a non-linguistic area in their subject (Ikeda, 2013). Within this, we find a range of models (Met, 1999) (cf. Figure 2):

- Immersion programs.
- Sub-immersion programs.
- Sheltered subject-matter teaching.
- Adjunct language instruction.

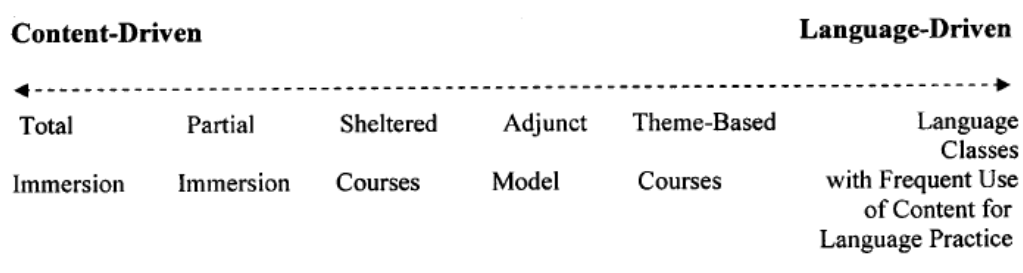


Fig. 2. Flexibility of CLIL (Met, 1999).

The diversity of models allows a flexible adaption, depending on the characteristics and needs of the students, which is one of the strengths of CLIL. CLIL methodology encourages the use of ICTs and student-centered methodologies that simultaneously involves a change of roles between teachers and students. This makes the student become more autonomous and therefore the student will be the protagonist of his/her teaching-learning process, and the teacher will act as a guide or counsellor. In this way, it contributes to constructivist learning, named by some authors as Scaffolding.

In the next section, we will focus on describing one of these SCM: cooperative learning.

2.2. Cooperative Learning

2.2.1. Definition and general characteristics

Since the beginning of civilizations, the degree of interdependence among members of society has been growing until it becomes essential to work cooperatively to find solutions to different problems (environmental, political and economic). Moreover, working cooperatively is implicit in human nature (Ovejero, 1990). Therefore, one of society's main demands to

schools is to promote teamwork skills, that is, to train students to be able to work together (Cerdeja & Querol, 2014).

As is explained by Johnson, Johnson and Holubec (1999), cooperative learning is based on teamwork in small groups in order to achieve common goals, so that success is the responsibility of all members, and these members are able to evaluate their individual work and the work of the team. The objectives of the teaching-learning process are achieved by a student if the rest of the components of the group achieve their objectives, that is, together they build knowledge for each other.

Sometimes, cooperation is used as a synonym for collaboration, this is a mistaken belief. In collaborative work, a group of people work together simultaneously, to achieve or learn something, the same goal. However, in cooperative work the goals of the individual members are united so that there is a positive correlation between the consequences and the achievements of the objectives. That is, each individual achieves his goal if the rest of the people in the group achieve theirs. All members of the group acquire a common commitment to improve everyone's learning (Turrión & Ovejero, 2013) (Kozar, 2010).

Although there are differences between cooperative and collaborative work, there are also similarities, such as: the development of social skills, group reflection, use of higher cognitive skills and the objective of completing a task (Kagan, 1985). Cooperative learning is an increasingly popular trend due to numerous benefits, such as increasing student interest and improving critical thinking, among others. Johnson and Johnson (1989) describe five features for a successful implementation of cooperative learning:

- The first one is positive interdependence, for which, teachers must propose a well-explained task and a group objective, making it clear that the success of each member is essential for the success of the whole group. In other words, learners must understand that "they survive or sink together". When you start working cooperatively for the first time, it is appropriate to encourage positive interdependence through awards and rewards by the teacher, thus enhancing the work done by each of the members of the groups.
- The second feature is the individual and group responsibility, and each member will be responsible to achieve the part of the work that corresponds to them. The group can identify who needs more help to finish their work, which does not mean that they should do all the work for that member, but help them. The matter is to evaluate the

performance of each member, offering more help, support and encouragement to those who need it most, as this will affect the result.

- The third feature is stimulating interaction, preferably face to face. The group members should promote the success of others, sharing existing resources and helping, supporting, encouraging and congratulating each other on their effort to learn. Some cognitive and interpersonal activities can only occur when each student promotes the learning of others, verbally explaining how to solve the problems, analysing the nature of the concepts that are being learned, teaching what one knows to their schoolmates and connecting the present learning with past learning. By promoting the learning of others, group members acquire a personal commitment to each other, as well as to their common goals.
- The fourth feature is to teach students some essential interpersonal and group practices. This type of learning is much more complex than competitive or individualistic learning, since it requires the management of interpersonal practices for positive group work. Members should know how to exercise leadership, make decisions, create an atmosphere of trust, communicate and manage conflicts, and should feel motivated to do so.
- The fifth fundamental element of cooperative learning is group assessment. This assessment takes place when the members of the group analyse to what extent their goals are achieved and, maintain effective working relationships. Groups must decide which of their actions are positive or negative, and make decisions about which behaviours should be kept or modified in order to increase the effectiveness of the group.

According to Johnson, Johnson and Holubec (1999), in cooperative learning, three different learning groups can be distinguished: informal groups, formal groups and grassroots groups, which we will explain below.

Informal cooperative learning groups are characterized by establishing themselves in short periods, from a few minutes to an hour. These groups usually consist of brief dialogues among small groups of two or three students before, after and during the course of a task, activity or class. Informal groups are often used during direct teaching activities to draw the attention of learners to the content, create an adequate learning atmosphere and help students to process the content cognitively. With these informal groups, students are able to organize, explain, summarize and integrate the material.

On the other hand, formal cooperative learning groups can be extended in time from one hour to several weeks of class. These can be implemented in any subject and any task during the teaching-learning process. Students work together to achieve a shared goal, but knowing that each individual's contributions are essential to complete the task. As in informal cooperative learning groups, students are able to organize, explain, summarize and integrate the material.

Finally, the cooperative grassroots groups are characterized by having a long-term functioning (usually a complete school year). These groups consist in heterogeneous learning groups always formed by the same members, who will generally be chosen by the teacher based on certain characteristics (we are later explained). Each member of the group will have a previously established role and, as explained above, the final success will depend on all parts achieving their objectives. Working in this way, the establishment of a relationship of responsibility is achieved, based mainly on support and help, which will help the learners to achieve a good cognitive and social development.

2.2.2. Strategies and techniques to establish cooperative learning

2.2.2.1. Cooperative learning strategies

Cooperative learning is not simply about making students work in groups. There are some fundamental aspects that must be taken into account when we want to put this methodology into practice. Among those aspects, we can highlight the choice of the components of the groups, the internal organization of the groups (role establishing) and the distribution of classroom space.

The establishing of groups is a fundamental issue, especially in formal and grassroots groups that are durable over time. As we have mentioned before, the choice of students that form the groups is usually a responsibility of the teacher. Normally, the establishing of the groups is carried out after an initial evaluation. This evaluation must be comprehensive, covering aspects such as knowledge of content from previous years, principally learning styles and difficulties. In addition to this, it is important to take into account the relationship between students (friendships and disagreements), so it is usually useful to wait a certain period of time before establishing groups to detect these behaviours. The good harmony of the group is very important in order to promote good communication and thus avoid any student to be displaced.

The number of members of each group depends on the type of activities to be carried out. These groupings can be in pairs (informal groups) or in groups of four to six students (formal and grassroots groups), although the ideal group has a maximum of four learners.

On the other hand, it is important to guarantee the ethnic heterogeneity, motivation, performance efficiency, abilities of the work teams, so that the characteristics of the class group in each team are reproduced with the greatest fidelity. Gender equality is also essential to keep in mind. The most relevant characteristics are the academic performance and academic and social skills (empathy, solidarity and altruism). Usually, the distribution of the group is a student with high performance and abilities, two students with medium characteristics and finally one student that “needs more help”.

One way to make a simple distribution of students is the one proposed by Pujolás (2004), which consists of dividing the students into three columns. In the first column a quarter of the class is placed, which would correspond to the most capable students; in the last column we place the other quarter of the class, corresponding to the most needy students and, finally, in the middle column the rest of the class is placed (half of the students). In this way, each group would be composed with a student from the first column, two students from the middle column and a student from the final column.

Once the groups have been established, it is time to carry out the internal organization of the group or organize roles. There are many different ways to name each role, but we will focus more on the task that each member must develop:

- 1) Leader or person responsible: the person in charge for coordinating the work of the team. This person encourages colleagues to develop the work and ensure that all members have the opportunity to participate and learn. Furthermore, he/she ensures that all the classmates dominate the task learning.
- 2) Writer or secretary: responsible for recording the activity of the group in the workbook. He/she transcribes the agreements and solutions taken by the group and can be in charge of preparing the oral presentation materials.
- 3) Reporter: responsible for communicating orally the conclusions taken by the group. This person communicates with the teacher or members of other teams if the task requires it.

- 4) Person responsible for the material and time: custody and care for the common equipment. He/she checks that all team members have their work-area clean. In addition, they are responsible for timing and keeping deadlines.
- 5) Jack-of-all-trades: One of the previous roles can be duplicated if we are forced to form groups of five people.

The establishing of roles is a clear guide for the development of the individual tasks of each team member. Also, it is appropriate to distribute the roles from the students with more needs, giving them a task that we are sure that they will be able to achieve, to the “strongest” students who, surely, are capable of carrying out any task.

The last essential aspect to take into account when implementing cooperative learning is the distribution of space in the classroom. The first thing that should be trained with the students at the beginning of the school year, this is the capacity of the students to organize the classroom at the beginning of the class without causing discomfort or big noises, something that is not an easy task. Visibility is another important point. All students should easily be able to see the main elements such as the whiteboard or digital projector. One way to organize the class in a practical way would be the proposal in Figure 3.

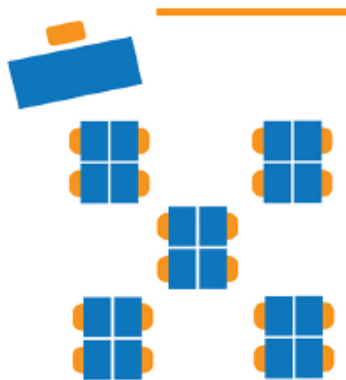


Fig. 3. Classroom Distribution.

It is important to mention that, in SCM, in which cooperative learning is encased, the teacher's role changes with respect to traditional methodologies. Here, the teacher is no longer a simple expert in the transmission of content of the subject, but acts as a facilitator who guides the students. Among the teacher's tasks, we can focus on:

- 1) Specifying the class objectives.
- 2) Making a series of pre-teaching decisions.
- 3) Explaining the task and, what positive interdependence is to the students is.

- 4) Supervising the student learning and intervening in groups to provide support in the task or to improve the interpersonal and group performance of the students.
- 5) Evaluating the students' learning and helping them to determine the level of effectiveness of their group.

2.2.2.2. *Cooperative learning techniques*

Cooperative techniques can be classified into two large groups: informal techniques, which are short-lived, structured, simple and with specific objectives; and formal techniques, which have a longer duration over time and are more complex than the previous ones (Torrego, 2012). There are many cooperative techniques described by different authors that can be carried out in the classroom. However, we will only describe the ones used in the proposed teaching unit:

Informal techniques

- Discussion pairs: The learners, grouped in pairs, should discuss and find solutions to the questions suggested by the teacher. Once that the activity is resolved by the students, the teacher randomly asks for some answers of the pairs of students. This technique can be used to activate previous knowledge.
- Round table or rotating paper: Students must be grouped into small groups. The teacher will distribute a sheet with a task, questions or a table related to the contents to work during the activity. The paper sheet is placed in the centre of the table and the group of students turn the sheet so that each student writes their ideas, in a certain time (they will make at least two rotations). In the end, it is about solving the activity with everyone's ideas.
- 3-minute stop: When the teacher is presenting a topic, they introduce 3-minute pauses, during which they ask students to try and summarize orally the contents of the presentation. They also need to write two questions about that part of the presentation. When the three minutes are over, each pair asks one of their questions to the rest of the class (avoiding repeated or similar questions) When all questions have been asked and discussed, the teacher continues the presentation, until the next three-minute stop.
- Pens in the middle: The teacher poses a problem or question to the students. The teacher appoints a moderator within each group. The pens are in the middle, which is a sign to listen and not write. The reporter reads the problem or question and makes sure everybody understands and gets the chance to express their opinion. They also make

sure that everyone has understood the solution. Students take their pens and write the solution that has been agreed.

- 1-2-4: The teacher states a question or problem. Each student takes a few minutes to think of a possible answer or solution. Then they share and discuss with their immediate partner and come up with a common answer. Then they do the same with their group. Finally, one member of each group gives an answer to share with the rest of the class and the whole group tries to agree on the best possible answer or solution.

Formal techniques

- Jigsaw: Students are grouped into heterogeneous teams according to their efficiency, performance or skills. Each team is assigned the same matter, topic or set of contents. The topic is divided into its different parts or aspects. These parts are distributed among the members of each team (numbered from 1 to 4) by the teacher, so that each of them becomes “expert” in one of these sections, taking responsibility for the development of her/his section. After working on their part of the topic, the different team experts (focused on a specific aspect) meet to contrast and share their part of the topic. Afterwards, the experts return to their groups and expose the content they have worked on to their colleagues.
- Teams-games-tournament: The teacher distributes the students in pairs made up of members of different groups. A list of topic questions is developed and distributed to each couple and each one of them will answer questions alternately. Every time they answer a question correctly, they earn a point, however, if they answer the wrong way they lose a point. Each student's answers will be noted by the other member of their team and, in the end, they will check if their answers are correct using the correction template. Finally, the points of all the members of each base group are added and we will create a raking team.

2.2.3. Assets and pitfalls of cooperative learning

Given that the main characteristics of cooperative learning have been described and, although they can be intuited, we will now describe some of the benefits of putting this methodology into practice in the classroom. According to Johnson and Johnson (2014), there are numerous studies conducted in recent decades about cooperation with positive results in the teaching-learning process.

Cooperative learning leads to an increase in positive interaction between students, which has many advantages. Slavin (1989) reports the results of 60 studies in which it is shown that learners obtain better results by working cooperatively than individually or competitively. This greater achievement of attainment (increase in academic performance and productivity) is due, among other factors, to the fact that significant learning, and not memory learning, is favoured. The realization of cooperative tasks favours the learning by discovery and, therefore, self-learning (learning to learn). The active involvement implied in the use of SCM, in this particular case: cooperative learning, also has an impact on the increased responsibility of learners in their own teaching-learning process. All these factors help to improve critical reflexive thinking.

According to Roseth, Johnson and Johnson (2008), the results of 148 studies reviewed also show benefits in terms of social behaviours and emotions. It is a fact that the increase in motivation and enthusiasm that students show by being aware of their contribution is important for the success of the group. In addition, with positive interdependence, the integration of all students is facilitated, as it is required that all members assume some function. The self-esteem of students with greater learning difficulties is another improved element due to the fact that these students feel that their work is important. The increased interaction between students with the use of cooperative techniques also favours scaffolding processes, as students share information and knowledge is transmitted between them.

Multiple intelligences, specifically intrapersonal and interpersonal, are also developed, since the need to communicate continuously favours social skills. The improvement of the ability to work in a team helps to put into practice certain values and skills such as respect, the ability to resolve conflicts, flexibility, negotiation and empathy, that are important in the real world (Barkley, Cross, & Major, 2014).

Although the numerous benefits of cooperative learning are unquestionable, it is likely that by implementing this methodology we will encounter a number of potential difficulties. The first experiences can be hard due to the lack of experience, which is why the teacher must be trained in order to react to the problems that arise.

A single teacher, sometimes, is not enough to pay sufficient attention to all students in a class, especially, when learners are beginning to adapt to this methodology. Another difficulty that can be found is the imbalances when it comes to forming groups. It is possible to find classes where it is difficult for us to form balanced work groups due to the lack of diversity of students. The predisposition of the teaching team can also be a handicap. Good communication

and predisposition among teachers are important for successful implementation of this methodology. The more subjects and, therefore, the more hours worked in that way, the better the results.

2.3. Why Cooperative Learning and CLIL?

CLIL is the present and the future in teaching foreign languages due to its innovative way of integrating content and language into the curriculum. It is a fact that CLIL is flexible and varied and favours the use of SCM. In this sense, we have chosen cooperative learning to use it in a CLIL context in a Biology and Geology class for the reasons detailed below.

As Casal (2008) states, one of the problems that may arise in CLIL contexts is that learners do not have enough time in class to practice the target language orally. However, as we already mentioned, cooperative learning creates an interactive and more active environment than other types of methodologies. This favours the development of cognitive skills (debating, communicating and negotiating) that are essential when learning a new language and provides students with the opportunity to increase language skills.

These greater opportunities to speak and listen when students work in groups contribute to achieving a true meaningful learning, since micro-societies are created that have a connection with the real everyday world (Mehisto, Marsh, & Frigols, 2008). Furthermore, these collaborative environments increase levels of trust between peers, which means that students feel less inhibited to establish conversations in languages that they do not completely dominate.

Everything described above, added to the aforementioned benefits of cooperative learning on motivation, self-esteem, attention to diversity and achievement of attainments by students, make this methodology suitable in CLIL contexts.

3. DIDACTIC PROPOSAL

In this section, we are going to describe every element of the didactic unit proposed in detail. The designed didactic unit, with the title of “The biodiversity of the animal kingdom: vertebrates and invertebrates” is proposed for students belonging to the first year of Compulsory Secondary Education in the subject of Biology and Geology.

3.1. Justification

As we have already mentioned above, society is moving at a frenetic pace and education must adapt to cover its requirements. In this didactic unit, we want to respond to two of the great challenges or concerns of today's society regarding education.

On one hand, the learning of a second language or foreign language (bilingualism). In our context, English stands out, we could call it a marked language, due to the fact that this is an international language for education, science, research and business. Therefore, the methodology of this didactic unit will be CLIL, that is, we will use the target language as a vehicle, with the necessary support and assistance from the teacher (scaffolding), in order to learn the content of our subject, biology and geology. The objective is to improve the knowledge and management of the foreign language, increasing the level of exposure to it and achieving it in a contextualized way, so that meaningful learning is encouraged.

On the other hand, use of methodologies that motivate and involve learners. Currently, there is widespread concern in the educational environment, both of the growing lack of motivation in students, and of failure and/or dropping out of school. In this unit, we enhance the use of SCM, specifically cooperative learning, as a type of methodology that encourages active participation of students and makes them the protagonists of their teaching-learning process. This increase in participation is translated into an increase in motivation and, therefore, an improvement in the school performance of the learners.

In addition, cooperative learning encourages interaction skills between equal. Classrooms, such as micro-societies or reflections of society, give us the opportunity to form autonomous, critical and self-thinking people who develop skills and abilities in order to be implicated in the social and cultural context in which they live in a positive way. Positive interdependence is the best characteristic of this methodology.

Finally, it should be noted that by means of this didactic unit, learners will be able to go in to depth learning the particularities of the animal kingdom. They will be aware that the best-known animals, vertebrates, are not the most common ones and they will learn about invertebrates and their importance. They will also discover the environmental biodiversity of their nearby environment and, in turn, environmental awareness will be encouraged.

3.2. Contextualization

To understand the characteristics of the students, it is important to contextualize the area and the school centre they attend.

3.2.1. Area

Our centre is located in a town in the metropolitan area of the province of Jaén, 17 km west of the capital. The area has 13,874 inhabitants that, due to the surroundings of the municipality, are mainly dedicated to the cultivation of olive groves, the industrial sector of the adjacent towns, retail commercial activity, as well as basic services of the state, both in the sanitary branch as in education.

The municipality has a rich natural heritage, of which two lacustrine ecosystems stand out, unique for being resting places for migratory birds, a salt mine and numerous island-forests surrounded by the sea of olive trees.

3.2.2. The school centre

The school is located between two areas of expansion, one of middle / low class and one of middle / high class. Moreover, an area of housing promoted by the town hall for the most disadvantaged families in the town is next to the centre.

The educational offer of the centre consists of the teaching of Compulsory Secondary Education (one of the three strands is in the bilingual program), Baccalaureate modules of Scientific-Technological and Humanities and Social Science branches, and Basic Vocational Training course.

Among the resources of the centre, it should be noted that all ordinary classrooms have a projector, conventional whiteboard and wireless internet connection, in addition to having portable computer equipment available for the teacher.

The school accommodates about 400 students, of which the vast majority of those who begin Compulsory Secondary Education come from the public schools linked to the area. Furthermore, students from affiliated schools of smaller neighbouring municipalities do not have all the educational stages, therefore are additionally incorporated.

In spite of the diverse origin and characteristics of the students, the centre enjoys positive conviviality and a civic vitality that fosters academic success and numerous acts of solidarity.

Concerning the families, most of them are employed in low-skilled positions, although more and more families are emerging in which one or two of their members perform high-skilled jobs or work in general state administration.

3.2.3. Target group

This didactic proposal has been designed for students belonging to the first-year group of Compulsory Secondary Education, which consists of 24 students, 13 boys (54.2%) and 11 girls (45.8%). All of them show the typical psycho-evolutionary characters of adolescence, characterized by profound physical and psychological changes. Due to these changes, it is common to find students restless, irritable and with great difficulty to maintain attention and concentration. Although they usually respond well to teaching authority so the pace of the class and work environment are adequate.

3.3. Objectives

The objectives are those related to the attainments that the student must achieve at the end of the didactic unit, as a result of the teaching-learning experiences planned for this purpose. Due to the characteristics of the didactic unit proposed, we must differentiate among the content objectives, language objectives and, in addition, objectives regarding the acquisition of skills and abilities.

Regarding to content, at the end of this teaching unit, students will be able to:

- Describe the characteristics that discern the animal kingdom.
- Characterize the main groups of invertebrates and vertebrates and distinguish some of the animals that belong to each group.
- Explain why some animals can help to determinate the state of ecosystems.
- Defend the importance of preserving or maintaining the different ecosystems

In relation to the learning of the language, throughout the development of the unit, we will aim for students to:

- Learn new vocabulary in the target/foreign language.

- Use the foreign language to express doubts, ideas and opinions.
- Improve their communication skills, both oral and written.
- Use the foreign language to explain what they have learned to their classmates and the teacher during interactions and expositions.

Finally, other objectives and skills that are encouraged with the development of the unit are to:

- Learn about English culture in order to contribute to the personal development of the students and foster attitudes of tolerance and respect towards other cultures, as well as strengthen the spirit of European citizenship.
- Develop attitudes, work habits and strategies to achieve their learning autonomy and active participation.
- Develop interpersonal and group work skills and abilities: knowing how to listen, respecting the opinions and contributions of colleagues and discussing in an assertive way.
- Promote positive attitudes of respect, tolerance and help/support.
- Develop and foster responsibility of students by occupying different roles.
- Achieve basic knowledge in the field of technologies, information and communication.
- Use critical thinking and reasoning processes to solve problems, obtain information and be able to self-evaluate, recognizing their own mistakes and learning from others.

3.4. Competences

The key competences, according to Royal Decree 1105/2014 of December 26, which establishes the basic curriculum of Compulsory Secondary Education and Baccalaureate, are the competences to be applied to the contents of each teaching and educational stage in an integrated manner, with the purpose of achieving the adequate realization of activities and the effective resolution of complex problems.

The key competences of the curriculum according to the aforementioned Royal decree (RD) are the following:

1. **Competence in Linguistic communication (CLC):** Refers to the use of language, either orally or writing, in Spanish or the foreign language, as an instrument of learning and communication, also essential for the socialization and use of educational experience.

2. **Mathematical competence and basic competences in science and technology (CMST):** Implies the ability to use and match numbers, their basic operations and forms of mathematical expression and reasoning, to create or interpret information, as well as to solve problems in the world of work and daily life.
3. **Digital competence (DC):** Uses technologies of information and communication in a creative, critical and secure way, favouring the acquisition of skills to search, process and communicate information and subsequently convert it into knowledge.
4. **Learning to learn (L2L):** Implies recognizing and controlling the learning processes by independently, favouring increasingly autonomous and effective learning.
5. **Social and civic competence (SCC):** Involves the understanding of today's society from plurality, accepting differences, being tolerant and respecting the values of others.
6. **Sense of initiative and entrepreneurship (SIE):** Involves transforming ideas into acts, developing creative and innovative projects with autonomous determination, individually or collectively.
7. **Cultural awareness and expressions (CAE):** It is implicit to know, understand and appreciate different cultural manifestations critically and respectfully.

As it is indicated in Order ECD 65/2015 of January 21, the objectives are closely linked to the key competences in all educational stages, because the achievement of the objectives proposed in these stages contributes to the development of the different competences. Therefore, we are going to relate the objectives proposed in the teaching unit with the seven key competences (table 1).

Competences	Objectives
Competence in linguistic communication	- Learn new vocabulary in the target language. - Use the foreign language in order to express their ideas, doubts and opinions. - Improve their communicative skills, both oral and written.
Mathematical competence and basic competences in science and technology	- Describe the characteristics that differentiate the animal kingdom. - Characterize the main groups of invertebrates and vertebrates and distinguishing some of the animals that belong to each group.

	- Explain why some animals can help to determinate the state of ecosystems. - Defend the importance of preserving or maintaining the different ecosystems.
Digital Competence	- Achieve basic knowledge in the field of technologies, information and communication.
Learning to learn	- Use the foreign language to explain what they have learned to their classmates and the teacher during interactions and expositions. - Use critical thinking and reasoning processes to solve problems, obtain information and be able to self-evaluate, recognizing our mistakes and learning from others.
Social and civic competences	- Develop interpersonal and group work skills and abilities: know how to listen, respecting the opinions and contributions of colleagues and discuss in an assertive way. - Promote positive attitudes of respect, tolerance and help/support.
Initiative and entrepreneurship	- Develop and foster the responsibility of students by occupying different roles. - Develop attitudes, work habits and strategies to achieve learn autonomy and active participation.
Cultural awareness and expression	- Learn about English culture in order to contribute to the personal development of the students and foster attitudes of tolerance and respect towards other cultures, as well as strengthen the spirit of European citizenship.

Table 1. Relationship between objectives and key competencies.

3.5. Contents

The contents are the set of knowledge, skills, abilities and attitudes that contribute to the achievement of the objectives of teaching, as well as the acquisition of competences. The contents that will be worked on during this unit, indicated by the Order of July 14, 2016, which

develop the curriculum corresponding to Compulsory Secondary Education in the Autonomous Community of Andalucía, within block three: Biodiversity on planet Earth, are as follows:

- Invertebrates: Porifera, Cnidarians, Annelid, Molluscs, Echinoderms and Arthropods.
- Anatomical and physiological characteristics. Identification of the main species.
- Vertebrates: Fish, Amphibians, Reptiles, Mammals and Birds.
- Anatomical and physiological characteristics. Identification of the main species.
- Biodiversity in Andalucía.

3.6. Assessment criteria and measurable learning standards

The assessment criteria are the specific references to evaluate the students learning. These criteria describe what we want to value and what the students must achieve, both knowledge and skills; it responds to what is intended to be achieved in each subject.

Learning standards are established as the specifications of the assessment criteria. Furthermore, these learning standards allow defining the learning results and specify what the student should know, understand and know how to do in each subject. On the other hand, the standards must be observable, measurable and evaluable and allow the graduation of performance or attainment achieved. Their design should contribute to and facilitate the establishment of standardized and comparable tests.

The assessment criteria and standards, established in RD 1105/2014 of December 26, are closely related to the contents. Those related to the developed didactic unit are shown in the following table.

Assessment criteria	Measurable learning standards
3. Recognize the main morphological characteristics of the different taxonomic groups.	3.1 This applies to the classification criteria of living beings, relating the most common animals and plants with their taxonomic group.
5. Describe the general characteristics of the large taxonomic groups and explain their importance in all living beings.	5.1 Discriminates the general and singular characteristics of each taxonomic group.

6. Characterize the main groups of invertebrates and vertebrates.	6.1 Associates common invertebrates with the taxonomic group to which they belong. 6.2 Recognises different vertebrate specimens, assigning them to the class to which they belong.
7. Determine, based on observation, the adaptations that allow animals and plants to survive in certain ecosystems.	7.1 Identifies specimens of plants and animals of some ecosystems or of special interest because they are endangered or endemic species. 7.2 Relates the presence of certain structures, in animals and plants, more common with their adaptation to the environment.
8. Using dichotomous keys or other methods for the identification and classification of animals and plants	8.1 Classifies animals and plants based on identification keys.

Table 2. Evaluation criteria and standards.

3.7. Methodology

We can define the didactic methodology as the set of strategies, procedures and actions organized and planned by the teaching staff, in a conscious and thoughtful way, in order to make student learning and achievement of objectives possible. To develop the student's competence level, an active methodology is required by which the learners are the lead of the teaching-learning process. Besides, in the teaching-learning process it is essential to awaken and keep the students motivated, because without this no learning takes place (Novak & Godwin, 2004).

During the development of this didactic unit, a constructivist, active and participative methodology is used, such as cooperative learning. Moreover, we must remember that we are working in a CLIL context. Both formal and informal cooperative techniques are used, although we must emphasize that it is the first year that students follow this type of methodology. In previous didactic units learners have already worked with informal cooperative techniques, but

in this unit in which it is the first time that formal techniques are used, we will dedicate a session to explaining the development of the techniques in detail.

One of the great challenges of teaching content through a foreign language is how to ensure that students have enough linguistic resources to understand the concepts they are learning. Therefore, during the development of the different activities that make up our didactic unit, different linguistic scaffolding strategies will be carried out. These techniques include:

- Vocabulary support sheets.
- Target language speaking cards.
- Presentation of new vocabulary through images.
- Effective use of wait time for student's answers.
- In the teacher's oral theoretical exposures, resources such as paraphrasing, use synonyms and reinforcing contextual definitions are used.
- Teacher and peer support during the development of activities.
- Activation of prior knowledge.

The type of activities used in the development of the didactic proposal are:

- Initiation activities: Where we can find motivational activities used to start the topic, trying to awaken the interest of students towards these contents and activating of previous knowledge.
- Development and research activities: They are useful to help to achieve the objectives, content and competences.
- Conclusion activities: They are used to reinforce and strengthen the content learned, as well as to solve student doubts. These activities are done once all the contents have been exposed.
- Evaluation activities: They are designed to appreciate what has been learned throughout the teaching unit.

3.8. Timing

The proposed didactic unit takes place throughout 9 sessions with a duration of 55 minutes each. This didactic unit will begin on November 25 and end on December 18. Three sessions are held per week, Monday, Wednesday and Friday (cf. Table 3).

WEEK	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
November 25-29	SESSION 1		SESSION 2		SESSION 3
December 2-6	SESSION 4		SESSION 5		PUBLIC HOLIDAY
December 9-13	PUBLIC HOLIDAY		SESSION 6		SESSION 7
December 16-20	SESSION 8		SESSION 9		

Table 3. Timing.

3.9. Sessions and activities

In this section, we explain each of the sessions that make up the didactic unit and the activities carried out in them.

Session 1

Session objectives: To establish formal work groups, establish roles and create rules for group work behaviour.

General description of the session: In the previous units, students have had a gradual approach to cooperative learning. They have worked only with simple informal cooperative techniques in pairs and, it is from this unit when they will begin to work in formal cooperative groups of four students. Therefore, in this first session, these groups are established and the roles are distributed to the students. Moreover, a series of rules is created to facilitate group work and the correct functioning of the class and is distributed among the students. Finally, the teacher explains to the learners how they will work in future sessions and what materials will be used. In this session, the scaffolding strategies used is the teacher support during oral explanations.

The session is divided into three activities:

Activity 1: How do we form a group?	
Type: Initiation activity	Duration: 20'

Description: Formal working groups are established for the development of certain activities during the didactic unit and successive units. Six groups of four students each will be formed (cf. Appendix 1). Roles are established within the groups: Leader, Secretary, Reporter and Person responsible for the material and time. In addition, a number from 1 to 4 will be given to each student to form the Jigsaw expert groups.	
Objectives: Make heterogeneous cooperative work groups.	
Assessment: No assessment	Resources: Team notebook and blackboard

Table 4. Activity 1.

Activity 2: How do we behave?	
Type: Initiation activity	Duration: 20'
Description: Individually, the learners propose a series of rules and behaviour patterns that they believe are appropriate for the correct development of the classes. These proposed rules are written on the board (modifying and completing according to contributions). In the end, students vote and the 10 rules with the highest score will be established. Finally, students copy these rules in their team notebook and onto a cardboard poster that will be hung on the wall.	
Objectives: Establish rules for the proper functioning of the class when students work in groups	
Assessment: No assessment	Resources: Team notebook, blackboard and cardboard.

Table 5. Activity 2.

Activity 3: How will we work?	
Type: Initiation activity	Duration: 15'
Description: The teacher explains in detail how the classroom furniture will be arranged, what function each of the roles assigned in activity 1 has, where each group will be placed and where the expert groups will work. The procedure to make the team notebook or portfolio and how it will be evaluated will be shown.	
Objectives: Understand how they will work and what they will work on in the following sessions and explaining the procedure for the realization of the team notebook.	
Assessment: No assessment	Resources: Blackboard and team notebook.

Table 6. Activity 3.

Session 2

Session objectives: To discovering different ways of classifying animals, remember and stimulate previous ideas, in addition to structuring the knowledge to acquire during this didactic unit. Remember and learn vocabulary in the target language and encourage oral communication.

General description of the session: Initial activities of motivation and activation of previous ideas related to the subject “the living beings” are carried out. After this, we will do an activity in which the contents to work on in the unit are structured.

The scaffolding strategies used in this session are: the activation of prior knowledge and presentation of new vocabulary through images (activity 6).

The session is divided into three activities:

Activity 4: How do we classify animals?	
Type: Initiation activity	Duration: 15’
Description: Using the cooperative technique of "discussion pairs", students are instructed to find different ways of classifying animals. For this, the teacher guides the students by giving them certain criteria such as: type of feeding, reproduction, embryonic development, environment in which they live, presence / absence of skeleton. At the end of the activity, a summary scheme is written on the board that indicates that we focus on the classification of vertebrates and invertebrates in this unit.	
Objectives: Activate ideas and previous knowledge. Show the multidisciplinary nature of science. Revise vocabulary related to the topic. Encourage oral communication.	
Assessment: Direct observation.	Resources: Textbook, notebook and blackboard

Table 7. Activity 4.

Activity 5: The five kingdoms	
Type: Initiation activity	Duration: 15’
Description: In this activity it is the first time that the learners work in the formal cooperative groups, so it is a simple adaptation activity. We continue working on the students' previous knowledge and in this case, using the “rotating paper” technique, the student groups must make a table (cf. Appendix 2) with the general characteristics (cell type, cell organization, nutrition, reproduction and habitats) of the five kingdoms in which living beings are classified. At the end, this table is corrected on the board.	

Objectives: Remember essential characteristics to structure the new learning. Remember / learning specific vocabulary. Encourage oral communication in the target language.	
Assessment: Team notebook and direct observation.	Resources: Textbook and blackboard.

Table 8. Activity 5.

Activity 6: Animal classification	
Type: Development activity	Duration: 25'
Description: The material is distributed to formal work groups. The material consists of a piece of cardboard, keywords and images of each group of animals to make a concept map where vertebrates and invertebrates are classified in their different groups (15'). Afterwards, the concept map is corrected on the board and the invertebrate groups will be distributed into the following groups of experts (from 1 to 4 of the base group): 1. Porifera and Cnidarian 2. Annelid 3. Mollusc and echinoderm 4. Arthropods Finally, the teacher distributes the study material in order for students to read it carefully at home.	
Objectives: Structure the contents that we are going to work with. Make the students aware of the contents they know best and which are more unknown. Learn specific new vocabulary and encourage oral communication.	
Assessment: Team notebook and direct observation.	Resources: Table with keywords and images (cf. Appendix 3) and blackboard.

Table 9. Activity 6.

Session 3

Session objectives: To investigate and learn the characteristics of the different groups of invertebrates. Encourage teamwork and work on reading and writing, mainly in the target language.

General description of the session: In this session we begin to concentrate on the new contents of the topic. The session begins with a brief presentation by the teacher, where the main general characteristics of invertebrates are exposed. Following that, students will be divided into groups of experts (Jigsaw technique) and they will work investigating the different groups of invertebrates (Porifera, Cnidarians, annelids, molluscs, echinoderms and arthropods).

The scaffolding strategies used in this session are: paraphrase, use synonyms, reinforce contextual definitions (activity 7), an invertebrate vocabulary support sheet and peer and teacher support.

The session is divided into two activities:

Activity 7: Introduction to invertebrates	
Type: Development activity	Duration: 15'
Description: Theoretical-visual exhibition of the teacher where the invertebrates are introduced and their main characteristics are exposed. During this activity, the students are in their formal groups and the “three-minute stop” technique is used to solve the doubts and strengthen the concepts. Each group should ask at least two questions.	
Objectives: Begin the topic. Expand knowledge of the subject.	
Assessment: Team notebook and direct observation.	Resources: Digital board and team notebook.

Table 10. Activity 7.

Activity 8: Specialist in...	
Type: Development activity	Duration: 20' + 20'
Description: During this activity the "Jigsaw technique" is used. Students leave their formal groups to meet in expert groups (allocated in activity 1) and work on the topics that were distributed in activity 6. The teacher gives some tables out to each specialist group that must be handed in at the end of the activity (cf. Appendix 4). During the first 20 minutes, the learners will consult the previously sources which were previously handed in activity 6. In the remaining 20 minutes, each member of the group explains the relevant information they have found using the “pens in the middle” technique. All members debate and agreements are reached to complete the table (tables must be completed in in English).	
Objectives: Introduce the characteristics of the invertebrate groups. Learn to select, synthesize and integrate information from various sources. Improve the ability to work in teams, discuss and reach agreements. Promote autonomy and research learning. Work, read, write, speak and listen with simple grammar.	
Assessment: Direct observation and final table (cf. Appendix 8.5).	Resources: Textbook, laptop, articles, table to fill out (cf. Appendix 4).

Table 11. Activity 8.

Session 4

Session objectives: To delving into contents by sharing the information of the expert groups to the formal groups. Promoting communication skills.

General description of the session: All members of the specialist groups will return to their formal groups and share the information they have learned. Then, they will answer a questionnaire, in formal groups, of all the contents they have worked on.

The scaffolding strategies used in this session are: target language speaking cards with basic grammar structures for communication, clarifications on wh-questions and descriptions (use of the present simple) and peer and teacher support.

The session is divided into two activities:

Activity 9: Sharing information	
Type: Development activity	Duration: 20'
Description: Once the tables of the previous activity are completed by each group of experts and reviewed by the teacher, the learners return to their formal group and must explain to their classmates the most relevant characteristics of the invertebrate group that they have investigated. In addition, they must solve the doubts of their classmates. The four members of the group have 5 minutes each to perform this task.	
Objectives: Expand and deepen knowledge on the subject. Practice oral expression. Foster respect and listen to others.	
Assessment: Direct observation.	Resources: Tables from activity 8 (cf. Appendix 4).

Table 12. Activity 9.

Activity 10: We apply what we have learned	
Type: Development activity	Duration: 35'
Description: Once all students have shared their knowledge with their formal group, a set of questions (cf. Appendix 5) about the subject (invertebrates) is distributed to the groups. The “1-2-4 technique” is used to solve the questions, so that each one answers individually, then each one reaches and agreement for the answers with his / her partner seated on the right hand side and, finally, the answers are agreed upon in the formal group. Finally, the teacher can ask any student in the group to answer a question. At the end of this activity, information is distributed to the different groups of experts to read. This time it is about vertebrates. The different groups will investigate about:	

1. Reptiles	2. Fish and amphibians
3. Birds	4. Mammals
Objectives: Integrate and apply the knowledge acquired. Promote interpersonal communication skills. Promote attitudes of tolerance and help.	
Assessment: Direct observation, individual question sheet and team notebook.	Resources: Individual question sheet (cf. Appendix 5), answer sheet, team notebook.

Table 13. Activity 10.

Session 5

Session objectives: To investigate and learn the characteristics of the different groups of vertebrates. Encouraging teamwork and work reading and writing, mainly in the target language.

General description of the session: As with the invertebrates, the session begins with a brief presentation by the teacher, where the main general characteristics of vertebrates are exposed. Following that, students will separate into groups of experts (Jigsaw technique) and they will work investigating the different groups of vertebrates (Fish, amphibians, reptiles, birds and mammals).

The scaffolding strategies used in this session are: paraphrase, use synonyms, reinforce contextual definitions (activity 11), a vertebrate vocabulary support sheet and peer and teacher support.

Activity 11: Introduction to vertebrates	
Type: Development activity	Duration: 15'
Description: Consult activity 7.	

Table 14. Activity 11.

Activity 12: Specialist in... (II)	
Type: Development	Duration: 20' + 20'
Description: Cooperative technique "Jigsaw". Consult activity 8. (cf. Appendix 6)	

Table 15. Activity 12.

Session 6

Session objectives: To expand on the content by sharing the information of the expert groups to the formal groups. To promote communication skills.

General description of the session: All members of the expert groups will return to their formal groups and share the information they have learned. Then, all the formal groups will answer a questionnaire about all the contents worked.

The scaffolding strategies used in this session are: target language speaking cards with basic grammar structures for communication, clarifications on wh-questions and descriptions (use of the present simple) and peer and teacher support.

The session is divided into two activities:

Activity 13: Sharing information (II)	
Type: Development activity	Duration: 20'
Description: Consult activity 9.	

Table 16. Activity 13.

Activity 14: We apply what we learned (II)	
Type: Development	Duration: 35'
Description: Cooperative technique “1-2-4”. Consult activity 10. (cf. Appendix 7) At the end of this activity, the teacher indicates to the students that, at home, they must investigate the native fauna of the area. The teacher distributes the different themes or topics to the formal groups (1. Birds; 2. Reptiles; 3. Molluscs; 4. Annelids; 5. Mammals; 6. Amphibians) and a script with the points to be studied: 1. Students must choose two species of special importance. 2. Characteristics (habitats, importance for the environment, morphology) 3. Population condition: No threat, vulnerable, endangered or critically endangered. 4. Problems that could affect these species.	

Table 17. Activity 14.

Session 7

Session objectives: To learn the native fauna of the area and raise awareness among students of the importance of conserving ecosystems. In addition, autonomy and critical thinking are encouraged.

General description of the session: A mini research task about the native fauna of the region is proposed. With this research, it is intended that students associate the species of animals they know with the different groups studied. In addition, the importance of environmental conservation is emphasized. After this research task, students will have to do a small oral presentation with their groups.

The scaffolding strategies used in this session are: target language speaking cards with basic grammar structures for communication, clarifications on wh-questions and descriptions (use of the present simple) and peer and teacher support.

Activity 15: Fauna from our environment	
Type: Research activity	Duration: 30'
Description: In formal work groups, students should investigate the native fauna of the area (part of that work must come from home). Each group knows the topics to work on (1. Birds; 2. Reptiles; 3. Molluscs; 4. Annelids; 5. Mammals; 6. Amphibians) and the script with the points to be studied: 1. Students must choose two species of special importance. 2. Characteristics (habitats, importance for the environment, morphology) 3. Population condition: No threat, vulnerable, endangered or critically endangered. 4. Problems that could affect these species. The groups of students share their research and organize the information in order to do a brief oral presentation (4 minutes) in the second part of the class.	
Objectives: Distinguish some of the animals that belong to each group. Defend the importance of conserving ecosystems. Promote autonomy of learning and critical thinking and in addition, promote teamwork.	
Assessment: Direct observation and team notebook.	Resources: Laptops and team notebook.

Table 18. Activity 15.

Activity 16: Oral exposition	
Type: Development activity	Duration: 25'
Description: Formal groups should present the results of the investigation. Each group will do a brief oral presentation (4 minutes), in which all its members must participate, to	

show the results of their research. In order to explain their results in the oral presentation they can prepare a simple PowerPoint presentation or use the board.

As additional homework, the groups must do a report that will be shared on the subject's blog.

Objectives: Promote communication skills, especially listening and speaking.

Assessment: Written report and oral presentation rubric (cf. Appendix 8).

Resources: Laptops, team notebook and blackboard.

Table 19. Activity 16.

Session 8

Session objectives: To remember and integrate what they have learned throughout the unit and self-evaluate cooperative work by students.

General description of the session: Once all the contents have been completed, a final session is planned before the final evaluation of the teaching unit. In this session two activities are carried out, one review (Team Games Tournament), another activity to outline all the content and answer questions or doubts, and a cooperative learning self-evaluation activity.

The scaffolding strategies used in this session are: effective use of wait time for student's answers, target language speaking cards and peer and teacher support.

Activity 17: Fantastic animals tournament	
Type: Conclusion activity	Duration: 35'
Description: The students are distributed in pairs, and each pair is composed of members of different groups. Each couple has the 40 questions worked throughout the didactic unit. So alternately, they will answer questions, one each of them. Every time they answer a question correctly, they earn a point, however, if they answer wrong, they lose a point. Each student's answers will be noted by the other member of their team and, in the end, they will check if their answers are correct using the correction template. Finally, the points of all the members of each formal group are added and we will create a ranking of the teams. To encourage motivation in this activity, the top-ranked team members will add 1 point to their final unit rating, the second will add 0.5 points and the third 0.25 points.	

Objectives: Review and integrate the most important content. Promote interpersonal skills. Practice oral communication (listening and reading).	
Assessment: Team notebook, and direct observation.	Resources: Final sheet with all the questions of the unit.

Table 20. Activity 17.

Activity 18: Ending of unit	
Type: Conclusion activity	Duration: 20'
Description: A mind map is made with all the contents discussed in the topic. The mind or concept map will be completed by all the members of the class and at the same time it is being done, the doubts that exist will be solved.	
Objectives: Resolve doubts and organize all the knowledge acquired during the didactic unit.	
Assessment: No assessment	Resources: Blackboard and notebook.

Table 21. Activity 18.

Activity 19: cooperative learning self-evaluation	
Type: Assessment activity	Duration: 5'
Description: Self-evaluation of cooperative work will be carried out by formal groups of students.	
Objectives: Make students aware if they have worked correctly in cooperative groups.	
Assessment: Self-assessment of cooperative learning	Resources: cf. Appendix 5.8

Table 22: Activity 19.

Session 9

Session objectives: To measure the level of acquisition of the proposed content and language objectives.

General description of the session: To finish the topic, a written test is carried out to evaluate the acquisition of the content and language objectives. Furthermore, a self-assessment is also carried out.

Activity 20: Final revision	
Type: Assessment activity	Duration: 50'
Description: A written exam will be carried out in which students must show their knowledge about the content of the unit. In addition, in that exam, language will also be evaluated.	
Objectives: Check the level of knowledge about the proposed objectives.	
Assessment: Final exam	Resources: Final exam

Table 23. Activity 20.

Activity 21: Self-assessment	
Type: Assessment activity	Duration: 5'
Description: A self-assessment will be carried out so that the students themselves know if they have achieved the proposed objectives.	
Objectives: Determine the level of compliance with own objectives	
Assessment: Self-assessment	Resources: Self-assessment

Table 24. Activity 21.

3.10. Assessment

The measuring of achievement of the objectives in any area is one of the most controversial issues in education, but evaluation is another stage of the teaching-learning process, which not only measures student progression, but also seeks to improve the quality of the teaching process. Assessment helps to stimulate personal effort, interest and commitment when it comes to taking responsibilities. When it comes to assessing, we must take different aspects into account: Why? What? When and How?

Why? In our educational regulations, article 20 of the Royal Decree 1105/2014 which establishes the basic curricula in Compulsory Secondary Education and Baccalaureate in Spain, assessment is obligatory to progress in the education system and obtain an academic degree. Apart from this, there are other reasons already cited above. We could highlight three important reasons why it is important evaluate (Pérez & Rubio, 2005):

- For curricular and instructional reforms: we have to know if we must change the contents of the curriculum, methodology or teaching materials, that is, remedial teaching will be applied in all those areas if necessary.
- For performance/efficiency reasons: Responsibility, interest, commitment and motivation of students are improved through evaluation.

- Students expect to be evaluated to build their own self-concept as learners.

What? In CLIL context, it is obvious that both, content and language must be verified, as it is an integrated approach. With regard to the first aspect, the main contents and skills indicated in the assessment criteria must be measured. In the same vein, language makes reference both to language skills (listening, speaking, reading, writing, and interaction) and linguistic components (grammar, vocabulary, and pronunciation). The challenge is to measure the authentic use of language, that is, we must try not only to measure linguistic competence but also communicative performance.

In addition to the students, the teacher's work must also be evaluated, since he/she is an essential part of the teaching-learning process. On the other hand, we must evaluate the development of the syllabus in order to check if they are effective and adequate or not.

When? At least four moments are discerned to carry out assessment. Before the teaching and learning process (diagnostic assessment), at the beginning of the process (initial assessment), during the process (formative assessment) and at the end of the process (summative assessment). The types integrated into teaching unit are outlined below.

The initial assessment can be used to find out the previously acquired knowledge of our students and activate it. It also helps us detect some lacunae and locate individual differences (basis for attention to diversity).

Formative or continuous assessment consists in collecting data from the work, attitude and behaviour of learners. This evaluation has a double purpose: to help the teacher to control the learning process and inform and motivate students about their teaching-learning process. This evaluation can be carried out in several formats: achievement records, portfolios, oral or written comments and so on. (Newby, y otros, 2007).

Last but not least, summative assessment, which is applied at the end of the teaching process in order to check acquisition and learning of contents, procedures, and attitudes. Many teachers claim that if formative evaluation has been conducted appropriately, a summative evaluation is not necessary. Others indicate that this type of evaluation allows students to review and study the contents in-depth. The usual instruments used in this kind of assessment are written and oral exams.

How? There are many evaluation tools for each of the assessment mentioned above. Here, we are not going to describe all the existing tools; we simply describe those used in the unit and some of the basic requirements that it must accomplish:

- They must be practical, useful, valid, reliable, y pursues clear objectives.
- The format of the tools should be familiar to avoid anxiety and confusion in the learners.
- The assessment must be carried out with different evaluation tools, not just one.
- Self and peer-assessment also must be considered.

In our didactic unit, we use different evaluation tools (cf. Appendix 8):

- Oral presentation rubric.
- Self-assessment.
- Self-assessment of cooperative learning.
- Assessment scale of daily observation in class.
- Rubric for activities.
- Team notebook rubric.
- Didactic unit assessment.

Finally, we must establish assessment criteria for our didactic unit. These criteria are shown in the following table.

Qualification criteria	Percentage in the final mark
Content	60%
Daily cooperative work	20%
Language	20%

Table 25. Assesment criteria.

4. CONCLUSION

As we have explained previously, with the development of this didactic unit, we are intending to respond to two of the greatest challenges in education today: the learning of a foreign language (English in our context) and the use of active methodologies that support meaningful learning.

Due to the reasons described above, we have designed a didactic unit in which cooperative learning is worked in a CLIL context. The combination of these two

“methodologies” have created an ideal framework for language and content learning and, in addition, have helped to create an atmosphere of cooperation between students.

CLIL has allowed us to increase the level of exposure of the foreign language by using the target language as a vehicle for teaching content. Furthermore, the contextualized use of language favours significant learning. The combination of CLIL with cooperative techniques has created great opportunities to practice oral communication of the new language.

In addition, the establishing of individual roles and responsibilities and the positive interdependence, typical of cooperative learning, have led to an increase in the degree of student involvement in the teaching-learning process. When students use dynamic activities with active roles, in the cooperative techniques used, an increase in student motivation is encouraged both in terms of content and language.

Based on the above, we can conclude that the use of cooperative learning and CLIL is an appropriate combination to achieve the objectives proposed in this didactic unit.

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6. APPENDICES

6.1. Appendix 1

Formal work groups

Group A 1. Student 1 2. Student 2 3. Student 3 4. Student 4	Group B 1. Student 5 2. Student 6 3. Student 7 4. Student 8	Group C 1. Student 9 2. Student 10 3. Student 11 4. Student 12
Group D 1. Student 13 2. Student 14 3. Student 15 4. Student 16	Group E 1. Student 17 2. Student 18 3. Student 19 4. Student 20	Group F 1. Student 21 2. Student 22 3. Student 23 4. Student 24

Expert groups

Group 1 1. Student 1 2. Student 5 3. Student 9 4. Student 13 5. Student 17 6. Student 21	Group 2 1. Student 2 2. Student 6 3. Student 10 4. Student 14 5. Student 18 6. Student 22	Group 3 1. Student 3 2. Student 7 3. Student 11 4. Student 15 5. Student 19 6. Student 23	Group 4 1. Student 4 2. Student 8 3. Student 12 4. Student 16 5. Student 20 6. Student 24
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6.2. Appendix 2

Table for activity 5

	Cell type	Body organization	Nutrition	Reproduction	Examples of organisms
Monera					
Protista					
Fungi					
Plantae					
Animalia					

6.3. Appendix 3

Material for activity 6

ANIMAL KINGDOM

Cnidarians

Molluscs

Crustaceans

Amphibians

Worms

Bivalves

Porifera

Annelids

Arthropods

Insects

Reptile

Sponges

Nematode

Fishes

Cephalopods

VERTEBRATES

Arachnids

INVERTEBRATES

Birds

Echinoderm

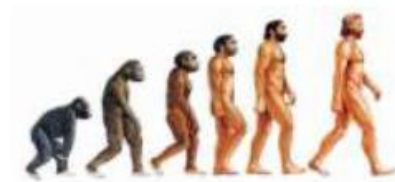
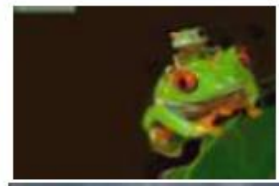
Myriapods

Mammalians

Jellyfishes

Gastropods





6.4. Appendix 4

Tables for activity 8

Poriferous and Cnidarians	Expert groups nº1:
How do sponges feed?	Draw a jellyfish and indicate its parts
What is the habitat of the poriferous? Could they adapt to other types of habitats?	What are coral reefs? How do they form?
Why do you think Poriferous and Cnidarians have many common characteristics?	How many bodily forms can cnidarians present? What is the difference between them?

WORMS	Expert groups nº 2:
What types of worms can we find? Explain the differences between them.	What is their diet?
How do they breathe?	Explain the benefits of the earthworm for the environment.
How do they reproduce?	What diseases can they cause in people?

Mollusc and Echinoderms	Expert groups n°3:
Describe the general characteristics of echinoderms	What three types of molluscs can we find? Draw them
	How do molluscs breathe?
What is the ambulacral system? Explain it.	What is a mollusc's diet?

ARTHROPODOUS	Expert groups n°4:
Draw an arthropod that indicates its parts:	Explain the parts of its body:
What is their skeleton like?	How do they breathe?
How do they reproduce? Explain the metamorphosis	What is their diet like?

6.5. Appendix 5

List of questions for activity 10

1. What are the general characteristics of animals? (Cell type, feeding, reproduction)	
Individual	
Pairs	
Group	
Solution	
2. What are the differences in the different body shapes of arachnids?	
I	
P	
G	
S	
3. Are poriferous animals simple or complex animals? Why?	
I	
P	
G	
S	
4. Why are sponges called poriferous?	
I	
P	
G	
S	
5. Why do some jellyfish found in the sea/ocean sting us?	
I	
P	
G	
S	
6. Write the name of a poisonous jellyfish.	
I	
P	
G	
S	
7. What types of worms can we find? Explain the differences between them.	
I	
P	
G	
S	
8. What kind of worm is the tapeworm? What disease or pain does it cause in people?	
I	
P	
G	
S	
9. Write the consequences that would occur if earthworms became extinct.	
I	
P	
G	
S	

10. How do worms reproduce?	
I	
P	
G	
S	
11. What does echinoderms have radial symmetry mean?	
I	
P	
G	
S	
12. Write two species of echinoderms.	
I	
P	
G	
S	
13. Indicate the functions of the ambulacral system.	
I	
P	
G	
S	
14. Explain what the function of the shell of the clam is.	
I	
P	
G	
S	
15. Is a squid a mollusc? Does the squid have a shell?	
I	
P	
G	
S	
16. Write the name of the main types of molluscs.	
I	
P	
G	
S	
17. Can snails breathe in and out of the water? Why?	
I	
P	
G	
S	
18. What groups of arthropods do you know?	
I	
P	
G	
S	
19. What is the exoskeleton? What is it for?	
I	
P	

G	
S	
20. Order the different phases of metamorphosis of an arthropod: Adult/ Egg/ Nymph/ Birth	
I	
P	
G	
S	
21. What group of arthropods do crabs belong to?	
I	
P	
G	
S	
22. Give two examples of myriapods and two examples of insects.	
I	
P	
G	
S	
23. What are the articulated appendages of arachnids like?	
I	
P	
G	
S	

6.6. Appendix 6

Tables for activity 12

FISH AND AMPHIBIANS		Experts group nº 2:		
What is fish habitat?	What type of breathing do they have?	What is their diet like?	How do they reproduce?	Can they regulate their temperature?
What is amphibian habitat?	What type of breathing do they have?	What is their diet like?	How do they reproduce?	Can they regulate their temperature?
Draw a cartilaginous fish and indicate its parts.	What characteristics does bonefish have?		What is the SIDE LINE?	
Give an example	Give an example			
Explain the main characteristics of urodeles	Draw a frog's metamorphosis circle		Why are amphibians bioindicators?	
Give an example				

BIRDS		Experts group nº 3:		
What is their habitat?	What type of breathing do they have?	What is their diet like?	How do they reproduce?	Can they regulate their temperature?
What is the skin of birds like? What are their feathers for?		Draw a bird and indicate its parts 		

MAMMALS		Experts group n° 4:		
What is their habitat?	What type of breathing do they have?	What is their diet like?	How do they reproduce?	Can they regulate their temperature?
What differentiates mammals from other vertebrates?	Why do female kangaroos have a ventral bag?		Write the types of mammals that exist and give an example of each one	
Are all mammals land mammals?	What makes human beings different?			

6.7. Appendix 7

List of questions for activity 14

1. What is the main characteristic of all vertebrates?
2. Why can't fish eggs survive outside of water?
3. Indicate the function of a fish's operculum.
4. Explain how a gill works. Are fish the only vertebrates with gills?
5. Indicate three differences between bonefish and cartilaginous fish.
6. Write the reason why fish do not collide with each other when they move forming a shoal.
7. Knowing that amphi- means double and -bians means life, why do amphibians receive this name?
8. What is the skin of amphibians like?
9. Indicate the main difference between anura and urodele.
10. Why are amphibians often used as bioindicators?
11. Write if amphibians are able to live permanently out of water.
12. What adaptations allow most reptiles to live out of water?
13. Write the three main groups of reptiles. Give an example of each one.
14. Why can some reptiles get rid of their tail?
15. Explain why snakes are more active in the summer season.
16. From which group did birds and mammals evolve?
17. What are the functions of bird feathers?
18. What kind of adjustments do birds need to fly? Indicate two of these adjustments.
19. Explain what an air sac is.
20. Indicate the main difference between fringillid birds and ratites birds.

21. The term mammal means to have breasts. Do you think it is suitable for this group?
Explain your answer.
22. Give an example of each mammal: flying mammal, terrestrial mammal and aquatic mammal.
23. Indicate two distinctive characteristics of human beings in relation to other mammals.
24. Are there any mammals that can lay eggs?
25. Explain what function the placenta develops.

6.8. Appendix 8

Assessment tools.

Oral presentation rubric

	Excellent 10	Good 7	Elementary 5	Inadequate 2
Content 50%	Good command of the subject, makes very few mistakes, does not doubt.	Fluid exposure, very few content errors	Some rectifications, from time to time he/she seems to doubt	There is no prior preparation on the subject, it is improvised or not delivered
Captative audience 10%	Attracts the attention of the audience and maintains interest throughout the presentation.	Interesting enough in principle but it gets a bit monotonous	Struggles to attract or keep the interest of the public	Does not show any interest in the presentation.
Speaking 20%	Clear voice, good intonation and pronunciation of all words	Clear voice, mostly good intonation and pronunciation.	Hard to understand some fragments	There is no way to understand or does not deliver
Grammar and vocabulary 20%	Use of appropriate grammatical tenses and specific vocabulary of the subject	Verbs are mostly well conjugated and the vocabulary is adequate although not specific	Only use of simple phrases (simple present or similar) and errors of the vocabulary related to the subject.	Verbs are not well conjugated and the vocabulary is inappropriate

Self- assessment

N: never; **S:** sometimes; **U:** usually; **A:** always

	N	S	U	A
I actively participate both individually and in group				
I actively listen to the teacher and my classmates				
I ask all the questions/doubts that I have				
I bring the right material to class				
I help others, respect their opinions and share my knowledge				
I know the different types of vertebrates and invertebrates and their main characteristics				
I can identify some species of each type				
I am able to use English to express my ideas and ask questions				
I know and use specific vocabulary of the subject in English				
I know the main question and grammar structures necessary to make descriptions and ask questions				

Self-assessment of cooperative learning

N: never; **S:** sometimes; **U:** usually; **A:** always

	N	S	U	A
We collaborate with each other and share responsibilities				
We all contribute with ideas				
We respect our partners and the rules				
We actively listen to each other				
We use time properly and finish tasks on time				
We help each other				
We use English in our group conversations				
We agree on all decisions and answers				

Assessment scale of daily observation in class

N: never; **S:** sometimes; **U:** usually; **A:** always

	N	S	U	A
1. He/she does all his/her individual tasks and fulfil their group tasks				
2. He/she does the homework on time				
3. He/she respects their schoolmates and teacher				
4. He/she actively listens to their classmates and teacher				
5. He/she makes the most of the time				
6. He/she brings the right material				
7. He/she actively participates in task resolution				
8. He/she uses the FL				
9. He/she uses subject specific vocabulary				
10. He/she expresses his/her ideas, doubts and questions in the target language				

Rubric for activity tables 8 and 12

	Excellent 10	Good 7	Elementary 5	Inadequate 2
Answers 25%	All questions have an answer	Most questions have an answer	At least half of the questions have an answer	Less than half of the questions have an answer.
Quality of the answers 25%	Structured, complete and very clear information	Information with some structuring and clarity.	Poorly structured but correct information	Unstructured and erroneous information
Classwork 25%	They take advantage of all the time and work in an organized way.	They take advantage of time and work in a more or less organized way.	They work but without organization.	They don't show interest and they don't work
Grammar and vocabulary 25%	Use of appropriate grammatical tenses and specific vocabulary of the subject	Most of the verbs are well conjugated and the vocabulary is adequate although not specific	Only use of simple phrases (simple present or similar) and errors in the vocabulary related to the subject	The verbs are not well conjugated and the vocabulary is inappropriate

Team notebook rubric

	Excellent 10	Good 7	Elementary 5	Inadequate 2
Organization and structure of the notebook 30%	Organization and structure perfectly sequenced	A part is unstructured	Two parts are unstructured	More than two parts are unstructured
Reflexive diary 40%	All sessions are carried out and incorporate objective and subjective data	One or two sessions are missing in the notebook or parts of them.	Three or four sessions are missing in the notebook or parts of them.	There are more than four sessions left in the notebook or parts of them.
Information sources 30%	Provides each idea with appropriate and developed sources of information	Provides most ideas with adequate and developed sources of information	Provide appropriate sources of information and developed on half of the ideas	Most ideas lack sources of information

Didactic unit assessment

This assessment will be carried out by the teacher at the end of the didactic unit.

	Yes	No
1. The objectives proposed are realistic and appropriate		
2. Sufficient opportunities are given to students to express themselves through the FL		
3. The proposed language objectives have been achieved		
4. The proposed content objectives have been achieved		
5. The timing has been adequate		
6. The activities are motivating and satisfy students' skills		
7. The resources and materials used are appropriate.		
8. The provision in the classroom and the composition of the student groups have been adequate.		