

Master's Dissertation/
Trabajo Fin de Máster

**A CLIL DIDACTIC PROPOSAL:
TEACHING GEOLOGY AND
PETROLEUM TO SECONDARY
SCHOOL STUDENTS IN FRANCISCO
DE ORELLANA, ECUADOR**

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ABSTRACT AND KEYWORDS

ABSTRACT

This Master's Dissertation aims to design a CLIL didactic unit with Geology and Petroleum contents for teaching English to students in the last year of secondary education in the city of Francisco de Orellana, Ecuador. This proposal uses the CLIL methodology as a central teaching strategy, complemented by the Flipped Classroom and Task Based Learning approaches in order to teach English as a foreign language along with the themes of Petroleum and Geology. This project is intended for students living in Francisco de Orellana, an Ecuadorian city where the oil industry as well as the Geology related work has become part of its environment since decades. The structure of this paper is divided into two main parts. First of all, a literature review is made regarding the CLIL methodology, its characteristics, materials, assessment, as well as the aspects of the Ecuadorian curriculum of English as a foreign language. Lastly, the second part consists of the development itself of the didactic unit, contrived in seven sessions, in each of which the objectives, materials, activities and assessment are detailed. On the whole it is concluded that the present paper constitutes a guide for teaching EFL using Geology and Petroleum related contents, on account of the variety of activities and the use of ICT that facilitate the connection of the language and contents with the students' daily life experiences. In this context, the present work ultimately provides examples of activities and materials that promote cooperation, communication, critical thinking, cognitive skills, cultural awareness that constitute the main characteristics of CLIL.

Key words: Didactic proposal, CLIL, Task-based learning, Flipped Classroom, Geology, Petroleum, EFL Ecuadorian Curriculum.

RESUMEN

Este Trabajo de Fin de Máster tiene como objetivo diseñar una unidad didáctica AICLE con contenidos de Geología y Petróleo para la enseñanza del inglés a estudiantes del último año de educación secundaria en la ciudad de Francisco de Orellana, Ecuador. Esta propuesta utiliza la metodología AICLE como estrategia central de enseñanza, complementada con los enfoques Aula Invertida (Flipped Classroom) y Aprendizaje Basado en Tareas (Task Based Learning) para la enseñanza del inglés como lengua extranjera junto con los temas de Petróleo y Geología. Este proyecto está dirigido a los estudiantes que viven en Francisco de Orellana, una ciudad ecuatoriana donde la industria petrolera, así como el trabajo relacionado con la Geología se ha convertido en parte de su entorno desde hace décadas. La estructura de este trabajo se divide en dos partes principales. En primer lugar, se realiza una revisión bibliográfica sobre la metodología AICLE, sus características, materiales, evaluación, así como los aspectos del currículo ecuatoriano de inglés como lengua extranjera. Por último, la segunda parte consiste en el desarrollo propiamente dicho de la unidad didáctica, concebida en siete sesiones, en cada una de las cuales se detallan los objetivos, materiales, actividades y evaluación. En definitiva, se concluye que el presente trabajo constituye una guía para la enseñanza de EFL utilizando contenidos relacionados con la Geología y el Petróleo, por la variedad de actividades y el uso de las TIC que facilitan la conexión de la lengua y los contenidos con las experiencias de la vida cotidiana de los alumnos. En este contexto, el presente trabajo proporciona, finalmente, ejemplos de actividades y materiales que promueven la cooperación, la comunicación, el pensamiento crítico, las habilidades cognitivas y la conciencia cultural que constituyen las principales características del AICLE.

Palabras clave: Propuesta didáctica, AICLE, Aprendizaje basado en tareas, Aula invertida, Geología, Petróleo, Currículo ecuatoriano de lengua extranjera.

1. INTRODUCTION

As a consequence of globalization and the advancement of technology, the use of the English language for communication has been evolving and has become imperative (Mansfield & Poppi, 2012). Siqueira (2017) highlights the English language as “a language that has reached a status never achieved by any other language worldwide where everyone seeks to learn the language of technology, entertainment, scientific knowledge and business” (p. 5). Consequently, teaching English as a Foreign Language (EFL) in educational institutions must keep up with these constant changes. In response to this increased need for language proficiency, the CLIL methodology has become a viable option.

Content and Language Integrated Learning (CLIL) is an approach to language education that was born in Europe to offer students internationalization of higher education and promote multilingualism within the European Union. The approach integrates L2 learning and curriculum content (Coyle et al., 2010). Due to its relevance in fostering bilingualism and multilingualism which has led to the learning of English, CLIL has been implemented in several countries around the world, and South America is no exception (Torres & McCandless, 2022).

Specifically, in Ecuador, the government implemented the CLIL approach in its English Foreign Language curriculum in 2016. CLIL is the central methodology to improve English learning in this country. The main objective of the Ecuadorian government was to create meaningful EFL classes in which students develop activities that involve communication, and engage and motivate English learning (Barre & Villafuerte, 2021). Despite the implementation of the 2016 EFL curriculum, according to Education First (2021), Ecuador is ranked 90th in the world ranking of English proficiency out of 112 countries and 18th out of 20 countries in Latin America. Palma (2020) states that one of the main reasons for Ecuador's low level of English proficiency despite the implementation of the EFL curriculum is precisely the lack of knowledge of the CLIL approach since English teachers did not receive formal training. In the same terms, Villamarín-Guevara and Fajardo-Dack (2022) in their research concluded that although teachers are aware of the CLIL methodology, most of them do not apply it because their preparation in terms of methodology is inadequate, even though the curriculum establishes it as a methodology for teaching English in Ecuador.

In this sense, this Master's dissertation presents a didactic proposal that combines the teaching of Geology and Petroleum using the CLIL methodology as an option for teachers and students to apply it in English language learning. It also serves as a guide for teachers in the use of materials and teaching approaches around CLIL. For the students in last year of secondary

education (3rd year of "Bachillerato General Unificado") in the city of Francisco de Orellana, Ecuador., this proposal is an opportunity to learn English through the context in which they live since Ecuador is a Petroleum-producing country.

2. OBJECTIVES

2.1. General objective

- To design a language-driven CLIL didactic unit using Geology and Petroleum contents for teaching English to secondary school students in the city of Francisco de Orellana, Ecuador.

2.2. Specific objectives

- To investigate the main features of the CLIL methodology, materials, and assessment for its correct application;
- To contribute to the acquisition of basic knowledge of Geology and Petroleum by secondary school students through the CLIL approach as part of the energy and economic culture of Ecuador;
- To develop and adapt materials for the teaching of contents (Geology and Petroleum) and language (EFL) using the CLIL approach, prioritizing the use of Information and Communication Technologies (ICT);
- To improve linguistic, critical thinking, and communicative skills through the CLIL methodology by applying the principles of the Ecuadorian EFL curriculum to secondary school students in the city of Francisco de Orellana-Ecuador;
- To provide through the design of this didactic proposal a theoretical and practical guide of the CLIL methodology to be applied in teaching the English language to secondary school students.

3. THEORETICAL FRAMEWORK

3.1. CLIL methodology

With the development and incorporation of cutting-edge educational techniques and processes into the teaching field, Content and Language Integrated Learning (CLIL) has evolved into an ever-changing approach to instruction (Diaz et al., 2018). David Marsh, who first used this approach in 1994 in conjunction with the multilingualism and bilingual education field at the Finnish University of Jyväskylä, defines CLIL as “a dual-focused education approach” that uses a second language (in addition to the mother tongue) for learning and teaching content and language (Marsh, & Langé, 2000, p. 2).

Similarly, Yassin et al. (2010) claim that CLIL is an approach in which non-language subjects are taught through the use of a second language whereby the employment of the second language can be total, moderate, or partial. CLIL can be used to teach one or more topic areas using a second L2 language as a medium at various levels of education, or in a language program that includes content-based disciplines (Massler et al., 2014). In this context, the following elements distinguish the CLIL approach as an innovative teaching methodology.

3.1.1. CLIL characteristics

According to Pérez-Cañado (2012), the use of CLIL methodology varies across Europe. Coyle (2007) identifies 216 CLIL programs that differ in terms of mandatory application, educational institutions where it is used, program intensity (strong or soft CLIL), starting age of the students, and linguistic level at which they begin the program. Despite the numerous application scope of the CLIL approach mentioned above, certain characteristics particularly distinguish it in the teaching of a second or foreign language.

CLIL, according to Mehisto et al. (2008), has multiple approaches that integrate the contents of different subjects and the learning of a language. Furthermore, through CLIL, teachers strive to create a learning environment that allows students to develop linguistic awareness through the use of authentic materials and experimentation with language and content. Indeed, CLIL methodology connects language, content, and daily life experiences for students to develop learning in the context that surrounds them, with their interests and motivations. As a result, students are the agents of their own learning.

As a learner-centered methodology, CLIL includes activities involving cooperation, communication, and the development of cognitive and thinking skills. Teachers take on the role of facilitators and guides in the learning process, paying close attention to the student's

linguistic needs. As a result, teachers must use scaffolding strategies that build on previously acquired knowledge. Consequently, the participation and cooperation of stakeholders such as teachers, parents, and students are essential for the successful implementation of the CLIL methodology.

Furthermore, Coyle et al. (2010) argue that CLIL stands out as an innovative methodology that integrates content, cognition, communication, and culture into the teaching and learning process. This collection of elements is known as the CLIL 4C's framework (Coyle, 2007). According to Meyer (2010), the application of these four components provides theoretical and methodological support for the development of a CLIL program. Each component is described by the author as follows:

- **Content:** Content subject matter is not just about achieving knowledge and skills in subjects such as math or science; it is also about students creating their knowledge and understanding and developing their skills.
- **Cognition:** It refers to learning in conjunction with thinking. Students must create their interpretation of the content by developing their critical thinking, as thinking processes must be analyzed by their linguistic demands.
- **Communication:** It is related to the language skills that learners need and will develop to communicate effectively, in other words, the use of the target language for learning. It is important to learn a language by relating it to the context in which learners operate, reinforcing the content and the cognitive processes involved in learning.
- **Culture:** It focuses on the cultural context of learners and intercultural awareness. Culture is strictly linked to language and is a fundamental element of the CLIL approach; in fact, it lies at the core of it (see Figure 1).

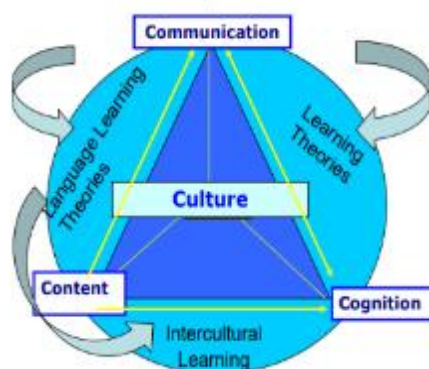


Figure 1: The 4Cs Framework for CLIL (Coyle, 2011)

In this regard, it is critical to identify the concepts differentiated by Cummins (1999) that are based on the development and acquisition of communication skills in a social environment Basic Interpersonal Communication Skills (BICS) or in an academic environment Cognitive Academic Language Proficiency (CALP) using the target language during the language learning process. These concepts are described as follows:

- Basic Interpersonal Communication Skills (BICS): It refers to the linguistic skills required to interact in everyday life. For instance, when conversing with a friend or family member; thus, the language involved in these social interactions is integrated into the context.
- Cognitive Academic Language Proficiency (CALP): It focuses on the development of academic language, which is used in different subjects within a classroom. It requires learning skills such as evaluation, synthesis, and analysis (cognition) within the academic context.

Within this framework, CLIL, as a teaching methodology that involves the development of both language and content, aims to develop both BICS and CALP, which contributes to the holistic development of the student in the learning process.

Furthermore, CLIL employs Bloom's (1956) taxonomy for the cognitive development of students learning a language. In this regard, Peyró et al. (2020) explain that Bloom's taxonomy (1956) describes the educational objectives in a hierarchical order, from bottom to top, reportedly: “knowledge, comprehension, application, analysis, synthesis, and evaluation” (p. 186).

Anderson and Krathwohl (2001) revised this structure, and interpret synthesis as a tool for creating new knowledge, placing creation in the highest hierarchical group of learning objectives. The authors convert the nouns into verbs and place remembering, understanding, and applying as Lower Order Thinking Skills (LOTS) and the objectives of analyzing, evaluating, and creating as Higher Order Thinking Skills (HOTS) (Figure 2). Coyle et al. (2010) argue that effective learning takes place when activities stimulate critical thinking and challenge at a cognitive level. Therefore, Bloom's Taxonomy should be used to develop academic activities such as assignments and materials within a CLIL program. Consequently, promoting the development of cognitive skills.

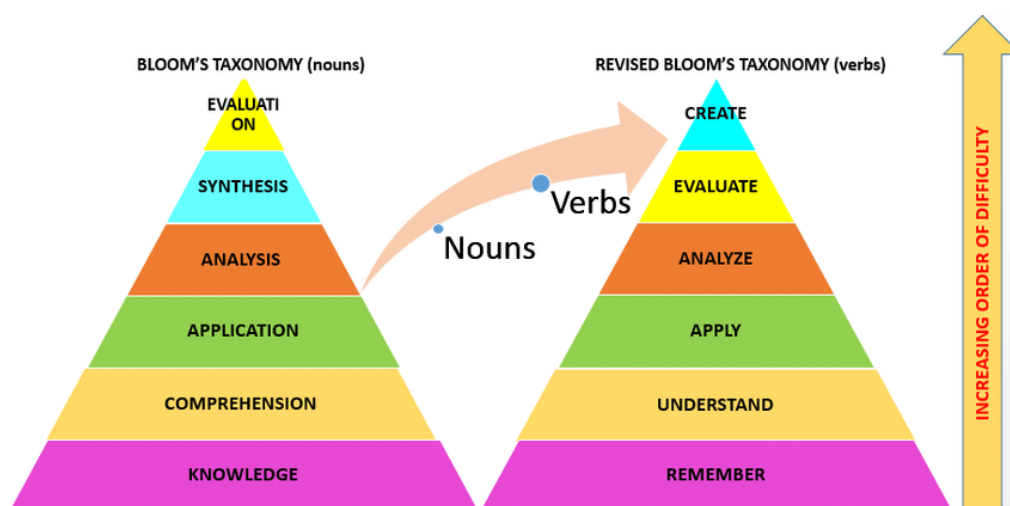


Figure 2: Bloom's Taxonomy (1956) and Anderson and Krathwohl's revision (2001)

3.1.2. CLIL materials

Implementing the CLIL methodology requires the design of new materials and the adaptation of existing ones to meet the demands of the CLIL methodology due to its diversity. (Ball, 2018). The CLIL approach requires materials that allow the learner to acquire language and content knowledge; these materials must help to keep the learner's interest and motivation to develop their creativity through continuous interaction. (Tomlinson, 2001). Considering this, knowing about the types of materials is a fundamental tool to promote learning. Tomlinson (2003) identifies the following types of materials:

Informative and instructional materials: In practical terms, they help teachers in the teaching-learning process because they provide examples of the activities to be developed. Also, they provide the linguistic input that the students will acquire, including, books, worksheets, tables, and graphs.

Experiential materials: This type of material allows the student to make use of the target language. It promotes autonomous learning through the analysis of the language in context. For example, the analysis of a video on a specific topic.

The third type, *elicitive materials* are characterized by stimulating the use of the target language in a natural environment. They aim to make students use specific language features without knowing that they have to do so, i.e., intuitively and naturally, promoting critical thinking and analysis, allowing for simplified scaffolding. The elicitive materials are focused on the CLIL methodology.

Finally, *exploratory materials* allow students to discover the target language by themselves, employing practical activities that allow them to establish connections of linguistic characteristics. As a result, conclusions are to be drawn by the students (p. 2).

After identifying the type of material, it is necessary to take into account the characteristics that materials must meet to contribute to the learning of a second language. With this intention, the following are the relevant principles compiled by Tomlinson (2013) for the development, selection, and evaluation of materials to be used in second language teaching. According to the author, materials should:

- achieve impact,
- help the learners to develop confidence,
- provide the learners with opportunities to use the target language to achieve communicative purposes,
- require and facilitate learner self-investment,
- maximize learning potential by encouraging intellectual, aesthetic, and emotional involvement
- provide opportunities for outcome feedback,
- help the learner to develop cultural awareness and sensitivity
- take into account that learners differ in affective attitudes and learning styles
- expose learners to authentic use (Tomlinson, 2013, p. 28).

In addition to the principles listed above for the development and evaluation of language teaching materials, Mehisto (2012) is more specific and proposes “ten criteria for the development of quality CLIL materials,” taking into account the characteristics of the CLIL approach to language learning and content. The criteria are:

1. Making the learning intentions (language, content, learning skills) & process visible to students
2. Systematically fostering academic language proficiency.
3. Fostering learning skills development and learner autonomy
4. Include self, peer, and other types of formative assessment
5. Helping to create a safe learning environment
6. Fostering cooperative learning
7. Seeking ways of incorporating authentic language and authentic language use

8. Fostering critical thinking
9. Fostering cognitive fluency through scaffolding of a) content, b) language and c) skills development; helping the student to reach well beyond what they could do on their own
10. Helping to make learning meaningful (Mehisto, 2012, p. 17)

Regarding the selection of appropriate materials for the CLIL approach, teachers must be at the forefront in terms of tools, resources, as well as teaching and learning techniques. In that sense, the employment of appropriate materials allows teachers to develop lesson plans according to the demands and needs of students around the CLIL methodology. Within this framework, the following is a brief description of essential resources and strategies to achieve the objectives that teachers set for themselves in a CLIL teaching program:

First, *authentic materials and realia*: The use of authentic resources represents an opportunity for learners to enter into the culture of the language they are learning. Moreover, authenticity provides learners with experience in naturally using the language. Mehisto et al. (2008) state the main benefits of using authentic materials in the CLIL approach, namely the motivation learners develop to ask for help using their thriving language skills, and to find adaptations in the teaching program according to their interests. Another benefit is the connection between the learning process and their daily lives as it happens when learners connect with speakers of the target language, through the use of current materials such as media or similar resources. In other words, Mehisto et al. (2008) indicate that the use of authentic material provides a relevant connection between learners' interests not only in the linguistic or academic aspect but also with their everyday life activities. For instance, the use of authentic resources obtained from internet media, and printed resources, among others, provides real contact with the target language.

With this in mind, resources such as texts intended for native speakers should indeed be adapted to the language level of the learners. Adapted texts help students to understand the context of the reading. For the text to be properly adapted, it is necessary to follow a process. In this sense, Bentley (2010) argues that to adapt a text we should: Use simple syntactic structures, next employ paraphrasing with synonyms according to the linguistic level of the students, then remove details that are not necessary for the teaching activity being performed, and reduce the length of sentences so that students do not lose interest in the reading.

Second, *ICT*, Technology has been steadily growing, giving rise to a variety of teaching resources for the advancement of education with the emergence of Information and

Communications Technologies (ICT). Wojtowicz et al. (2011) define ICT as a variety of technological tools and resources used to create, communicate, store and organize information, which supports the CLIL approach. In effect, ICT increases learner motivation because of the variety and countless resources, both language and content, they provide. For instance, visual and audio elements such as images or videos complement the explanation of the topics being covered by providing a more authentic context. ICT provides the possibility to interact and be in contact with cultural awareness (Comfort & Tierney, 2007).

Furthermore, ICT has contributed to the expansion of education by providing access to resources, materials, and content for comprehensive education to students in different parts of the world. In the CLIL context, students can interact directly with real situations through the use of the target language (Tinio, 2003). López and Galván (2017) argue that the use of ICT helps students to develop, among other things, skills in the management of new technologies, and promotes autonomous learning. In addition, ICT allows students to develop individual and group projects. Moreover, ICT allows access to a large amount of information giving the student the possibility to be in contact with the target language. The following is a description of some of the ICT tools and platforms to create or host materials that have proven to be of great help in learning a second language and CLIL approach:

Webquests: They are ICT tools designed to give students the possibility of getting and providing information to interact in a real way, and promote effective communication (Alshumaimeri, 2011). Webquests were created in 1995 when Bernie Dodge and Tom March integrated the World Wide Web into education. Consequently, according to March (2004), Webquests allow students accessing the web to process information and use it in the academic context in many ways. As a result, as it is highlighted by Dudeney (2003), the Webquest is a tool that provides motivation, as well as knowledge acquisition with authentic elements and information; letting students concentrate on the development of proposed activities. Regarding the benefits of Webquests in education, Torres (2007) indicates that it allows students to develop a habit of controlling the time in which they carry out the activities, and develop skills in the search and analysis of information. Besides, the activities carried out, in Webquests students are prompted to read, synthesize and analyze information, thus favoring to a great extent higher order reasoning.

Blogs: They are websites ordered chronologically on a specific topic, which allow the sharing of points of view of participants who have a common relationship with the topic in question. Leaning (2014) describes blogs as a media technology used to share information that has transformed social practices. Among the main characteristics of a blog according to

Campbell (2005), are that students have control and privacy of the comments they make; also, students can customize their pages, and have integrated social network functions so that they can quickly find peers who have a common interest in the topic of the blog. Additionally, students can easily share all types of files such as video, audio, and ensure that the blog is designed in a free web. In addition, the main advantages of using blogs in second language teaching are the ease of designing and maintaining a blog, creating, editing, assigning tasks in an organized way, and sharing websites in English so that students have contact with the target language, the teacher can keep track of the activities carried out (Wu, 2004).

Social media: It is a set of tools designed to interact, get information, and publish information. In addition, social media is one of the most used technological tools around the world, reaching people of all ages (Al Arif, 2019). This ICT tool is used for various activities of daily life. Thus, the scope of social media has permitted ICT to be used for content creation in various areas including education (Liu, 2010). Currently, the most popular social media are Twitter, Facebook, YouTube, and Instagram, among others (Monica & Anamaria, 2014). Students find these technological tools attractive because they are free and easy to access, and they can find information that is of interest to them (Al Arif, 2019).

Social networks are well known for allowing students to interact with other people, social media platforms provide simple management so that anyone can interact (Chou, 2014). Among the benefits of using social media in education according to Edosomwan et al. (2011) are the ease of communication between students and teachers; students can share their ideas, knowledge, and experiences, promote collaborative and cooperative work giving the teacher the ability to provide quick feedback, share specific content according to the interests and learning needs of students. In the CLIL approach, social media contributes to the motivation of students, engaging them in learning and developing linguistic and content skills, providing a natural environment to establish discussions improving the cognitive skills of students, allowing direct contact with the target language, and promoting self-learning (Palacios & Espejo, 2019).

Third, *Scaffolding*: It is an educational strategy based on Vygotsky's proposal and was introduced in the educational context by Bruner in 1970. Scaffolding in a classroom is characterized by providing support to the student, in other words, feedback through the use of materials and strategies to make an activity or task more accessible to students Mahan (2020). One of the main functions of scaffolding is the use of supportive material such as graphic organizers, body language, and visuals (Grossman et al., 2013). In fact, in a CLIL program the

use of graphic organizers, videos, and images, are of great help in the understanding of abstract concepts in subjects such as science.

Fourth, *development of cognitive strategies*: Finally, as mentioned above, the development of cognitive skills is one of the pillars of the CLIL approach according to the 4Cs model proposed by Coyle (2011). Therefore, it is essential during the development, adaptation, and elaboration of materials to consider Coyle's model, and Bloom's taxonomy (1956) focusing on High Order Thinking Skills (HOTS), and developing CALP (Cognitive Academic Language Proficiency).

During the material-selection process, teachers should implement resources that guarantee students' cognitive development. In this sense, Bentley (2010) proposes activities that allow the development of cognitive or thinking skills; among the most important are: "Carrying out investigations, cooperating with others, guessing from context, note taking; organizing, interpreting and locating information, planning, solving problems, summarizing" (p. 26-27).

3.1.3. CLIL assessment

Assessment of students' skills is one of the most controversial issues in education and the CLIL approach is no exception. Particularly, the lack of guidelines, the difficulty of selecting suitable assessment tools, and the variety of contexts in which CLIL is applied are some of the reasons (Otto & Estrada, 2019). However, assessment is vital for a CLIL teaching program to be successful. As Llinares et al. (2012) describe, assessment is a fundamental part of instruction. As a result of CLIL being a dual-focused approach, both content and language must be assessed, emphasizing that language acts as both an instrument and an object of assessment (Bachman, 1990).

What, why, when, and how do we assess? For a proper assessment within an educational program, it is important to answer some basic questions. In the CLIL approach, these questions become more relevant because of the characteristics of the methodology.

What: As mentioned above, in the CLIL approach, both content and language must be assessed, considering the assessment of students' competencies and skills. Given this, assessment should be a continuous and formative procedure. Moreover, assessment should include as a core part of the objectives of the curriculum as well as the procedures used during the teaching process. In CLIL it is essential to assess the learner considering the 4Cs established by Coyle (2011) that is, content, communication cognition, and culture. In addition, the linguistic component should be assessed declarative knowledge such as vocabulary, grammar,

pronunciation, and non-declarative knowledge such as listening, speaking, reading, and writing (Pérez-Paredes & Rubio, 2005).

Why: There are many reasons to assess students, however Lane (2012) mentions the main reasons. The first one refers to the curricular and instructional reforms that can be implemented, the assessment allows to have a criterion to determine the areas in which more attention should be paid to improvement. The second focuses on affective reasons such as motivation and the third establishes the need for students to build their perspective as learners.

When: Assessment is characterized by being a continuous process, which is why the assessment should be carried out before, during, and after the teaching and learning process. Before the teaching process itself begins, a diagnostic assessment is carried out to know if the students have the necessary competencies to satisfactorily complete the teaching program. During the teaching-learning process, a continuous assessment is carried out during all the activities developed to control the learning process and motivate the students. Finally, the assessment is done after the end of the program where all the contents studied are evaluated to know the skills acquired by the students after completing the program (Pérez-Paredes & Rubio, 2005)

How: There are a variety of techniques and tools designed to assess students' knowledge, all of which, according to Bachman (1990), should be characterized by being objective, reliable, valid, and useful for an adequate assessment. In addition, they should pursue a clear objective. Moreover, teachers should provide clear guidelines, employ different forms of assessment, including self-assessment, and use authentic assessment materials.

Types of assessment: Several types of assessments can be carried out during a teaching and learning process. Some of them are explained below.

Diagnostic assessment: It is used to measure the knowledge of a student in a specific subject. One of the main functions of diagnostic assessment is to find shortcomings in specific aspects of a teaching program. Brown and Abeywickrama, (2019) emphasize that diagnostic assessment is designed to diagnose specific aspects of language. A practical example is a diagnostic test of pronunciation in the use of a foreign language, so diagnostic assessments are performed to determine in which phonological feature a student has difficulties.

Initial assessment: This type of assessment is of great help to a teacher because it allows for gathering information regarding the linguistic and content level of the students. The consequence is the opportunity for students to make corrections and comply with the program

planning (Dale & Tanner, 2012). Initial assessment also allows for to identification of individual learning characteristics of students or what is called attention to diversity. Pérez-Paredes and Rubio (2005) state that a properly executed initial assessment allows adapting and making decisions in the implementation of the curriculum considering the diversity of the students.

Formative assessment Otto & Estrada (2019) defines formative assessment as a pedagogical tool designed to encourage learning in students. This type of assessment is also known as Assessment for Learning (AfL) and focuses on establishing clear learning objectives. As a main characteristic, formative assessment provides continuous and effective feedback complementing gaps in learning (Black & William, 1998). Moreover, formative assessment employs different feedback strategies such as individual or group observation. Nonetheless, it is not based on concepts by contrast but it is characterized as a part of the practical activities during the class. (Leung & Mohan, 2004). Formative assessment is characterized by being qualified because teachers collect information about the academic level of students. Furthermore, formative assessment is reactive, since it allows teachers to modify their activities according to the information they obtain, finally, it is reciprocal since both students and teachers benefit from the information collected as a result of the assessment, the students with activities that improve learning and the teachers with the information to develop them (Barbero, 2012). *Summative assessment*: Unlike formative assessment, summative assessment is conducted in quantitative terms by measuring the progress of students, in terms of grades after a course. (Nitko 1989). Linares et al. (2012) argue that summative assessment uses tests and exams at the end of a program to assess student progress in the curriculum; in fact, in professional fields such as health care, business, law, engineering, and engineering, summative assessment is used for certification purposes.

Assessment in CLIL: CLIL, being a teaching methodology, should assess general issues as part of good educational practice. In this respect, the following should be considered for the assessment of content: the development of cognitive skills, social interaction skills, awareness of the environment, and technological formation. While focusing specifically on the CLIL approach, assessment should be considered in areas such as the development of students' language skills, content acquisition, attitude towards content and language learning, and strategic competencies in content and language should be assessed. The following is a more detailed description of basic aspects of the assessment of content and language in a CLIL program.

Assessing content in CLIL: the CLIL approach covers the learning of a large number of subjects such as physics, mathematics, and natural sciences, among others. To assess the content in a cross-cutting manner in all subjects where CLIL is applied, it is necessary to evaluate first the specific knowledge of the subject, then how much of what is taught is being understood by the students, and finally the skills acquired by the students (Massler et al., 2014).

To assess content in a CLIL approach, it is most appropriate to use achievement tests in conjunction with other syllabus-based assessment tools. Achievement tests are summative assessment tools. Among the main types of achievement tests are multiple-choice tests, where students must choose an answer from a list of options; another type of achievement test is the questions of development, where students must write about the knowledge acquired and give their point of view. The two aforementioned types of achievement have one thing in common; the application of the tests must be done in the same way for all students, applying the same criteria for each student (Massler et al., 2014).

In terms of the types of items to be evaluated, on the one hand, we distinguish discrete-item tests designed to evaluate specific topics associated with the subject being evaluated and which could not have been learned during the development of the teaching program. On the other hand, the integrative assessment helps to evaluate the student's ability to use several components at the same time, establish connections between the different topics learned, as well as the ability to draw general conclusions.

When assessing content subjects, it is important the match the teaching objectives and the subject matter content, as well as the teaching methodology applied during the class. Moreover, the assessment must reflect the content that was taught and must use instruments with the same characteristics as those used in the teaching activities. In other words, students must be familiar with the formats, questions, and assessment materials.

Language assessment in CLIL: This represents a vitally important issue within the approach because all linguistic aspects are considered in the assessment. In addition, (McKay, 2006) mentions that when a student starts learning a second language, learners have a basic knowledge of the discourse of a specific curriculum. As the student moves through the levels of education, the content becomes more complex and specialized, so students must learn more complex linguistic terms that require a higher academic demand.

McKay's arguments refer to the language skills proposed by Cummins (1979), students acquire at a certain level the basic interpersonal communicative skills (BICS) which, as

previously mentioned, refer to the use of language in everyday life situations that can be acquired through social interaction. On the other hand, Cognitive Academic Language Proficiency (CALP) refers to the use of the language in an academic and formal context which according to Cummins takes longer to learn. In a CLIL program, it is essential to assess students' CALP skills as they represent an indispensable factor for academic success. Not to mention the assessment of BICS skills, which are crucial for effective social communication.

Similar to the assessment of the content, in the assessment of language, discrete-item assessments are identified, which involve the evaluation of the four language skills: listening, speaking, reading, and writing. In the same way, grammatical structures, vocabulary related to the content of the subject matter, and adequate pronunciation. Additionally, students should know that the target language is used in daily lessons as well as in the evaluations, paying attention to the ability to communicate. Also, this kind of assessment can consider an integrative item, with which teachers can develop activities such as oral presentations in class, group work, writing assignments, ability to summarize, listening, and reading academic texts related to the subject matter, interpretation, discussion, and analysis.

Assessment of content and language within the CLIL approach requires the appropriate use of assessment tools that are beneficial to the teaching and learning process for students and teachers. The following is a summary of the main materials that can be used in the different stages of the teaching process of a CLIL program.

CLIL Assessment Tools: Tools selected for assessment in the CLIL context should measure content and language skills applied in a real context (Coyle et al. 2010). In addition, assessment activities and materials used should involve activities from real life and the context in which the learners operate. Moreover, materials complying with the characteristics of CLIL methodology should include cognitive skills and critical thinking in their assessment (Lo & Lin, 2014). Otto (2017) compiles tools that are effective for the assessment of students in bilingual education programs.

Portfolios: This kind of assessment tool refers to the collection of works. The term comes from the collection of canvases that artists make that show the growth they have had in their works (Otto, 2017); this model is applied to the educational context. The portfolio allows for analyzing the growth of the students according to the collection of works, tasks, and activities that they carry out during the teaching program (Genesee & Upshur, 1996). The first time that portfolio was applied as an assessment tool for second language acquisition was in

writing activities. Writing is the most complicated language skill to acquire due to its dynamic characteristics, which involve creativity and cognition (Otto, 2017). Although it began only as a tool to assess writing, the use of the portfolio has expanded to the assessment of other language skills. A portfolio used as a tool for the assessment of students' progress provides several advantages for teachers and students, as it establishes a direct relationship between assessment and instruction and motivates students to carry out activities (Schmitt, 2010).

Students' Journals: Through this assessment tool, continuous activities are carried out to evaluate what the students have learned concerning each topic covered. They are of great help to promote the development of skills and promote reflection, and critical thinking. Additionally, student journals benefit both students and teachers. Teachers can track students' progress allowing them to provide continuous feedback. Among the benefits for students are motivation and assessment of their learning process.

Self and peer-assessment: Self-assessment is defined by Panadero et al. (2017) as a variety of techniques used for students to assess for themselves the qualities they have acquired during the teaching and learning process. These assessment tools allow students to reflect on the one hand on their learning progress and on the other hand to have the ability and criteria to evaluate their peers. For the success of this assessment tool, it is important to provide training to the students before being applied. Among the benefits for students are the motivation and the opportunity to be involved in the assessment of their learning process (Otto 2017). In this regard, Topping (2003) concludes that self-assessment contributes to improving the quality of learning.

Rubrics: The rubric is a matrix used to assess student performance (Barbero, 2012). Its main function is to make the assessment process as transparent as possible; showing students the criteria by which they will be evaluated. The rubric consists of rows in which the criteria are detailed and columns with the qualities of the performance and the corresponding quantitative assessment (Otto, 2017).

Barbero (2012) mentions the advantages that rubrics provide, as an assessment tool. For instance, it allows to provide feedback and serves as a guide for students since it not only provides the numerical assessment but also the assessment criteria, also the assessment is objective and the time to evaluate students is reduced. Two types of rubrics are identified, the first is called a holistic rubric that assesses the product of teaching or student performance, covering all assessment parameters in a general way.

The holistic rubric corresponds to a type of summative assessment where the teacher evaluates the student considering the whole teaching process without considering individual criteria (Mertler, 2001). Due to its characteristics, the holistic rubric provides a quick assessment making a general idea of the student's performance. However, the feedback it provides is limited (Taggart et al., 1998).

The second type of rubric is called the analytical rubric, which allows for a formative or summative assessment of student performance (Taggart et al., 1998). Unlike the holistic rubric, the analytic rubric is more comprehensive, providing a detailed assessment of the tasks and allowing for the identification of students' strengths and weaknesses (Mertler, 2001). As it is a rubric that assesses individual characteristics, it requires more teacher time for its elaboration. Furthermore, an analytical rubric should contain elements that allow the assessment of behavior, the characteristics of the task to be assessed, and a grading scale (Taggart et al., 1998).

3.2. Flipped Classroom

The flipped classroom (FC) is a pedagogical approach whose activities that are commonly done in the classroom are done at home while homework is developed in the classroom (Bergmann & Sams, 2012). On the other hand, the authors Abeysekera and Dawson (2014) defend the FC model not only as an approach but as a set of pedagogical approaches in which the transmission of information takes place outside the classroom and uses classroom time for active learning activities. For this approach, students must develop the proposed tasks and activities for the home. FC has gained space in the educational context specifically in the teaching-learning of a foreign language mainly because it is a student-centered model that integrates activities that promote cognitive development and critical thinking and the use of ICT as a means of learning (Alexander, 2018).

3.2.1. Advantages of the flipped classroom

One of the main challenges in learning a foreign language is the lack of time to be in contact with the target language (Kostka & Marshall, 2018). The flipped classroom approach is one of the options to solve this problem. Flipped classroom effectively utilizes class time with activities that encourage the use of the target language (Hockly, 2017). In more specific terms, Kerr (2020) states that the advantages of the FC approach fit into three areas: “personalization, active learning, engagement and attitudes” (p. 5)

Personalization, this term refers to the characteristics of the FC approach to identify the academic needs of each student. Teachers can develop activities according to the content and language deficiencies of the students. In other words, "personalize the student's education" (Bergman & Sams 2012). A flipped classroom approach can personalize the students' education in four ways:

First, providing support for specific learning difficulties: in an average class, at least one student has learning difficulties. The FC model with the help of ICT technology tools allows the student to overcome these difficulties (Delaney & Farley, 2016). Second, self-pacing: students are free to organize the time they will spend on each academic activity. Each student has different capacities to assimilate knowledge, some spend more time than others performing the same activity. In the FC approach, students can spend more time on activities that are more complicated for them, unlike conventional teaching methods that impose a time for the execution of each activity (Ferster, 2014). Third, personal choice of study material: in addition to the materials provided by teachers, students are free to select other resources for their learning before classroom meetings. Finally, the approach makes it easier for the teacher to provide more support to students who need it. In addition, students can express their academic needs to be addressed (Bergmann & Sams, 2012).

Active learning: In traditional teaching, the teacher spends a lot of time reading content or teaching for long periods. In contrast, the flipped classroom is a student-centered approach that promotes active learning by focusing on higher-order skills, the interaction between students, and useful feedback (Kerr, 2020).

During the development of the activities that are intended for home in the flipped classroom approach, students develop lower-order skills about Bloom's taxonomy (1956) such as remembering and understanding. In the same line, in the classroom, the teacher must develop higher-order skills such as analyzing, evaluating and creating (Kostka & Marshall, 2017). To develop these skills students should engage in discussions, work collaboratively, and solve problems by naturally developing critical thinking. The development of higher-order skills requires greater interaction among students, activities should offer exposure to the target language providing students with the opportunity to produce ideas, thoughts, and opinions through the target language with the help of teacher feedback (Kostka & Marshall, 2018). The FC approach due to its nature as a student-centered methodology requires teachers to provide timely and effective feedback to their students during the execution of classroom activities (Kerr, 2020).

Engagement and attitudes: Authors Bergmann and Sams (2012) argue that in their experience using flipped classrooms they discovered “something amazing” as most of the common problems in a classroom were solved since the approach promotes active learning and a more constructive atmosphere. Mercer and Dörnyei (2020) mention that to keep students engaged, it is important to maintain cognitive challenge during all activities whilst students enjoy the class and avoid situations that provoke boredom. One of the main advantages of the flipped classroom is that students manage their learning process by contributing to engagement in all learning activities (Mercer & Dörnyei, 2020). Besides, schools that have implemented the FC approach have noticed that students’ communication with parents has improved, as during home activities students rely on their parents to complete their self-study. In this way, parents are aware of the topics their children are learning. Table 1 shows a summary proposed by Kerr (2020) of the potential advantages of the flipped classroom approach previously mentioned.

The potential advantages of flipped classroom	
Personalization	• Helping with specific learning difficulties • Self-pacing • Offering a personal choice of study material • Providing individual support
Active learning	• Focusing on ‘higher order skills • Facilitating increased interaction between students • Creating more opportunities for useful feedback
Engagement and attitudes	• Addressing classroom management issues • Encouraging learner ownership’ of learning • Promoting contact between school and parents

Table 1: Summary of the potential advantages of the flipped classroom (Kerr, 2020, p. 5)

3.2.2. Flipped Classroom and Second Language Acquisition

The characteristics of the flipped classroom approach have made it one of the most widely used methodologies in second language learning. In his study, Arslan (2020) highlights that the flipped classroom approach applied to second language learning plays an important role

in the improvement of language skills such as reading, writing, speaking, and listening. This improvement of language skills responds to the use of activities that promote active learning through collaboration, peer interaction, debate, and discussion. In addition, the FC approach increases students' motivation to acquire a second language, teachers must ensure that they provide a positive attitude during teaching, promote self-confidence and that students feel satisfaction in learning a second language (Kerr, 2020).

3.2.3. The challenges of the flipped classroom

Despite the multiple benefits of the flipped classroom approach, it has some challenges to overcome for stakeholders such as educational institutions, teachers, and students. Kerr (2020) identifies the following challenges of the flipped classroom approach “non-completion of assigned work, effective self-regulation, technological issues, as well as the learners’ and teachers’ expectations” (p.14).

Non-completion of assigned work refers to the execution of the activities that students must perform as part of their preparation before the face-to-face class. It is estimated that between 73 and 80% of students complete the activities assigned at home, i.e. between 20 and 27% do not (Webb & Doman, 2016). Getting students to complete all academic activities has been one of the biggest challenges for teachers. One of the most viable solutions is the one proposed by Hockly (2017) is to start the lesson in class with a quick diagnostic through a dialogue on the proposed topic, once identified the students who did not perform the activities in class place them in groups with students who did prepare the contents.

The second challenge is Effective self-regulation which goes hand in hand with the independence of students to acquire knowledge at their own pace. In this sense, students must organize themselves to meet objectives (McMahon & Oliver, 2001). However, many of them fail to do so. To solve this problem recommends that there should be a communication channel for students to ask questions to the teacher and classmates about the activities performed at home.

Another challenge faced by the flipped classroom methodology is the access that students have to technological resources such as a computer and access to an internet connection as well as skills for the management of technological platforms where they can find the activities to develop them at home. Likewise, teachers must have the necessary knowledge for the development of materials using ICT, which leads to the use of additional time (Kvashnina & Martynko, 2016). In other terms, educational institutions and teachers using the FC

methodology must ensure that the necessary educational resources are available for its application (Kerr, 2020).

Finally, learner and teacher expectations refer to the adaptation of students to the FC methodology, many students are not accustomed to this type of teaching methodology. The same happens with teachers, teachers who have not implemented this type of methodology must receive the necessary training, Hockly (2017) recommends making a transition between traditional and FC methodology to identify possible problems and solve them in the transition process.

3.3. Task-Based and Project-Based Learning

Task-Based and Project-Based Learning are two student-centered methodologies focused on language development, employing real-life situations in the classroom with a strong emphasis on communication and interaction through the use of language. These two teaching methodologies are described below.

3.3.1. Task-Based Learning

Task-Based Learning (TBL) is a teaching approach that involves the development of tasks on topics familiar to the learner, using the target language (Lightbown & Spada, 2013). Prabhu (1987) who developed the task-based learning methodology believed that students learn a language more effectively when they focus on the task they are performing, rather than on the target language. Authors such as Willis and Willis (2009) describe task-based learning as a superior and innovative approach to traditional methods. This approach allows students to develop communicative tasks using the target language (Benevides & Valvona, 2008). The main features of this innovative method are presented below.

Features of Task-based Learning: Task-Based Learning is characterized by learning based on communication through the target language, which allows the learning process to adapt to the needs of the students, motivating them to communicate continuously. Furthermore, TBL incorporates authentic texts according to the student's reality and the tasks to be developed are based on daily life situations that motivate students to develop them. In addition, TBL allows students to be part of the learning process and second language acquisition. The tasks are designed based on real-life situations that allow the student to develop new experiences through the second language. Finally, TBL allows for the establishment of a connection between language learning in the classroom and activities outside the classroom, allowing one to relate the learning activities with the acquisition of the second language (Nunan, 1991). Lastly, it is

important to highlight that the tasks should match the linguistic ability of the learners (Sholeh et al., 2020).

The framework of Task-based Learning: Willis (1996) describes three stages within the Framework of Task-Based Learning: pre-task, task cycle, and post-task. In the first stage, pre-task, teachers prepare students to face the task cycle by performing activities to elicit the linguistic skills required for the development of the task, the teacher makes the presentation of the topic, highlighting essential words. Pre-task activities can be watching a video, reading a short text, using pictures, and brainstorming, among others, so that students and teachers have an idea of the topic and the level of knowledge students have about the topic to be developed (Dussap et al., 2000).

In the second stage, called the task cycle, the task is developed and students can be grouped in small groups, in pairs, or individually; students must develop the task using their linguistic skills and teachers must closely follow the progress of the task. Additionally, once students complete the task, they should plan and write a report and present it to the rest of the class (Willis, 1996). After all, students can present the task through a poster, discussion, role play, or presentation (Dussap et al., 2000).

The final stage or post-task focuses on language, that is, the language skills used in the task are emphasized and developed (Willis, 1996). The teacher acted as a facilitator throughout the task. The teacher should take notes of vocabulary, language structures, and situations that were confusing during the performance and presentation of the task. At the end of the task, the teacher should give feedback and evaluate the task through reflection and analysis questions (Dussap et al., 2000).

Benefits of Task-Based Learning: Willis and Willis (2007), highlight the main advantages of TBL: Firstly, the freedom students have to make use of their language skills to meet the learning objectives that the teacher plans. Secondly, TBL gives students the possibility to use and naturally create target language situations. Thirdly, through TBL students are in contact with a variety of language forms, collocations, and patterns that allow them to improve their language skills. Fourth, TBL has been established as a communication-focused teaching approach, where students talk continuously using the target language.

3.3.2. Project-Based Learning

Project-Based Learning (PBL) is defined as a student-centered learning method, where the teacher acts as a motivator and facilitator in the learning process. It uses real-world activities (Nguyen, 2011). Furthermore, Dole et al. (2017) mention that PBL is an efficient teaching

method, which is student-centered so that knowledge is acquired around the development of a project with the goal of students working in teams to develop interdisciplinary activities as critical thinking skills (Kusrin et al., 2021). Alves et al. (2016) argue that PBL engages students to be part of their learning by actively solving real-world problems turning them into autonomous and creative learners.

Features of Project-based Learning: Krajcik and Czerniak (2018) describe the main features of PBL to generate an ideal learning environment. First, all PBL must start with a question that serves the function of guiding the solution of the problem to be solved. Then, starting from the driving question, students participate in the process of solving the problem together with teachers and involving the community. All the activities developed during the execution of the project seek to answer the driving question. Moreover, all along, students can receive support from teachers through the use of learning technologies. Finally, students must generate a report or product that demonstrates that the project was carried out and the driving question was answered.

The framework of Project-based Learning: For the development of a PBL, especially a project designed for language learning, it is essential to plan and organize each activity before it is implemented. Nguyen (2011) argues that to implement a PBL it is necessary to take into account, first, the curriculum as a basis for setting the learning objectives of the project. In other terms, the content established in the curriculum should be the basis of the project. Second, it is necessary to consider the project execution time and the materials or resources to be used so that students are engaged and acquire the planned knowledge. Third, collaboration in a project is essential; collaboration can occur between peers, teachers, and students, and even between educational institutions. Fourth, a feature of PBL that facilitates second language learning is the real-world connection, PBL helps students acquire knowledge by relating the project to real life. Finally, teachers must evaluate the competencies and knowledge of the students acquired during the execution of the project and it is important to apply appropriate assessment strategies.

Benefits of Task-Based Learning: Due to its nature, PBL provides a variety of benefits in English language teaching. Fried-Booth (2002) mentions that doing a project, and the results obtained, give students greater confidence and independence to do academic work, showing greater interest and motivation for learning. PBL also offers students the possibility of working in groups creating opportunities to use the target language, Beckett (2002) mentions that a PBL requires students to work together, demonstrating commitment and creativity since a PBL does

not only focus on textbooks or traditional assignments. PBL provides the possibility of executing authentic activities in search of solutions. Stoller (2006) mentions that this type of activity, develops higher-order critical thinking skills, since they analyze, debate, and discuss relevant information for the execution of the project. Another benefit is the variety of evaluations that can be applied to students. PBL allows students to be evaluated by the teacher, peer evaluation, self-evaluation, and reflection questions (Nguyen, 2011).

3.4. Ecuadorian EFL curriculum

English language teaching was implemented in Ecuador in 1912 (Villafuerte & Mosquera, 2020). Since then, new policies have been created to improve the learning of this language. In this sense in 2014 the Ecuadorian government through the Ministry of Education of Ecuador with “Acuerdo Ministerial 0041-14” (Ministerio de Educación del Ecuador, 2014) and “Acuerdo Ministerial 0052-14” (Ministerio de Educación del Ecuador, 2014) established the teaching of English as a compulsory subject from the second year of “Educación General Básica” (EGB) to the third year of “Bachillerato General Unificado” (BGU), that is to say in all levels of primary and secondary education. As an explanation, the Ecuadorian government divides primary education into 6 levels from 2nd to 4th year of “Educación General Básica” denominated “Subnivel de Educación Básica Elemental” and from 5th to 7th year of “Educación General Básica” named “Subnivel de Educación Básica Media”. On the other hand, secondary education is divided into 6 levels, from 8th to 10th grade of “Educación General Básica” known as “Subnivel de Educación Básica Superior” and from 1st to 3rd year of “Bachillerato General Unificado”. In 2016 the Ministry of Education of Ecuador published the English as a Foreign Language Curriculum to be applied in all levels of general basic education and high school. The following is a brief description of the Ecuadorian English as a Foreign Language Curriculum.

3.4.1. Main goals of the Ecuadorian EFL Curriculum

Ecuador is a country made up of cultural diversity, on the one hand, most of the students have Spanish as their mother tongue; however, there are cultural groups that have the dialects of their own culture as their language. In this setting, the Ecuadorian curriculum considers the linguistic needs for learning the English language of each student according to their cultural environment. For this purpose, the EFL curriculum has three main goals which are textually mentioned below (Ministerio de Educación del Ecuador, 2016):

To develop learners' understanding of the world - of other cultures and their own - and to communicate their understanding and views to others through English.

To develop the personal, social, and intellectual skills needed to achieve their potential to participate productively in an increasingly globalized world that operates in English.

To create love for learning languages starting at a young age, using engaging and positive learning experiences, to foster students' motivation to continue learning English throughout EGB and BGU, as well as work and beyond. (p. 16)

3.4.2. Core principles of the Ecuadorian EFL Curriculum.

The EFL curriculum was designed to be applied at all levels of primary and secondary education in public and private institutions in the Republic of Ecuador. The curriculum is based on 5 core principles established to contribute to the fulfillment of objectives within the process of teaching and learning English (Ministerio de Educación del Ecuador, 2016).:

- Communicative language approach
- Content and Language Integrated Learning (CLIL),
- International standards
- Thinking skills
- Learner-centered approach. (Ministerio de Educación del Ecuador, 2016, p. 3)

Communicative language approach: Ecuadorian EFL places special emphasis on communication so that students have the competencies in the use of the second language through oral and written communication; in other terms, the ability to communicate effectively. Moreover, students should participate in activities that promote interaction, arousing their interest and motivating them to learn English.

Content and Language Integrated Learning (CLIL): The Ecuadorian EFL curriculum “is based on a language-driven CLIL approach, using content from other disciplines for a meaningful and purposeful use of language.” (Ministry of Education of Ecuador, 2016, p. 3). CLIL was implemented in the curriculum to develop students' cognitive and social skills that will serve not only in English language learning but also in other subjects. The CLIL approach, as mentioned above, comprises as interdependent processes the critical thinking skills established in Bloom's Taxonomy and the development of communicative linguistic

competencies. Based on the CLIL approach, the Ecuadorian EFL curriculum implements the 4Cs framework (Coyle, 2007) content, culture, communication, and cognition are integrated into the curricular threads that make up the Ecuadorian EFL curriculum.

International standards: The EFL curriculum was designed using international standards such as the Common European Framework for Language Reference (CEFR).

Thinking skills: The curriculum prioritizes interaction in the target language by developing oral and written skills and incorporating critical thinking skills. In other words, students produce oral and written texts in an authentic context. This critical thinking skills concept represents an important component in multilingual education. As a result, thinking skills contribute to the creation of meaning in the foreign language through motivation and linguistic challenges.

Learner-centered approach: The EFL curriculum is applied in a standardized manner throughout Ecuador. However, teachers should be aware that each student is an individual with different characteristics, learning styles, interests, and personalities. Teachers should not focus teaching only on transferring content. In other words, teachers should focus on how students learn and not on their performance as teachers. Teachers must recognize that each student has a different way of learning and it is necessary to customize for each student the appropriate teaching approach. The learner-centered approach identifies learning as a process that is effective when students actively participate in their learning. Assessment is characterized as formative rather than summative, using continuous feedback to support learning sections (Ministerio de Educación del Ecuador, 2016).

3.4.3. Curricular threads of Ecuadorian EFL Curriculum

As mentioned above, the Ecuadorian EFL curriculum employs the CLIL model as a fundamental pillar of the teaching and learning process. CLIL is a diverse and flexible approach that makes it possible to be complemented other methodologies. The Ecuadorian EFL curriculum implements the 4Cs framework of the CLIL method through the integration of 5 curricular threads or sections (Ministerio de Educación del Ecuador, 2016). The 5 curricular threads of the Ecuadorian EFL curriculum are described below:

Communication and Cultural Awareness: It is composed of two areas, First, Intercultural Awareness and Identity in which students participate in the learning process of the target language through activities that promote intercultural awareness. Students become aware

of their culture and compare it with other cultures allowing them to genuinely and authentically discover where they come from and the cultures of other countries. Second, Social competencies and values refer to social interaction, students in the classroom have the opportunity to develop social skills in the target language by developing cooperative activities and group work (Ministerio de Educación del Ecuador, 2016).

Oral Communication (Listening and Speaking): The Ecuadorian curriculum prioritizes communication and encompasses listening and speaking skills in a single thread. The oral communication thread is divided into three sub-threads: Firstly, listening skills in which students must be able to infer, predict and construct meaning in the target language to have a real connection with the language, ICT is used as a resource allowing students to improve aspects such as pronunciation, stress, intonation. Second, spoken production is incorporated for students to develop fluency and intelligibility, and learn and produce sounds in the target language to communicate effectively. Third is spoken interaction, in which through continuous collaborative learning activities students use the target language. Students will have the facility to interact in discussions, debates, and debates increasing motivation and confidence in the use of the language (Ministerio de Educación del Ecuador, 2016).

Reading: The EFL curriculum seeks for students to be able to interact autonomously with different written texts about different areas and disciplines. This curriculum thread is divided into 4 sub-threads: Literacy-rich Environment which believes that English language learning can be enhanced when literacy-focused environments are employed, with activities such as display of work, poster presentations, and use of ICT. Second, reading comprehension, through the mastery of reading, students will develop their critical thinking skills, and improve study skills. Third, use of resources and study skills, the objective of this sub-thread is for students to acquire the knowledge to use resources such as ICT, print resources, and other resources to improve reading skills. Thus, focusing on the use of digital libraries and internet browsing. Students should be able to select, store, analyze and evaluate information autonomously. Finally, cross-curricular content whereby content from another subject curriculum is used in the target language provides an authentic environment for communication and interaction (Ministerio de Educación del Ecuador, 2016).

Writing: It is considered one of the most complicated skills in learning a second language. Writing is a cognitive and metacognitive skill in which it is required to manage vocabulary, and text types, and identify the audience. With this in mind, writing must be

acquired gradually. Considering that the 4 language skills are interrelated, the Writing curricular thread is divided into 2 sub-threads. Initial literacy: It refers to activities that are done daily, such as writing an email, or receiving a birthday card. Access to ICT has contributed to literacy skills becoming a fundamental part of students' lives. However, initial literacy is a problem because it employs less natural writing and the writer is distanced from the reader. Because of this writer has to construct meaning with words in contexts that do not provide a clear idea of meaning. Cameron (2001) argues that initial literacy in the target language is influenced by the learners' knowledge of the L2, their age, and the learners' prior knowledge and experience of L1 literacy. So, teaching literacy in EFL must balance meaningful exposure and explicit instruction. Text production: The EFL Ecuadorian curriculum considers writing as a social practice that has a context, a purpose, and an audience. It stands out as a communication tool through which students convey information. Moreover, students should develop the skill of writing by being aware of their role as authors in producing texts that communicate ideas about their interests (Ministerio de Educación del Ecuador, 2016).

Language through the Arts: The EFL curriculum considers this thread as an effective tool to promote English language learning and cites Uptis (2011) who argues that the most effective way to stimulate engagement in learning is by employing activities that include "conversation, inquiry, making things, and artistic expression" (p. 15). In this context, the curriculum considers 3 sub-threads. The first *literary text in context* is based on the criterion that literary texts are an extensive source of stories and general themes that contribute as a resource of oral and written texts. Literary texts motivate student participation because of their authentic nature of foreign language use. The second sub-thread *Creative Writing* constitutes a relationship between students and literary texts. It is intended that the student, from literary texts, relate the spoken and written word to give their point of view and use their creativity to share their experiences about their culture, experiences, and environment in which they live. The third sub-thread *Creative thinking skills* encompass students' participation in creative activities such as art, music, and dance that motivate students to employ different forms of communication using the target language. These activities all in all help students improve their self-confidence, implement social interactions, and enhance metacognition (Ministerio de Educación del Ecuador, 2016).

Table 2 summarizes the organization of the 5 Curricular Threads used in ELT at the "Educación General Básica EGB and Bachillerato General Unificado" levels, as described in the EFL curriculum.

CLIL	4Cs	Curricular Threads	Sub-Threads
	Culture / Citizenship	Communication and Cultural Awareness	Intercultural Awareness and Identity Social Competence and Values
	Communication	Oral Communication: (Listening and Speaking)	Listening Skills Spoken Production Spoken Interaction
		Reading	Literacy-rich Environment Reading Comprehension Use of Resources & Study Skills Cross-curricular Content
	Cognition	Writing	Initial Literacy Text Production
	Content	Language through the Arts	Literary Texts in Context Creative Writing Creative Thinking Skills

Table 2: Ecuadorian EFL Curricular Threads (Ministerio de Educación del Ecuador, 2016)

3.4.4. Levels of English Proficiency according to the CEFR into Ecuadorian levels of education.

In the EFL curriculum, the Ecuadorian government establishes the levels of English that students must achieve at each level of education. At the end of primary education or 7th EGB according to the Common European Framework of References (CEFR,) the Ecuadorian government establishes that students must acquire level A2. As a particularity and to reinforce the knowledge learned in primary school, in the "Subnivel de Educación Básica Superior" (8th, 9th, 10th EGB) students continue with the A2 level but using a deeper context combining learning with a new language according to the age of the students. The main objective is to identify students' language gaps and complement them. While at the end of high school students should acquire a B1 language level according to the CEFR, i.e. at the end of the 3rd year of BGU. The diagram shows the level of English language proficiency according to the CEFR for each level of primary and secondary education in Ecuador (Ministerio de Educación del Ecuador, 2016).

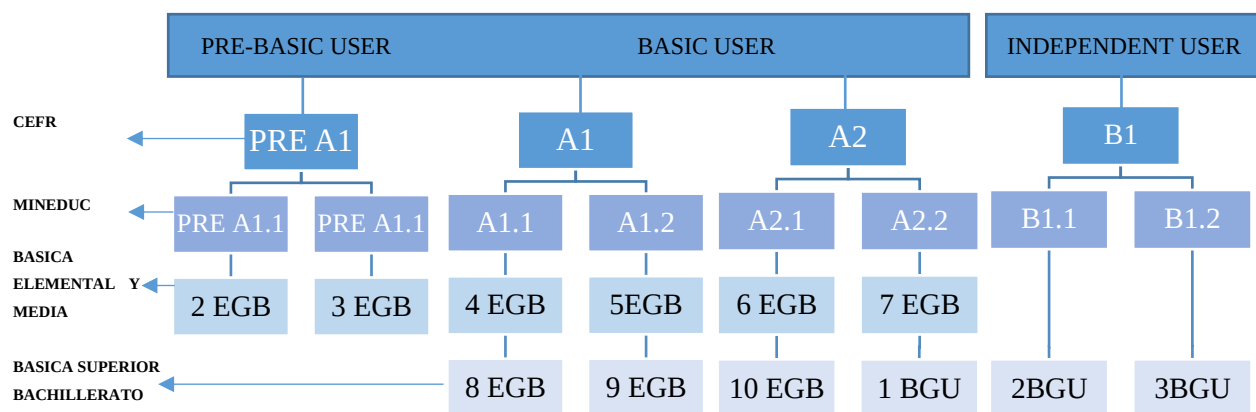


Figure 3: Level of English language proficiency according to the CEFR (Ministerio de Educación del Ecuador, 2016)

4. THE DIDACTIC PROPOSAL

4.1. Justification

Starting from the fact that Ecuador occupies the last places in the proficiency of the English language in Latin America and the world (Education First, 2021). The present didactic proposal arises from the observation of EFL classes in Ecuadorian secondary schools in which teachers continue to impart knowledge without the active participation of students in the teaching-learning process. Moreover, teachers do not use the CLIL methodology even though it is one of the EFL teaching principles of the curriculum. This reality is evidenced by the research of the authors Palma, Villamarín-Guevara and Fajardo-Dack (2020), who argue that English teachers in Ecuador do not know the CLIL methodology properly.

As contents for the teaching of English in this didactic unit, the topics of Geology and Petroleum were selected. These topics are part of the Ecuadorian curriculum of the discipline Natural Sciences. In other words, an integration of the natural science and EFL curricula is made. In addition, the contents of Geology and Petroleum represent a topic of interest for the students based on the context described in the following section. Since Ecuador is an oil-producing country, with an average monthly production of 467,210 barrels¹ of oil per day, of which 244,000 barrels of oil are produced in the province of Orellana, which represents 52.2 percent of the country's total oil production (Banco Central del Ecuador, 2022), students are immersed in the proposed topics on a daily basis.

In addition, the present proposal was designed as an option for public and private schools' teachers to apply it to their students. So, they can use the CLIL method and the principles of the EFL curriculum to develop linguistic, critical thinking, and cognitive skills with a topic of interest in the environment in which they develop. Finally, the present didactic proposal seeks to be a contribution to the improvement of the Ecuadorian English language proficiency alongside with a knowledge in a strategic area for the Ecuadorian economy.

4.2. Contextualization

The present didactic proposal was designed to be implemented in a group of 20 students of 3rd year of "Bachillerato General Unificado" BGU (17-18 years old) of the Unidad Educativa Amazonas. The Educational Unit is a public institution and is located in the city of Francisco de Orellana, province of Orellana, Ecuador. The city of Francisco de Orellana is characterized

¹ Barrels: unit of volumetric measurement equivalent to 42 US gallons or 158.987 liters.

by its wide vegetation because it is located in the Amazon region. It is also a province where most of the oil production in Ecuador is concentrated. Regarding to the attention to student diversity, no students with special learning needs were identified in the target group of students.

According to what is established in the “Acuerdo Ministerial 0041-14” (Ministerio de Educación del Ecuador, 2014), the students of 3rd year of BGU must fulfill 5 hours’ class of EFL per week of a duration of at least 40 minutes. On the other hand, the level established for the English language for 3rd year of “Bachillerato General Unificado” (BGU), according to the EFL curriculum in reference to the CEFR, must be B1.

The didactic proposal is composed of seven sessions. In sessions from one to four the flipped classroom approach is used and in sessions from five to seven Task Based learning is applied. The social network Facebook is employed as a tool. The students or their parents have an account in this social network so it is feasible to use it for this academic purpose.

4.3. Objectives

The language learning objectives for the present didactic proposal are based on the EFL curriculum and the content learning objectives are adapted from Natural Sciences curriculum. The objectives are listed below.

4.3.1. Content Objectives

- Students can discover the basic characteristics of geology.
- Students can create a concept map of the most important aspects of geology
- Students can evaluate the activities performed by a geological engineer.
- Students can differentiate the main types of rocks.
- Students can complete a graphic organizer based on chemical and physical processes that occur in the rock cycle.
- Students can discuss about the works of art that can be made with rocks
- Students can discover petroleum origin
- Students can explain the composition of petroleum
- Students can design a mind map about the importance of petroleum in students’ community
- Students can label the principal parts of petroleum reservoir.
- Students can justify what types of rocks are part of petroleum reservoir

- Students can differentiate the structures of petroleum trap.
- Students can research the main advantage and disadvantages of petroleum
- Students can categorize the positive and negative aspects of oil in the context in which students evolve
- Students can debate about the principal advantages and disadvantages of petroleum
- Students can infer about Sociocultural aspects of petroleum in Ecuador
- Students can analyze whether the lifestyle of indigenous communities is changing due to the oil industry.
- Students can evaluate if customs and culture of the indigenous communities are affected due to petroleum industry.
- Students can compare renewable energies and energy produced by petroleum derivatives.
- Students can create a graphic organizer about types of renewable energies.
- Students can explain how energy is generated from renewable resources

4.3.2. Language Objectives

- Students can identify key vocabulary about geology.
- Students can develop creative thinking skills through the writing of a paragraph.
- Students can use proper connectors of contrast in real communication.
- Students can expand the specific vocabulary regarding the types of rocks.
- Students can apply the use of conjunctions in an oral presentation about rock cycle.
- Students can improve the use of English language to express ideas and judgment.
- Students can generate complete sentences with vocabulary related to petroleum.
- Students can implement the present simple tense in real communication.
- Students can produce oral communication related to the importance of petroleum
- Students can exemplify the use of petroleum reservoir vocabulary
- Students can employ English language skills in the development of a team work.
- Students can sequence the migration of petroleum using English words to describe the processes.
- Student can produce effectively oral and writing communication related advantages and disadvantages of petroleum
- Students can apply words and expressions that are used in a discussion or debate.

- Students can use effective English language to solve a current Ecuadorian problem about petroleum industry.
- Students can apply contrast connectors, conjunctions and verb tenses in oral communication
- Students can use English language expressions to compare renewable energies and petroleum.
- Students can perform an oral presentation about renewable energies

4.4. Contents

4.4.1. General contents

- Definition of geology.
- Fields of study of geology
- Activities of a geological engineer
- Types of rocks: igneous, metamorphic, and sedimentary.
- The rock cycle, transitions through the three main rock types
- Art with rocks.
- Petroleum origin
- Composition of petroleum
- Importance of petroleum as a source of energy and raw material.
- Definition of petroleum reservoir
- Parts of petroleum reservoir
- Types of petroleum traps
- Advantages and disadvantages of petroleum extraction
- Environmental issues about oil
- Economic benefits of petroleum
- Sociocultural aspects of petroleum in Ecuador
- Lifestyle of the indigenous communities
- Customs and culture of the indigenous communities
- Replacing petroleum
- Renewable energies
- Energy sources and the energy generating devices

4.4.2. Contents related to language skills

- Vocabulary related to geology and engineering geology.
- Reading, speaking, writing, and listening skills through real material about geology
- Connectors of contrast
- Vocabulary related to types of rocks.
- Reading, speaking, writing, and listening skills through real material about types of rocks
- Types of conjunctions and how use it.
- Vocabulary related to petroleum.
- Reading, speaking, writing, and listening skills through real material about petroleum
- Comprehension and use of present simple in real context.
- Vocabulary related to petroleum reservoir.
- English language for team work
- Words to describe the steps in a process.
- Writing the introduction on advantages and disadvantages of petroleum
- Words and expressions for debate
- Communication skills
- Contrast connectors,
- Types of conjunctions
- Use of verb tenses
- Words and expression for comparing.
- Reading, speaking, writing, and listening skills through real material about renewable energies

4.5. Materials

The materials used in this didactic proposal were designed and adapted. The materials meet the criteria for the selection of materials proposed by Tomlinson (2013) and Mehisto (2008), as well as the Curricular Threads defined in the EFL Ecuadorian Curriculum (see tables from 3 to 9).

Materials session 1: What is Geology?			
Materials	Type of material Tomlinson (2003)	Curricular Thread EFL Ecuadorian Curriculum	Selection and evaluation criteria Tomlinson (2013), Mehisto (2008)
Facebook group: What is Geology? (Appendix 1)	Experiential Elicitative	Oral Communication (Listening and Speaking) Reading Writing	Fostering learning skills development and learner autonomy. Provide the learners with opportunities to use the target language to achieve communicative purposes.
Reading 1: Geology (Appendix 2) Reading 2: What do geologists do? (Appendix 3)	Informative and instructional Experiential	Reading	Seeking ways of incorporating authentic language and authentic language use Systematically fostering academic language proficiency
Video: Connectors of contrast (Appendix 4)	Informative and instructional	Oral Communication (Listening and Speaking)	Seeking ways of incorporating authentic language and authentic language use.
Worksheet: Match the definition (Appendix 5)	Exploratory	Reading Oral Communication (Listening and Speaking)	Fostering cooperative learning Helping to make learning meaningful Systematically fostering academic language proficiency
Concept map: Geology	Elicitative Exploratory	Reading Writing Oral Communication (Listening and Speaking)	Fostering cooperative learning Helping to make learning meaningful Fostering cooperative learning Seeking ways of incorporating authentic language and authentic language use Fostering critical thinking
Paragraph: Activities of geological engineer	Elicitative Exploratory	Writing Oral Communication (Listening and Speaking)	Fostering cooperative learning Seeking ways of incorporating authentic language and authentic language use

Table 3: Materials session 1: What is Geology?

Materials session 2: Types of rocks			
Materials	Type of material Tomlinson (2003)	Curricular Thread EFL Ecuadorian Curriculum	Evaluation criteria Tomlinson (2013), Mehisto (2008)
Blog: Types of Rock (Appendix 6)	Experiential Elicitative	Oral Communication (Listening and Speaking) Reading Writing	Fostering learning skills development and learner autonomy Seeking ways of incorporating authentic language and authentic language use
Video: Types of rocks (Appendix 7) Video: The Rock Cycle (Appendix 8)	Experiential Informative and instructional	Oral Communication (Listening and Speaking),	Seeking ways of incorporating authentic language and authentic language use Helping to make learning meaningful
Web link- Conjunctions (Appendix 9)	Informative and instructional	Reading	Making the learning intentions (language, content, learning skills) & process visible to students
Worksheet: Conversation-Art with rocks (Appendix 10)	Elicitative	Oral Communication (Listening and Speaking)	Seeking ways of incorporating authentic language and authentic language use. Provide the learners with opportunities to use the target language to achieve communicative purposes
Worksheet: Rock cycle (Appendix 11)	Elicitative Exploratory	Oral Communication (Listening and Speaking) Reading Writing	Fostering learning skills development and learner autonomy Fostering critical thinking Helping to make learning meaningful

Table 4: Materials session 2: Types of rocks

Materials session 3: What is petroleum?			
Materials	Type of material Tomlinson (2003)	Curricular Thread EFL Ecuadorian Curriculum	Evaluation criteria Tomlinson (2013), Mehisto (2008)
Padlet: What is petroleum (Appendix 12)	Experiential Elicitative	Oral Communication (Listening and Speaking) Reading Writing	Fostering learning skills development and learner autonomy. Seeking ways of incorporating authentic language and authentic language use.
Web-link: Main uses of present simple (Appendix 13)	Informative and instructional	Reading	Making the learning intentions (language, content, learning skills) & process visible to students
Questionnaire (Appendix 14)	Exploratory	Reading	Include self, peer, and other types of formative assessment.
Crossword puzzle (Appendix 15)	Elicitative	Reading Writing	Foster cooperative learning Helping to make learning meaningful
Mind map: Importance of petroleum	Elicitative Exploratory	Oral Communication (Listening and Speaking) Reading Writing	Fostering cooperative learning Seeking ways of incorporating authentic language and authentic language use Fostering critical thinking

Table 5: Materials session 3: What is petroleum?

Materials session 4: Petroleum Reservoirs			
Materials	Type of material Tomlinson (2003)	Curricular Thread EFL Ecuadorian Curriculum	Evaluation criteria Tomlinson (2013), Mehisto (2008)
Facebook group: Petroleum Reservoirs (Appendix 16)	Experiential Elicitative	Oral Communication (Listening and Speaking) Reading Writing	Fostering learning skills development and learner autonomy. Seeking ways of incorporating authentic language and authentic language use.
Video: petroleum reservoirs (Appendix 17)	Experiential Informative and instructional	Oral Communication (Listening and Speaking)	Seeking ways of incorporating authentic language and authentic language use. Helping to make learning meaningful
Reading: Types of oil traps (Appendix 18)	Informative and instructional	Reading	Seeking ways of incorporating authentic language and authentic language use
Flash cards: vocabulary (Appendix 19)	Informative and instructional Exploratory	Reading	Seeking ways of incorporating authentic language and authentic language use Systematically fostering academic language proficiency
Words to describe the steps in a process (Appendix 20)	Informative and instructional	Reading	Making the learning intentions (language, content, learning skills) & process visible to students
Labeled diagram (Appendix 21)	Elicitative Exploratory	Oral Communication (Listening and Speaking) Reading Writing	Fostering cooperative learning Helping to make learning meaningful
Worksheet: Types of traps (Appendix 22)	Elicitative Exploratory	Oral Communication (Listening and Speaking) Reading Writing	Fostering cooperative learning Seeking ways of incorporating authentic language and authentic language use Fostering critical thinking

Table 6: Materials session 4: Petroleum Reservoirs

Materials session 5: Advantages and disadvantages of petroleum			
Materials	Type of material Tomlinson (2003)	Curricular Thread EFL Ecuadorian Curriculum	Evaluation criteria Tomlinson (2013), Mehisto (2008)
Video- advantages of oil extraction (Appendix 23) Video- advantages of oil extraction (Appendix 24)	Experiential Informative and instructional	Oral Communication (Listening and Speaking)	Seeking ways of incorporating authentic language and authentic language use. Helping to make learning meaningful
Words and expressions for discussion or debate (Appendix 25)	Informative and instructional	Communication and Cultural Awareness Oral Communication Reading, Writing	Making the learning intentions (language, content, learning skills) & process visible to students
Debate	Elicitative Exploratory	Communication and Cultural Awareness Oral Communication Reading Writing	Fostering cooperative learning. Seeking ways of incorporating authentic language and authentic language use. Include self, peer, and other types of formative assessment. Achieve impact. Help the learner to develop cultural awareness and sensitivity. Fostering critical thinking. Maximize learning potential by encouraging intellectual, aesthetic, and emotional involvement.

Table 7: Materials session 5: Advantages and disadvantages of petroleum

Materials session 6: Sociocultural aspects of petroleum in Ecuador			
Materials	Type of material Tomlinson (2003)	Curricular Thread EFL Ecuadorian Curriculum	Evaluation criteria Tomlinson (2013), Mehisto (2008)
Reading- Fragment of: Oiled forests-the case of Ecuador (Appendix 26)	Informative and instructional Experiential	Oral Communication (Listening and Speaking) Reading, Writing	Seeking ways of incorporating authentic language and authentic language use.
Solving problem	Elicitative Exploratory	Communication and Cultural Awareness Oral Communication (Listening and Speaking) Reading, Writing	Foster cooperative learning Seeking ways of incorporating authentic language and authentic language use Fostering critical thinking Include self, peer, and other types of formative assessment. Help the learner to develop cultural awareness and sensitivity. Maximize learning potential by encouraging intellectual, aesthetic, and emotional involvement.

Table 8: Materials session 6: Sociocultural aspects of petroleum in Ecuador

Materials session 7: Replacing petroleum			
Materials	Type of material Tomlinson (2003)	Curricular Thread EFL Ecuadorian Curriculum	Evaluation criteria Tomlinson (2013), Mehisto (2008)
Video: Renewable Energies (Appendix 27)	Experiential Informative and instructional	Oral Communication (Listening and Speaking)	Seeking ways of incorporating authentic language and authentic language use
Worksheet: words and expression for comparing (Appendix 28)	Informative and instructional	Reading	Making the learning intentions (language, content, learning skills) & process visible to students
Graphic organizer: types of renewable energies	Elicitative Exploratory	Oral Communication (Listening and Speaking) Reading, Writing	Fostering cooperative learning Seeking ways of incorporating authentic language and authentic language use Fostering critical thinking
Comparative chart: renewable energies and oil	Elicitative Exploratory	Oral Communication (Listening and Speaking) Reading, Writing	Fostering cooperative learning Seeking ways of incorporating authentic language and authentic language use Fostering critical thinking Include self, peer, and other types of formative assessment Achieve impact Help the learner to develop cultural awareness and sensitivity. Maximize learning potential by encouraging intellectual, aesthetic, and emotional involvement

Table 9: Materials session 7: Replacing petroleum

4.6. Step-by-step account of the sessions

The activities to be developed in each session are presented below. At the beginning of each session an information sheet is included with data such as the materials used, the objectives, the contents and the methodology applied. Then the procedure is described according to the teaching methodology applied FC or TBL.

4.6.1. Session 1: What is Geology?

Session 1: What is Geology?

Curricular Threads: Communication and Cultural Awareness, Oral Communication, Reading, Writing

Identification

Content subject: Natural Science

Student CEFR level: B1

Time: 40 minutes

Level: Third Course BGU

Method: CLIL-Flipped classroom

Types of grouping: individual, pair, group work

Subject-related content

Definition of geology.

Fields of study of geology

Activities of a geological engineer

Language-related content

Vocabulary related to geology and engineering geology.

Reading, speaking, writing, and listening skills through real material about geology

Connectors of contrast

Subject-related goals

To discover the basic characteristics of geology.

To create a concept map of the most important aspects of geology

To evaluate the activities performed by a geological engineer.

Language-related goals

To identify key vocabulary about geology.

To develop creative thinking skills through the writing of a paragraph.

To use proper connectors of contrast in real communication

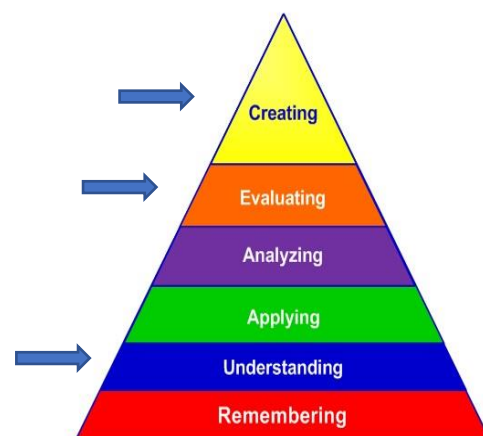
CALP language

Geology
Geophysics
Geochemistry
Petrology
Mineralogy
Paleontology
Morphology
Magma
Mud logging
Sampling

Materials

Facebook group: What is Geology?
Reading 1: Geology
Reading 2: What do geologists do?
Video: Connectors of contrast
Worksheet: Match the definition
Concept map: Geology
Paragraph: Activities of geological engineer

Blooms Taxonomy - Revised



The teacher, through the social network Facebook in a group created for academic purposes entitled "Session 1- What is Geology?" (Appendix 1) shares 2 links giving access to two readings. One of them entitled "Geology" (Encyclopedia Britannica, 2022), (Appendix 2) and the other entitled "What do geologists do?" (University Geoscience UK, n.d.), (Appendix 3). Readings provides basic information about geology such as the definition, the fields of study of geology and the activities performed by a geologist. Students should read the readings as many times as they need to understand the content.

To keep track that the students have completed the activity, they are asked to react on the Facebook platform to the publication of the reading and answer 2 questions.

In your own words define what geology is.

What is the field of study of geology that you like?

Activity 2:

The teacher through the Facebook group shares a YouTube video (Appendix 4) (Rozeboom, 2021) explaining the use of the "connectors of contrast". In the video, there are examples of the use of these connectors. Students can repeat the video as many times as necessary and consult other resources if they consider it necessary.

Finally, in the Facebook group, students will give their opinion on the answer of one of their classmates to the questions posed in activity 1 using connectors of contrast.

In class activities

Activity 3: (Time: 10 min)

In class, the teacher briefly introduces the topic by asking questions about the activities done at home. Then the teacher provides each pair of students with a worksheet (Appendix 5), in which they must match an image, a word, and the definition related to the topic "What is Geology" with this activity the teacher will be able to identify if the students have acquired the vocabulary of the topic and will reinforce the words that the students have not yet learned.

Activity 4: (Time: 15 min)

In the second-class activity, using the Canva platform (<https://www.canva.com/>), in pairs students must create a concept map that includes the definition and the most important aspects of geology included in the reading "Geology". During the activity, the teacher will provide continuous feedback and clarify the doubts of each group of students.

Activity 5: (Time: 15 min)

The students will be grouped into groups of 5. Each group will write a paragraph of at least 300 words describing the activities that a geological engineer performs and how these activities are applied in the city where students live (Francisco de Orellana). Students also will evaluate the positive and negative aspects of this profession in their city using at least 3 connectors of contrast such as: however, nevertheless, but, nonetheless, although, on the other hand, yet.

At the end of the paragraph, each group will orally present the key ideas of the developed paragraph. All students in the group should participate. At the end of each exposition, the groups that are in the audience should give their opinion in an oral and orderly manner of the exposition that ended. In the interventions, the students must use at least one connector of contrast.

For the development of the activities, students can use Internet connection or any other means of consulting. Students can use Power Point, Prezi or any other ICT for the presentation of their assignments.

4.6.2. Session 2: Types of rocks

Session 2: Types of rocks?

Curricular Threads: Communication and Cultural Awareness, Oral Communication, Reading, Writing, Language through the Arts

Identification

Content subject: Natural Science

Student CEFR level: B1

Time: 40 minutes

Level: Third Course BGU

Method: CLIL-Flipped classroom

Types of grouping: individual, pair, and group work

Subject-related content

Types of rocks: igneous, metamorphic, and sedimentary.

The rock cycle, transitions through the three main rock types

Art with rocks.

Language-related content

Vocabulary related to types of rocks.

Reading, speaking, writing, and listening skills through real material about types of rocks

Types of conjunctions and how use it.

Subject-related goals

To differentiate the main types of rocks.

To complete a graphic organizer based on chemical and physical processes that occur in the rock cycle.

To discuss about the works of art that can be made with rocks.

Language-related goals

To expand the specific vocabulary regarding the types of rocks.

To apply the use of conjunctions in an oral presentation about rock cycle.

To improve the use of English language to express ideas and judgment.

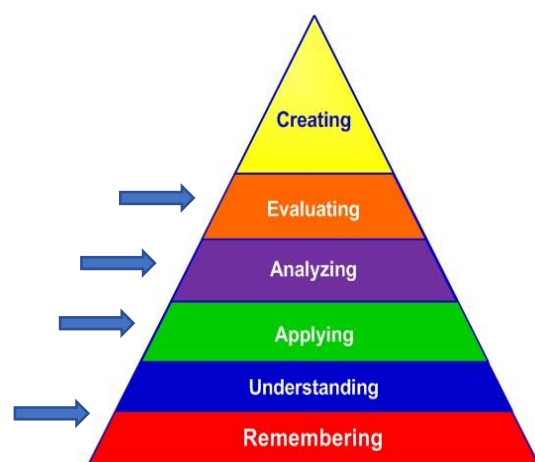
CALP language

Rocks
Igneous rock
Sedimentary rock
Metamorphic rock
Cooling
Melting
Heat
Pressure
Heat
Weathering
Erosion
Compaction
Cementation

Materials

Blog: Types of Rock
Video: Types of rocks
Video: The Rock Cycle
Web Link-Conjunctions
Worksheet-Conversation: Art with rocks
Worksheet: Rock cycle

Blooms Taxonomy - Revised



Activity 1:

The teacher shares the links of two YouTube videos through the Blog called “Types of Rocks” created on the platform Blogger (Appendix 6). The students must watch each video as many times as they need. The first video (Appendix 7) explains the three main types of rocks: igneous, metamorphic, and sedimentary rocks. Through the video, students acquire basic knowledge of the types of rocks, their formation, and some examples. In the second video (Appendix 8), the rock cycle is shown. It explains how rocks are transformed from one type of rock to another by the action of specific processes.

Activity 2:

In the second activity, the teacher shares a link through the Blog that contains information about the use of conjunctions, and types of conjunctions with examples (Appendix 9). Students should review this material as many times as they consider necessary. To ensure that the students have watched the videos and read the information about conjunctions, the teacher asks them to contribute to the blog summarizing each video in at least 100 words each, employing at least 4 conjunctions.

In class activities

Activity 3: (Time: 10 min)

As a first in class activity, the teacher shows images with some kind of art made from rocks (Appendix 10). The teacher will have a conversation with the students. The teacher will motivate the participation of the students with questions such as

- Have you seen this kind of art before?
- Can you describe the image?
- Do you think you can make a work similar to the one in the image?
- What other artwork could be made with rocks?

The teacher will guide the conversation so that all students participate, express their ideas, thoughts, criteria.

Activity 4: (Time: 10 min)

As the next activity of this session, students are divided into groups of 4 members. Each of the students discusses in their respective groups what they learned from the information on rock types and rock cycling, focusing on the physical and chemical processes of the rock cycle provided by the teacher in the activities proposed to be done at home. All students must participate and complement the information provided by their classmates. The teacher will provide feedback to each group of students and resolve doubts about the content of the topic.

Activity 5: (Time: 20 min)

In the next activity, students remain in the groups formed for the previous activity. The teacher provides a worksheet (Appendix 11), on which students complete the diagram of the rock cycle. At the end of the work, the students must prepare and make an oral presentation of their work explaining the rock cycle. The teacher will provide each group with a type of rock. Students should explain by what processes the type of rock mentioned by the teacher transforms into the other two types, for example how an igneous rock transforms into a metaphoric rock and a sedimentary rock. Students should use at least 2 conjunctions during their oral presentation. All students should actively participate. During the activity, the teacher provides feedback on the presentations in terms of content and use of language and scaffolding during all activities.

4.6.3. Session 3: What is petroleum?

Session 3: What is petroleum?

Curricular Threads: Communication and Cultural Awareness, Oral Communication, Reading, Writing

Identification

Content subject: Natural Science

Student CEFR level: B1

Time: 40 minutes

Level: Third Course BGU

Method: CLIL-Flipped classroom

Types of grouping: individual, pair, and group work

Subject-related content

Petroleum origin

Composition of petroleum

Importance of petroleum as a source of energy and raw material.

Language-related content

Vocabulary related to petroleum.

Reading, speaking, writing, and listening skills through real material about petroleum

Comprehension and use of present simple in real context

Subject-related goals

To discover petroleum origin

To explain the composition of petroleum

To design a mind map about the importance of petroleum in students' community

Language-related goals

To originate complete sentences with vocabulary related to petroleum.

To implement the present simple tense in real communication.

To produce oral communication related to the importance of petroleum

CALP language

Crude Oil

Hydrocarbons

Marine Organisms

Road Transport

Chemical Products

Organic Compounds

Inorganic Compounds

Sediment

Pressure

Materials

Padlet: What is petroleum

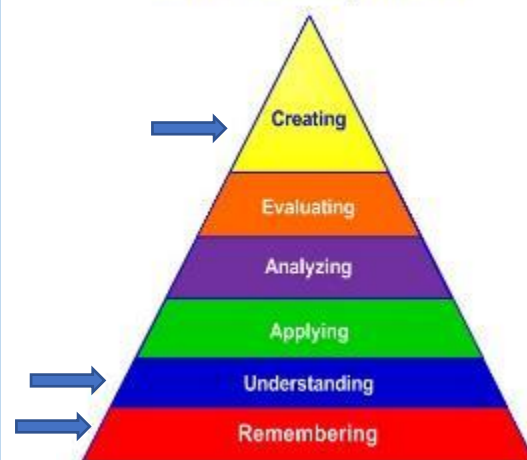
Web-link: Main uses of present simple

Questionnaire-Quizizz

Crossword puzzle

Mind map: Importance of petroleum

Blooms Taxonomy - Revised



Activity 1:

The teacher will use the Padlet platform (Appendix 12) to share with the students' texts with information on the origin, composition, and importance of petroleum as a source of energy and as a raw material for the production of a large number of products. Students should read it as many times as they need and consult other resources if they consider it necessary.

Activity 2:

The teacher on the Padlet platform shares a link with the main uses of the simple present tense (Education First, n.d.) (Appendix 13). Students should read the information as many times as necessary and research other sources. As a reading control activity, students will use the present simple tense to write one sentence for each subtopic of the reading on a Padlet. That is to say, one sentence that indicates the origin, another one the composition, and finally one about the importance of the oil.

Activity 3:

In the same way, the teacher shares on the Padlet platform a link to a questionnaire created on the Quizizz platform (Appendix 14) with questions about the topic "What is petroleum". The answers provided by the students will allow the teacher to obtain an idea of the knowledge to be reinforced during the activities in class. It will also allow the evaluation of reading skills in the second language.

In class activities

Activity 4: (Time: 10 min)

For the development this activity, the teacher organizes the students in groups of 5. Teacher delivers a crossword developed with the web page The Teacher's Corner (Appendix 15), (<https://www.theteacherscorner.net/>). Students must complete the crossword that is designed with the words of the questionnaire that was completed at home. Then, student must make a sentence with each word. All students in the group must contribute with ideas.

Activity 5: (Time: 30 min)

Each group of students must elaborate a mind map with the Canva platform (<https://www.canva.com/>). The title of the mind map for groups 1 and 2 will be "the importance of oil as an energy source in my city" while for groups 3 and 4 the topic will be "the importance of oil as a raw material in my city". Students will show their mind maps in a presentation using the present simple tense when relevant. The teacher will provide feedback to each student on content and language use during the presentations.

Session 4: Petroleum Reservoirs

Curricular Threads: Communication and Cultural Awareness, Oral Communication, Reading, Writing

Identification

Content subject: Natural Science

Student CEFR level: B1

Time: 40 minutes

Level: Third Course BGU

Method: CLIL-Flipped classroom

Types of grouping: individual, pair, and group work

Subject-related content

Definition of petroleum reservoir

Parts of petroleum reservoir

Types of petroleum traps

Language-related content

Vocabulary related to petroleum reservoir.

English language for team work

Words to describe the steps in a process.

Subject-related goals

To label the principal parts of petroleum reservoir.

To justify what types of rocks are part of petroleum reservoir

To differentiate the structures of petroleum trap.

Language-related goals

To exemplify the use of petroleum reservoir vocabulary

To employ English language skills in the development of teamwork.

To sequence the migration of petroleum using English words to describe the processes

CALP language

Reservoir rock

Porosity

Source rock

Petroleum trap

Seal rock

Impermeable

Migration

Structural traps

Stratigraphic traps

Materials

Facebook group: Petroleum Reservoirs

Video: petroleum reservoirs

Reading: Types of oil traps

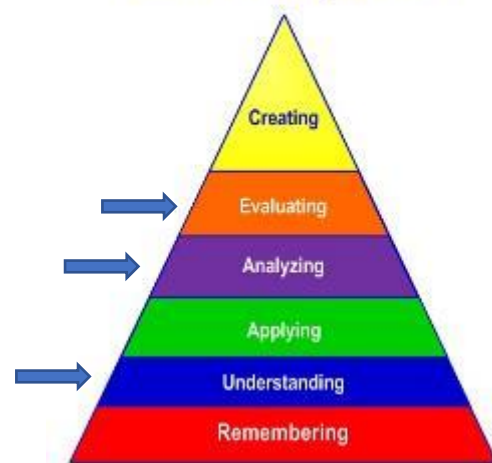
Flash cards: vocabulary

Words to describe the steps in a process

Labeled diagram

Worksheet: Types of traps

Blooms Taxonomy - Revised



Activity 1:

Through the Facebook group called “Session 4-Petroleum Reservoirs” (Appendix 16), the professor shares a video about the formation of an oil reservoir (Appendix 17). Students will watch the video as many times as necessary and consult other resources if they think it is pertinent. In the Facebook group, they must comment on what aroused their curiosity in the video and why.

Activity 2:

In the second activity, the teacher shares a link with information about the types of traps in an oil reservoir (Appendix 18) through the Facebook group. Students should read as many times as necessary to understand the text. They can also consult other resources to better understand the topic.

Activity 3:

In the third activity through the Facebook group, the teacher shares a link with flashcards developed in the Quizlet tool (Appendix 19) showing vocabulary related to oil reservoirs with their respective definitions. Students must associate the words with their respective definitions through flash cards. In the Facebook group, students must make a sentence with each word included in the flash cards.

Activity 4:

Through the Facebook group, the teacher shares a link with information related to words to describe the steps in a process (Appendix 20). Students can browse other resources if they feel it is necessary.

In class activities

Activity 5: (Time: 15 min) In the first-class activity, the teacher divides the students into pairs. Each pair is given a worksheet with a labeled diagram of an oil reservoir (Appendix 21). Each pair must complete the diagram mentioning each part of the reservoir. Once the activity is finished, the students must develop the following activities.

- According to the types of rocks previously studied, what type of rock can be a source rock, reservoir rock, and seal (trap) rock?
- Explain why in an oil field the substances water, petroleum, and petroleum gas have the same location.
- Outline the process of petroleum migration, using words to describe the processes reviewed at home.

Activity 6: (Time: 25 min)

The teacher divides the students into 4 groups of 5 and gives each group materials such as glue, bond paper, colored paper, markers, glitter, scissors, etc. The teacher gives a diagram with a different type of oil trap to each group (Appendix 22). The teacher asks the students to use the materials provided to make the type of trap assigned and identify the main parts of a reservoir. Once the work is finished, the students will make an oral presentation explaining each diagram. All students must participate. The teacher will provide scaffolding and feedback on content and use of the second language throughout the activity.

4.6.5. Session 5: Advantages and disadvantages of petroleum

Session 5: Advantages and disadvantages of petroleum extraction

Curricular Threads: Communication and Cultural Awareness, Oral Communication, Reading, Writing

Identification

Content subject: Natural Science

Student CEFR level: B1

Time: 80 minutes

Level: Third Course BGU

Method: CLIL-Task-Based Learning

Types of grouping: individual, pair, and group work

Subject-related content

Advantages and disadvantages of petroleum extraction

Environmental issues about oil

Economic benefits of petroleum

Language-related content

Writing the introduction on advantages and disadvantages of petroleum

Words and expressions for debate

Communication skills

Subject-related goals

To research the main advantage and disadvantages of petroleum

To categorize the positive and negative aspects of oil in the context in which students evolve

To debate about the principal advantages and disadvantages of petroleum

Language-related goals

To produce effectively oral and writing communication related advantages and disadvantages of petroleum

To apply words and expressions that are used in a discussion or debate.

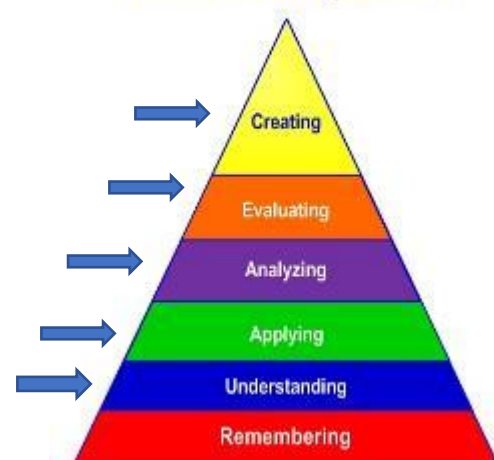
CALP language

Energy
Resource
Maintenance
Greenhouse gas emissions
Economy
Environment
Raw materials
Work source
Pollution

Materials

Video- advantages of oil extraction
Video- advantages of oil extraction
Web-link, words and expressions for discussion or debate
Debate

Blooms Taxonomy - Revised



(Time: 20 min.) As a pre-task, the teacher projects to the class two short videos, one with the advantages (Appendix 23), and the other with the disadvantages (Appendix 24) of oil extraction. These videos help to introduce the topic and give the students a general idea. The teacher then gives the students information about words and expressions that are used in a discussion or debate (Appendix 25), providing several examples of how to use the expressions, emphasizing the content of videos.

Task Cycle

Task: (Time: 20 min.)

The teacher divides the students into two groups of ten students each. Group one must organize themselves and look for arguments to defend the advantages of petroleum extraction and its use in their city (Francisco de Orellana). While group two will look for arguments to defend the disadvantages of the extraction and use of oil in their city (Francisco de Orellana). Considering petroleum as a source of energy, raw materials and economic support for their city and country. Each group will have access to a computer with an internet connection. The groups must obtain at least five properly supported or cited arguments.

Planning: (Time: 10 min.)

Students should organize the debate by ordering their arguments and ideas. They must prepare the interventions of each member of the group. During the debate, as many students as possible must participate. In the intervention, each student should use the words or linguistic expressions for a discussion or debate reviewed above. Students should prepare a paragraph of at least 100 words as an introduction to the debate about the position they are going to defend.

Reporting: (Time: 20 min.)

During the debate, the teacher will act as a moderator. The teacher will control the speaking time of each student. First, each group introduces the topic to be defended. Then the teacher, as moderator, will give way to the intervention of the group, alternating the participation, allowing the reply, and ensuring that the debate is fluid. The students must use linguistic expressions for a discussion or debate. Students should use their creativity to defend their proposals.

Analysis and Practice: (Time: 15 min.)

Once the debate is over, the teacher makes a general reflection of the group regarding the organization and defense of the debate, paying special attention to the use of language. The teacher asks group one to assess group two's use of language by considering the correctness of the linguistic expressions used in a discussion or debate, the use of grammar, fluency, and relevance. The teacher and students review the vocabulary used during the debate. If there are doubts about some words, activities such as using the words in sentences are carried out.

4.6.6. Session 6: Sociocultural aspects of petroleum in Ecuador

Session 6: Sociocultural aspects of petroleum in Ecuador

Curricular Threads: Communication and Cultural Awareness, Oral Communication, Reading, Writing

Identification

Content subject: Natural Science

Student CEFR level: B1

Time: 80 minutes

Level: Third Course BGU

Method: CLIL-Task-Based Learning

Types of grouping: group work

Subject-related content

Sociocultural aspects of petroleum in Ecuador

Lifestyle of the indigenous communities

Customs and culture of the indigenous communities

Language-related content

Contrast connectors.

Types of conjunctions

Use of verb tenses

Subject-related goals

To infer about Sociocultural aspects of petroleum in Ecuador

To analyze whether the lifestyle of indigenous communities is changing due to the oil industry.

To evaluate if customs and culture of the indigenous communities are affected due to petroleum industry

Language-related goals

To use effective English language to solve a current Ecuadorian problem about petroleum industry.

To apply contrast connectors, conjunctions and verb tenses in oral communication

CALP language

Exploration

Ancestral

Exploitation

Indigenous communities

Economy

Biodiversity

Concessions

Contamination

Protected natural areas

Materials

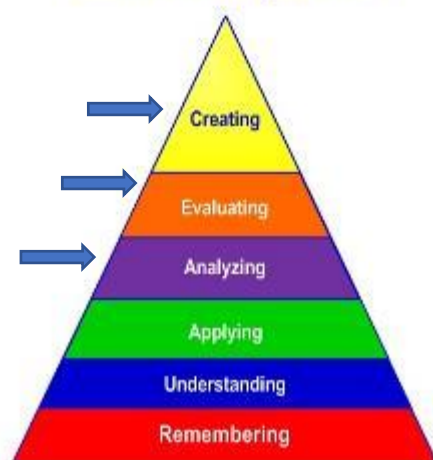
Video: Renewable Energies

Worksheet: words and expression for comparing

Graphic organizer: types of renewable energies

Comparative chart: renewable energies and oil

Blooms Taxonomy - Revised



(Time:15 min)

The teacher divides the students into 5 groups of 4 students each and gives a worksheet with a fragment of an article entitled Oiled forests - the case of Ecuador (Appendix 26). Students will read the article until they understand the content. Then, each group of students will look up 5 words they do not know. Students will have access to the internet and will look up the meaning of the words in an electronic dictionary. Next, students will write down the main idea of the text.

Task Cycle

Task: (Time: 20 min.)

The students will have to look for a solution to the problem of oil extraction activities in the territories where there are indigenous communities and natural protected areas. The students are aware of the indigenous groups of the territory in which they live and of the natural wealth of their region. The teacher asks the students the following statement:

Considering the risk of contamination in the oil and gas industry and the importance of petroleum as an economic source in Ecuador, how should the Ecuadorian government manage oil extraction in zones where indigenous communities and protected natural areas coexist?

As a guide to solving the problem, the following questions are posed.

- How important is petroleum for Ecuadorian economy?
- Should the extraction of oil as a resource for the country be prioritized over the lifestyle of the indigenous communities?
- Do the oil extraction activities affect the customs and culture of the indigenous communities?
- How should the government act to preserve the ecosystems during oil activities?

Planning: (Time: 10 min)

Each group of students must answer the questions and provide solutions to the problem posed. Students will have access to the internet for support in the search for the solution to the problem. Students must make a presentation giving possible answers to the problem proposed. They must organize in PowerPoint a presentation with no more than 10 slides.

Reporting: (Time: 20 min)

During the presentation, the students should make use of what they have learned previously in the linguistic aspect. They should use contrast connectors, conjunctions, and use of verb tenses. Students should make the presentation in a concise manner, sharing with their classmates the solutions they found to the problem posed. All members of the group should participate. The teacher will give feedback and scaffolding during the whole activity.

Post-task-Language focus

Analysis and Practice: (Time:15 min)

The teacher asks each group to make an analysis of the correct use of language during the presentation to the other groups. The teacher will also ask all students to make an assessment of whether the proposals presented to solve the problem posed. The teacher will give feedback on each student's participation, focusing on the use of conjunctions, contrast connectors, and use of verb tenses. Finally, the teacher will reinforce new vocabulary used in the presentation by proposing examples in the context of the topic of the session.

4.6.7. Session 7: Replacing petroleum

Session 7: Replacing petroleum

Curricular Threads: Communication and Cultural Awareness, Oral Communication, Reading, Writing

Identification

Content subject: Natural Science

Student CEFR level: B1

Time: 80 minutes

Level: Third Course BGU

Method: CLIL-Task-Based Learning

Types of grouping: group work

Subject-related content

Replacing petroleum

Renewable energies

Energy sources and the energy generating devices

Language-related content

Words and expression for comparing.

Reading, speaking, writing, and listening skills through real material about renewable energies

Subject-related goals

To compare renewable energies and energy produced by petroleum derivatives.

To create a graphic organizer about types of renewable energies.

To explain how energy is generated from renewable resources

Language-related goals

To use English language expressions to compare renewable energies and petroleum.

To perform an oral presentation about renewable energies.

CALP language

Renewable Energies

Turbines

Wind turbines

Photovoltaic cells

Renewable sources

Climate change

Hydroelectric

Geothermic

Biomass

Materials

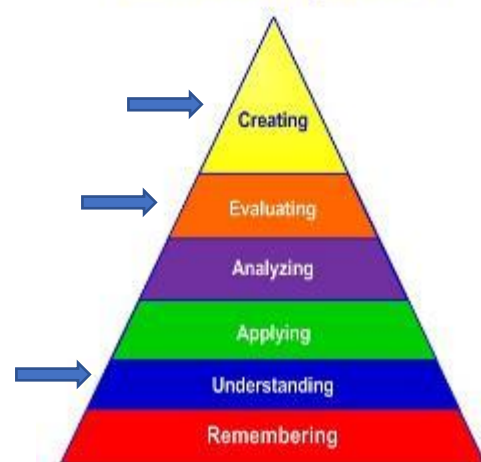
Video: Renewable Energies

Worksheet: words and expression for comparing

Graphic organizer: types of renewable energies.

Comparative chart: renewable energies and oil

Blooms Taxonomy - Revised



(Time:15 min)

The teacher presents a video to the students about renewable energies. The video shows the characteristics of renewable energies. (Appendix 27). The video also mentions a brief comparison with the use of oil in energy generation. Students using Canva brainstorm with the information obtained from the video. The teacher provides students a work sheet with words and expression for comparing (Appendix 28).

Task Cycle

Task: (Time: 20 min.)

The students are divided into 5 groups of 4 students each. Each group is asked to design a graphic organizer using the Canva platform. The graphic organizer should include 3 types of renewable energies mentioning the energy source and the energy generating device such as turbines, wind turbines, and photovoltaic cells. Considering the information about expression words for comparing and information of renewable energies from the graphic organizer, students will create a comparative chart between renewable energies and oil. To develop the task, students can use information from the web, citing the source.

Planning: (Time: 10 min.)

The students should prepare the presentation of the graphic organizer and the comparative chart. To present the comparative chart, students should use previously reviewed comparison words. All students should participate

Reporting: (Time: 20 min.)

Students present the graphic organizer and the comparative chart using comparative words. It is important that all students participate and that the charts should be legible to the audience.

Post-task-Language focus

Analysis and Practice: (Time: 15 min)

The teacher give feedback on each participant's intervention by analyzing the use of language during the presentation. The teacher reinforces and motivates the students for the proper use of the language and develops activities for the practice of the identified errors and reinforces the new vocabulary learned.

4.7. Assessment

4.7.1. Language evaluation criteria

In this didactic proposal, the language evaluation criteria described in the EFL Ecuadorian curriculum are considered. As is mentioned above, the Ecuadorian EFL curriculum implements the 4Cs framework of the CLIL method through the integration of 5 curricular threads or sections. In other words, the evaluation criteria focus on the fulfillment of the EFL curricular threads, the table 10 shows the language evaluation criteria considered in the didactic proposal, based on the curricular threads.

Curricular Thread	Language evaluation criteria
Communication and cultural awareness	Demonstrate mindfulness, empathy, tolerance and an overall respect for the integrity of cultures in classroom activities. Discover and employ alternative ways of saying things in social and classroom interactions. Communicate information and ideas effectively to diverse audiences using a variety of media and formats.
Oral communication	Deduce the meanings of unfamiliar phrases and words from a context containing familiar elements. Build on others' ideas when engaged in pair, group or whole class discussions on personal, social, community and academic topics. Follow main ideas in topics covered in other curricular subjects with the help of visual support, using concepts and vocabulary that have been studied in advance. Present information clearly and effectively in a variety of oral forms for a range of audiences and purposes.
Reading	Skim and scan reference materials, in print or online, to identify information that might be of practical use for one's own research and academic needs. Find the most important information in print or online sources in order to support an idea or argument.
Writing	Produce blog posts describing personal experiences and feelings. Use a variety of oral, print, and electronic forms for writing to others or for writing for self, applying the conventions of social writing
Language through the arts	Engage in collaborative activities through a variety of student groupings to share, reflect on, express and interpret opinions and evaluations of variety of types of art

Table 10: Language evaluation criteria

4.7.2. Content evaluation criteria

The evaluation criteria of the contents are taken in part from the Natural Sciences curriculum of Ecuador and are complemented according to the contents and activities proposed. In the table 11 the evaluation criteria of the contents for the present didactic unit are listed.

Topic of the session	Content evaluation criteria
What is Geology?	Describe the activities that a geological engineer performs within the community in which the students are involved. Define geology and explain the different fields of study in which it can be applied.
Types of rocks	Establish the differences between the main types of rocks, igneous, sedimentary and metamorphic rocks. Explain the rock cycle and the different rock transformation processes.
What is petroleum?	Explain and examine the origin, composition and importance of petroleum, not only as a source of energy, but also as a raw material for the production of a large number of products, based on the use of ICT.
Petroleum Reservoirs	Recognize the parts of a petroleum reservoir and describes its migration process. Differentiate between the types of oil traps and their structure.
Advantages and disadvantages of petroleum	Investigate the advantages and disadvantages of petroleum around the world. Argue the benefits and detriments of oil extraction in the community.
Sociocultural aspects of petroleum in Ecuador	Evaluate the incidence of oil extraction in Ecuador, contamination, economic benefits, effects on indigenous communities.
Replacing petroleum	Compare and analyze the use of renewable energies and oil in terms of energy generation and environmental care. Identify the different types of renewable energies, generation source and generation device.

Table 11: Content evaluation criteria

Once the language and content assessment criteria have been established, considering that assessment should be a continuous procedure, the following types of assessment are used in this proposal:

Initial assessment: As mentioned in the theoretical framework, this type of assessment is of great help to the teacher allowing to obtain information about language and content knowledge prior to the development of each session (Dale & Tanner, 2012). In the case of units 1 to 4 in which the Flipped Classroom methodology is used, the initial assessment constitutes the interaction and follow-up activities during the out of class activities. Thus, the teacher assesses the content and language knowledge of the students through interaction on Facebook, Blog and Padlet. The activities include questions and summaries of the readings, quizzes, feedback to peer input. All these activities are assessed by the teacher who will reinforce the errors found during class activities. While in sessions 5 to 7 the Task Based approach is used where the initial assessment is performed during the pre-tasks. The activities include the

analysis of videos and readings allowing the teacher to identify deficiencies in content and language. During the execution of the task, the teacher will prioritize the reinforcement of the identified gaps.

Formative assessment: During the development of the sessions, formative assessment is applied, taking into account the previously established content and language evaluation criteria. The formative assessment in this didactic proposal aims to encourage learning students (Otto & Estrada, 2019). In addition, during the execution and presentation of the activities in all sessions, the teacher provides continuous and effective feedback complementing gaps in learning (Black & William, 1998). The teacher will continuously assess the progress of the students and if required will adapt the activities during the development to meet the evaluation criteria and objectives set out in each unit.

Summative assessment: It is carried out at the end of the didactic proposal, providing a quantitative assessment of the students' learning progress according to the evaluation criteria and the established content and language objectives.

4.7.3. Assessment tools

Different tools are used for a correct assessment. At the end of each session, students perform a self-assessment using different tools such as rubric, target and through the Facebook wall. The tools used for each unit are detailed below.

Self-assessment session 1:



The image shows a Facebook post from a user named Dario Enriquez, Administrator, posted 17 minutes ago. The post is titled 'Session 1- What is Geology?' and contains a self-assessment form. The form asks the user to evaluate their performance on the statement: 'I can evaluate the activities performed by a geological engineer.' There are four options with corresponding emojis: 'I do it very well' (red heart), 'I do it somewhat well' (blue thumbs up), 'I can improve' (yellow face with a single tooth), and 'I can't do it without help' (yellow face with a wide-open mouth). Below the form, there is a row of seven emojis for reaction: thumbs up, heart, thinking, laughing, surprised, sad, and angry. At the bottom, there are buttons for 'Me gusta', 'Comentar', and 'Enviar'.

Figure 4: Facebook wall- Self-assessment session 1

Self-assessment session 2:

Self-evaluation-Session 2- I check the box that most applies to me				
Criteria	I do it very well	I do it somewhat well	I can improve	I can't do it without help
I can differentiate the main types of rocks.				
I can complete a graphic organizer based on chemical and physical processes that occur in the rock cycle				
I can discuss about the works of art that can be made with rocks				
I can use the specific vocabulary regarding the types of rocks.				
I can use conjunctions in an oral presentation about rock cycle				
I can use English language to express ideas and judgment				

Table 12: Rubric- Self- assessment -Session 2

Self-assessment session 3:

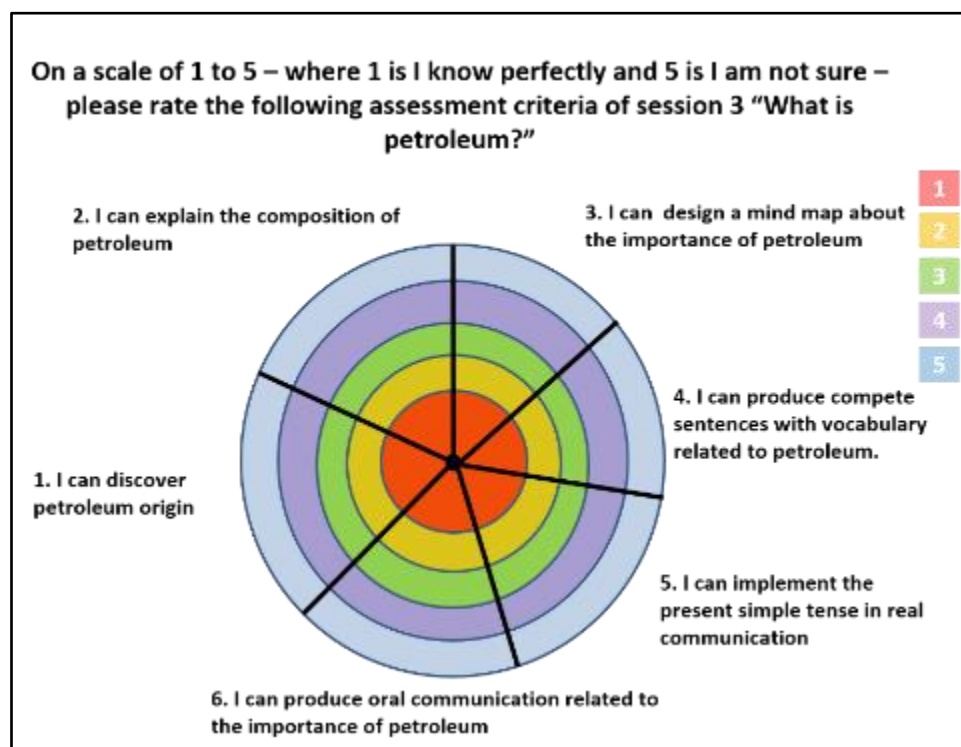


Figure 4: Target-Self- assessment -Session 3

Self-assessment session 4:



Figure 5: Facebook wall- Self-assessment session 4

Self-assessment session 5:

Self-evaluation-Session 5- I check the box that most applies to me				
Criteria	I do it very well	I do it somewhat well	I can improve	I can't do it without help
I can research information about petroleum				
I can categorize the positive and negative aspects of oil				
I can debate about the principal advantages and disadvantages of petroleum				
I can produce effectively oral and writing communication related advantages and disadvantages of petroleum				
I can apply words and expressions that are used in a discussion or debate				

Table 13: Rubric-Self-evaluation-Session 5

Self-assessment session 6:

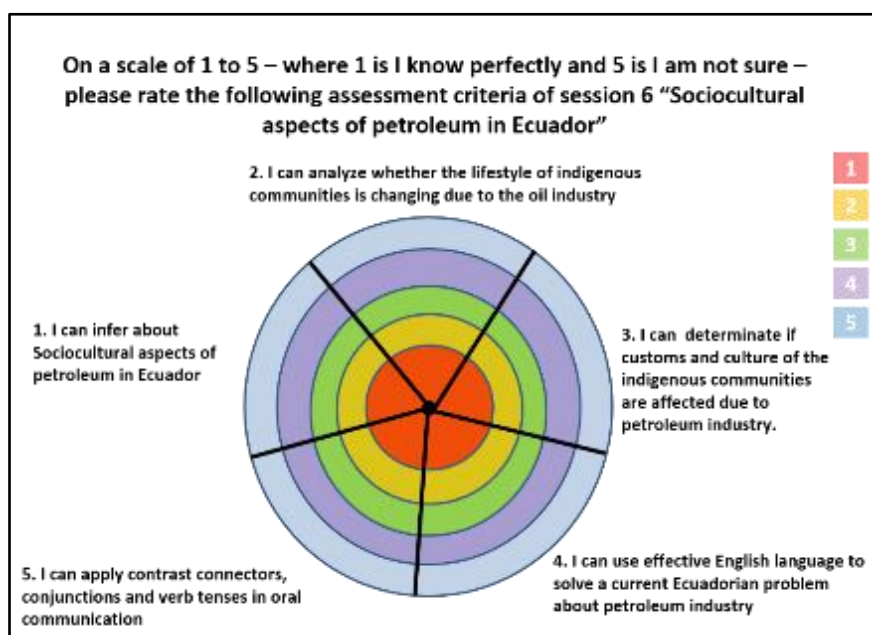


Figure 5: Target-Self-evaluation-Session 6

Self-assessment session 7:

Self-evaluation-Session 7- I check the box that most applies to me				
Criteria	I do it very well	I do it somewhat well	I can improve	I can't do it without help
I can compare renewable energies and energy produced by petroleum derivatives.				
I can create a graphic organizer about types of renewable energies.				
I can explain how energy is generated from renewable resources				
I can use English language expressions to compare renewable energies and petroleum.				
I can perform an oral presentation about renewable energies.				

Table 14: Rubric-Self-evaluation-Session 7

The following are the rubrics used as assessment instruments for the didactic proposal. Table 15 is the rubric used by the teacher to assess the language of the Didactic Unit considering the evaluation criteria proposed at the beginning of this section. Table 16, on the other hand, represents the evaluation rubric used by the teacher to assess the students' performance in terms of the content according to the evaluation criteria defined.

Curricular Thread	10-9 (Excellent)	8-6 (Good)	5-3 (Fair)	3-1 (Poor)
Communication and cultural awareness	The students always demonstrate empathy, tolerance and respect for the integrity of cultures, use alternative ways of saying things, communicate information and ideas effectively.	The students sometimes demonstrate empathy, tolerance and respect for the integrity of cultures, use alternative ways of saying things, communicate information and ideas effectively.	The students rarely demonstrate empathy, tolerance and respect for the integrity of cultures, use alternative ways of saying things, communicate information and ideas effectively.	The students almost never demonstrate empathy, tolerance and respect for the integrity of cultures, use alternative ways of saying things, communicate information and ideas effectively.
Oral communication	The students always deduce the meaning of unfamiliar words or sentences, complements and builds ideas during teamwork, presents information clearly and effectively	The students sometimes deduce the meaning of unfamiliar words or sentences, complements and builds ideas during teamwork, presents information clearly and effectively	The students rarely deduce the meaning of unfamiliar words or sentences, complements and builds ideas during teamwork, presents information clearly and effectively	The students almost never deduce the meaning of unfamiliar words or sentences, complements and builds ideas during teamwork, presents information clearly and effectively
Reading	The students always identify important information for their academic work in digital and print media.	The students sometimes identify important information for their academic work in digital and print media.	The students rarely identify important information for their academic work in digital and print media.	The students almost never identify important information for their academic work in digital and print media.
Writing	The students always produce blog entries giving their criteria and point of view, summarizing the main ideas of the contents, applying the conventions of social and academic writing.	The students sometimes produce blog entries giving their criteria and point of view, summarizing the main ideas of the contents, applying the conventions of social and academic writing.	The students rarely produce blog entries giving their criteria and point of view, summarizing the main ideas of the contents, applying the conventions of social and academic writing.	The students almost never produce blog entries giving their criteria and point of view, summarizing the main ideas of the contents, applying the conventions of social and academic writing.
Language through the arts	The students always engage in collaborative activities through a variety of student groupings to share, reflect on, express and interpret opinions and evaluations of variety types of art.	The students sometimes engage in collaborative activities through a variety of student groupings to share, reflect on, express and interpret opinions and evaluations of variety types of art.	The students rarely engage in collaborative activities through a variety of student groupings to share, reflect on, express and interpret opinions and evaluations of variety types of art.	The students almost never engage in collaborative activities through a variety of student groupings to share, reflect on, express and interpret opinions and evaluations of variety types of art.

Table 15: Didactic unit language evaluation rubric

Topic	10-9 (Excellent)	8-6 (Good)	5-3 (Fair)	3-1 (Poor)
Session 1 What is Geology?	The students can describe activities that a geological engineer performs, define geology correctly, identify the different fields of study of geology	The students can describe activities that a geological engineer performs, partially define geology, cannot identify the different fields of study of geology.	The students can describe activities that geological engineer performs; cannot define geology, neither identify the different fields of study of geology	The students cannot describe activities that geological engineer performs, cannot define geology, nor identify the different fields of study of geology
Types of rocks	The students can establish the differences between the main types of rocks, explain the rock cycle and the different rock transformation processes.	The students can establish the differences between the main types of rocks, can explain the rock cycle and cannot differentiate rock transformation processes.	The students can establish the differences between the main types of rocks, cannot explain the rock cycle and cannot differentiate rock transformation processes.	The students cannot establish the differences between the main types of rocks, cannot explain the rock cycle and cannot differentiate rock transformation processes.
What is petroleum?	The students can examine the origin and composition of oil and explain the importance of oil as a source of energy and raw material.	The students can examine the origin and composition of petroleum, they can partially explain the importance of petroleum as a source of energy and raw material.	The students can partially examine the origin and composition of petroleum, can partially explain the importance of petroleum as a source of energy and raw material	The students cannot examine the origin, the composition of oil, they cannot explain the importance of oil as a source of energy and raw material.
Petroleum Reservoirs	The students can recognize the parts of a petroleum reservoir, can describes petroleum migration process, can differentiate between the types of oil traps and their structure	The students can recognize the parts of a petroleum reservoir, can describes petroleum migration process, cannot differentiate between the types of oil traps and their structure	The students can recognize the parts of a petroleum reservoir, cannot describes petroleum migration process, cannot differentiate between the types of oil traps and their structure	The students cannot recognize the parts of a petroleum reservoir, cannot describes petroleum migration process, cannot differentiate between the types of oil traps and their structure
Advantages and disadvantages of petroleum	The students can investigate and observe the advantages and disadvantages of petroleum in the community, can argue the benefits and detriments of oil extraction in the community.	The students can investigate and observe the advantages and disadvantages of petroleum in the community, can partially argue the benefits and detriments of oil extraction in the community.	The students can partially investigate and observe the advantages and disadvantages of petroleum in the community, cannot argue the benefits and detriments of oil extraction in the community.	The students cannot investigate and observe the advantages and disadvantages of petroleum in the community, cannot argue the benefits and detriments of oil extraction in the community.
Sociocultural aspects of petroleum in Ecuador	Students can identify the advantages and disadvantages of oil, evaluate for themselves the benefits and detriments of oil extraction in the community.	Students can identify the advantages and disadvantages of oil. They require assistance in evaluating the benefits and detriments of oil extraction in the community.	Students can identify the advantages and disadvantages of oil, but cannot perceive the benefits and disadvantages of oil extraction in the community.	Students cannot identify the advantages and disadvantages of oil, cannot perceive the benefits and detriments of oil extraction in the community.
Replacing petroleum	The students can analyze the use of renewable energies and petroleum in terms of energy generation, value the use of renewable energies and care for the environment. Students correctly identify the different types of renewable energies.	The students analyze the use of renewable energies and petroleum in terms of energy generation, value the use of renewable energies and care for the environment. Students do not know how to identify the different types of renewable energies.	The students analyze the use of renewable energies and petroleum in terms of energy generation, they cannot value the use of renewable energies for the care of the environment. Students cannot identify the different types of renewable energy	The students cannot analyze the use of renewable energies and petroleum in terms of energy generation, they cannot value the use of renewable energies for the care of the environment. Students cannot identify the different types of renewable energies.

Table 16: Didactic unit content evaluation rubric

To assess the progress of students, the portfolio evaluation tool is used, which through the collection of work done by students. The portfolio is intended to assess the knowledge acquired in a continuous way based on the students' reflection of what they have learned with each activity and a general reflection of the whole unit. The portfolio will be presented by the students in a digital way due to the use of several ICT resources during the didactic proposal.

The students should include in the portfolio all activities performed including slide captures of the presentations, discussion outline, self-evaluation. In addition, students may submit evidence of additional resources researched. The activities that were done in printed material have to be scanned and united in a single document in pdf format. A screenshot must be taken of the activities performed in ICT resources such as Canva, Quizizz, Quizlet, among others. After each activity and session, students will reflect on what they have learned by completing the table 17. Activities will be presented in the order in which they were carried out.

Reflection	
Activity/Session topic	
What I liked most in this activity was	
What I liked least about this activity was:	
What I learned from doing this activity was:	
What I could improve is:	
This activity can be applied in:	

Table17: Reflection portfolio assessment tool

5. CONCLUSION

The didactic unit proposed in the present work constitute a comprehensive tool for aiding secondary students from Francisco de Orellana (3rd year of "BGU"), in the learning process by providing them with familiar contexts and topics, on which they can feel at ease in the classroom.

To assemble the didactic unit, a literature review on CLIL was carried out, including the main characteristics of the methodology, the selection, and the adaptation of materials, strategies, and assessment tools. As well as didactic approaches that complement the CLIL methodology such as Flipped Classroom, Task-Based Learning and Project Based Learning. It also includes the characteristics, principles, and curricular threads of the Ecuadorian EFL Curriculum. This theoretical framework was the basis for the development of the unit.

In this didactic unit were used materials designed and adapted, which meet the criteria to be applied in the teaching of English as a foreign language (Tomlinson, 2013) and in a CLIL program (Mehisto, 2012). The use of ICT materials was prioritized in order to promote interactive learning in a real context using tools such as Facebook and blogs.

This didactic proposal constitutes an educational tool for teaching content (Geology and Petroleum) and language (EFL), especially in a city like Francisco de Orellana whose development has revolved around the oil industry, results in a unique opportunity for students to start to produce their own learning since they have something or much to contribute to the topics being addressed as part of their culture and daily life.

This didactic proposal can be a valuable contribution in the teaching of EFL applying the CLIL methodology, for both teachers and students of Francisco de Orellana, since it contributes:

- Authentic activities and materials allow students to make connections between language, geology, and petroleum with everyday life experiences specific to the context in which they live.
- Activities to promote critical thinking and the development of cognitive skills, such as the solution of a problem in their community that promotes cultural awareness,

the comparison between renewable energies and oil, the elaboration of concept maps, mind maps, brainstorming, and labeling diagrams.

- Interaction, cooperation, and communication activities were designed so that during the planning stage students develop Basic Interpersonal Communication Skills (BICS) while during oral presentations Cognitive Academic Language Proficiency (CALP) skills are promoted. Formative assessment was prioritized by providing continuous feedback and scaffolding.

All in all, the completion of this master's dissertation meant a growth for me in the teaching of English as a foreign language. Because it allowed to group the knowledge acquired about the CLIL methodology in a didactic proposal, which although it was designed for students in the city of Francisco de Orellana, it can be adapted and applied throughout Ecuador. I consider that the didactic unit designed should not remain only as a proposal but be applied for its richness of materials, approaches, and activities that seek to promote communication using the target language, the culture of the students, the learning of real content and specific to the environment in which students interact, and the development of cognitive skills and critical thinking in students. Likewise, the execution of this master's dissertation motivates me to continue developing didactic proposals in order to contribute to the improvement of the English level of students at all levels of education in my country, Ecuador.

6. REFERENCES

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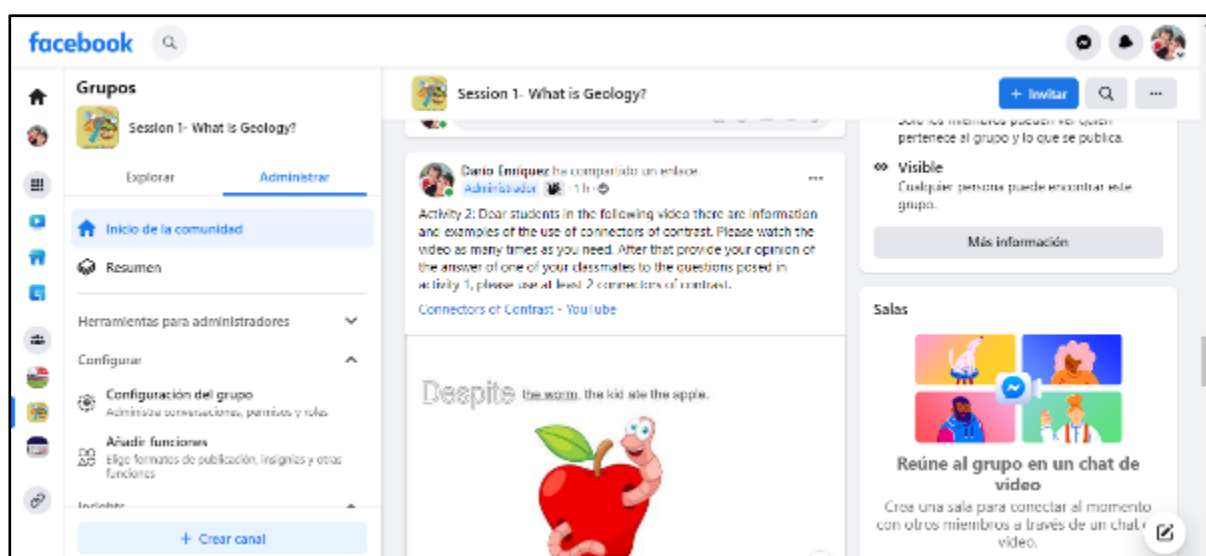
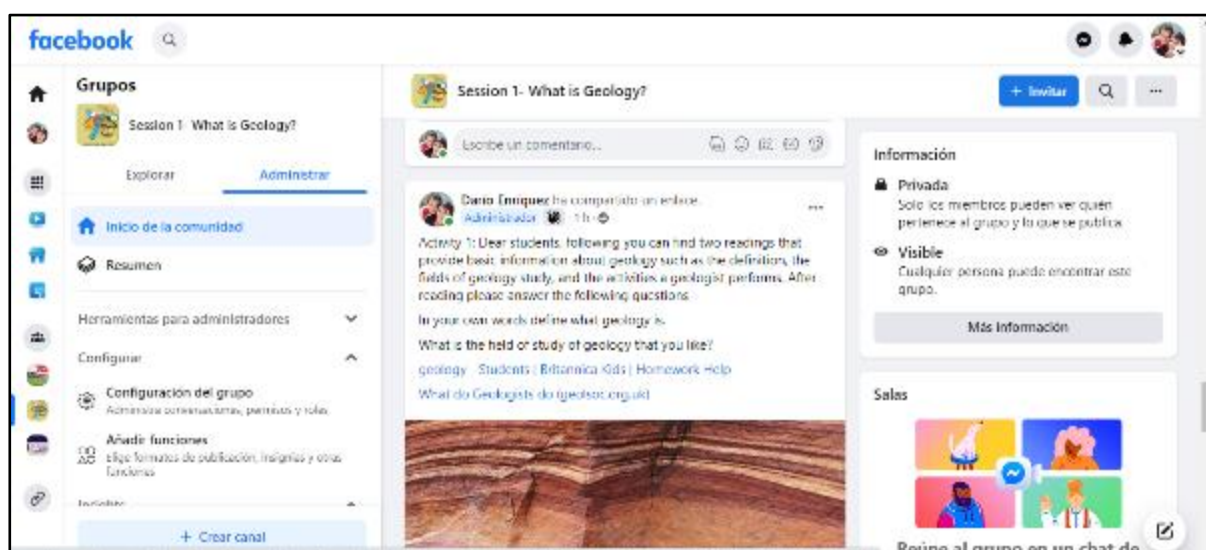
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APPENDICES

Appendix 1²: Session 1- Facebook group "Session 1- “What is Geology?”"



² Facebook group created for the present didactic proposal Access with the hyperlink in the appendix title.

Appendix 2³: Session 1-reading 1- “Geology”

geology

View article for: **Kids** **Students** **Scholars**

Article | Images & Videos | Related

Contents Expand

- Introduction
- Fields of Geologic Study
- Additional Reading

RELATED RESOURCES FOR THIS ARTICLE

- Articles
- Primary Sources & E-Books
- Websites

View search results for: **geology**

INTRODUCTION

The science of the Earth—geology—is perhaps the most varied of all the natural sciences. It is concerned with the origin of the planet Earth, its history, its shape, the materials forming it, and the processes that are acting and have acted on it (see *Earth*). Geology is one of several related subjects commonly grouped as the Earth sciences, or geoscience (see *Earth Sciences*). Geologists are Earth scientists concerned primarily with rocks and materials derived from rocks that make up the outer part of the Earth. To understand these materials, geologists use the knowledge gained in other fields of science such as physics, chemistry, and biology; thus, geological fields—such as geophysics, geochemistry, geochronology, and paleontology—incorporate other sciences, enabling geologists to understand better the working of Earth processes through time.

Although each Earth science has a particular focus, they all frequently overlap with geology. Thus, the study of the Earth's waters in relation to geological processes involves knowledge of hydrology and oceanography. The mapping and measurement of the Earth's surface formations involve knowledge of cartography and geodesy, the measurement of the Earth's precise shape and dimensions. Clues to the origin of the Earth are also sought from astronomical studies of extraterrestrial bodies.

As a major science, geology not only involves the study of landforms and other surface features of the Earth but also is concerned with the structure and inner parts of the planet. Such knowledge is of basic scientific interest, but it is also placed at the service of humanity. Applied geology, for example, focuses on the search for useful minerals within the Earth, the identification of geologically stable locations that are suitable for various types of construction, and the forecasting of natural hazards—such as earthquakes—that are associated with the geodynamic forces (see *Earthquake*).

FIELDS OF GEOLOGIC STUDY

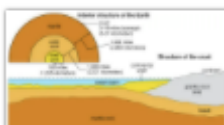
The discipline of geology deals with the history of the Earth, including the history of life, and covers all physical processes at work on the surface and in the crust of the Earth. Broadly, geology thereby includes studies of interactions among the Earth's rock, soil, water, atmosphere, and life forms—clearly too wide a field for one scientific discipline to cover as a whole. Geologists therefore generally limit themselves to specialized study in any of a number of fields, brief descriptions of which follow.

PHYSICAL GEOLOGY.

This branch of geology deals with Earth processes and forces that affect minerals, rocks, magma, and core materials. It is also concerned with the causes of change in the Earth's morphology; that is, in the shape of its landforms.

GEOPHYSICS.

The aim of geophysics is to deduce the physical properties of the Earth, along with its internal composition, from various physical phenomena. For example, geophysicists study the Earth's magnetic field (its source, configuration, and variations), the magnetism remaining in rocks and soils from the time of their formation, the flow of heat within the Earth, the force



³ Reading "Geology" (Encyclopedia Britannica, 2022). Access with the hyperlink in the appendix title.

Appendix 3⁴: Session 1- reading 2- “What do geologists do?”

WHAT DO GEOLOGISTS DO?

Geologists are employed in a diverse range of **jobs** in many different **industries**. Some work in the field, some in offices and others have a mixture of both. In a nutshell, Geologists work to better understand the Earth, but what do they actually do?

Below are some examples of the tasks Geologists carry out in their respective industries.



MAPPING & FIELDWORK

This is a field-based task many geologists undertake. Different types of field mapping will look for different aspects of the rocks of a particular area.

- **Field mapping** looks at the particular rock types and geological structures of an area and how they all relate to one another – the aim is to produce a ‘geological map’. It is undertaken by geology students and geoscientists who work for universities, mining and exploration companies or some oil and gas companies.
- **Sampling** trips are common for researchers and geological exploration companies.
- **Geotechnical mapping** assesses the engineering properties of a rock and its stability prior to undertaking any sort of construction or modification of the rocks (such as building a tunnel).

[Find out about mapping and fieldwork during an undergraduate degree](#) →

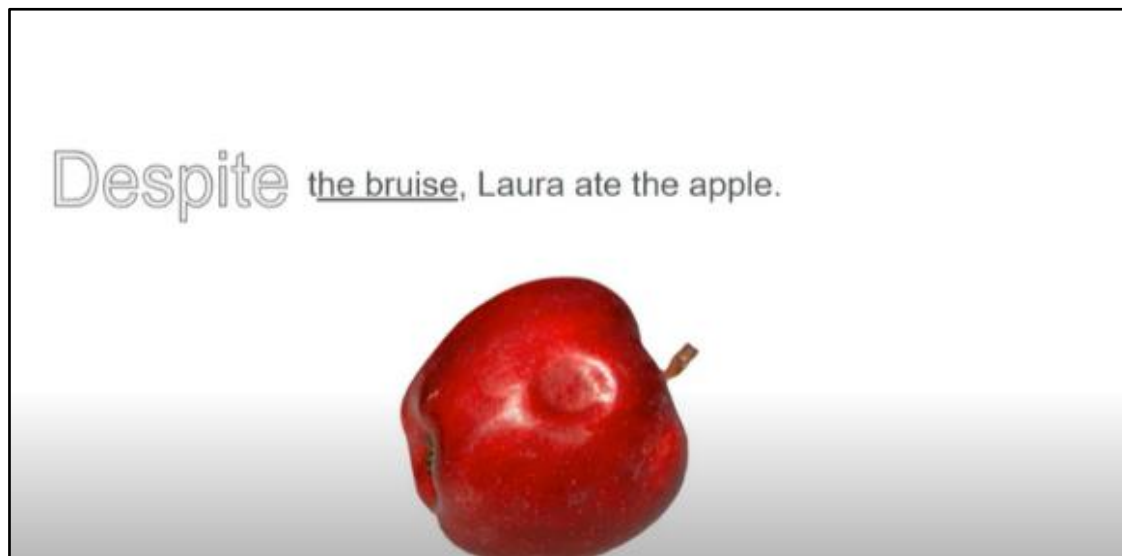
LOGGING

Again, this is often a **field-based** activity undertaken with geological drilling. Geologists describe rock extracted by drills to understand the geology below the surface. Logging of sedimentary or volcanic rocks above ground is also used to study past



⁴ Reading “What do geologists do?” (University Geoscience UK, n.d.) Access with the hyperlink in the appendix title.

Appendix 4⁵: Session 1- Video- “Connectors of contrast”

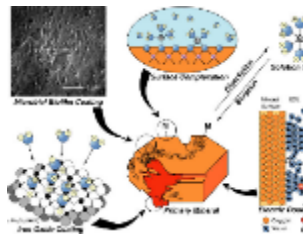
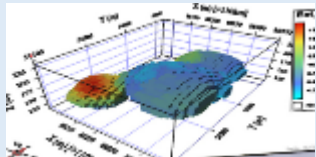


⁵ Video “Connectors of contrast” (Rozeboom, 2021). Access with the hyperlink in the appendix title.

Appendix 5⁶: Session 1-Activity 3- worksheet- “Match the definition”

Session 1-Activity 3

Match the words with the definitions and pictures, about the readings reviewed at home.

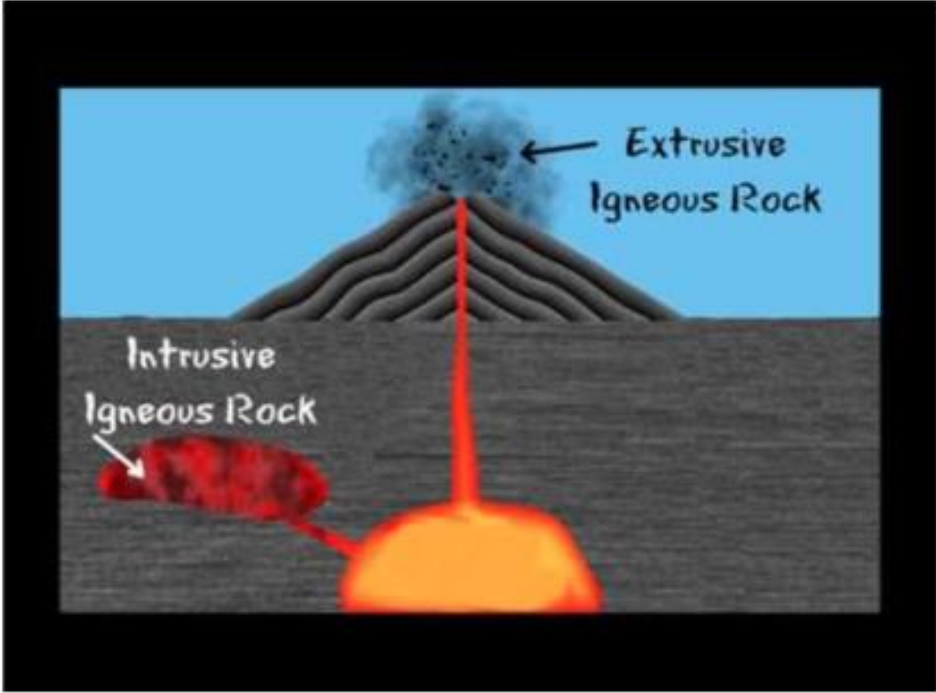
Geology	Description of the rock extracted by drills to understand the geology below the surface	
Geologists	Work to better understand the Earth	
Physical Geology	Producing a 3-D model of a mineral deposit, oil field or aquifer.	
Geochemistry	Studies the distribution and amounts of the chemical elements in minerals, rocks, soils, etc.	
Logging	Is concerned with change in the Earth's morphology	
Modelling programs	The science of the Earth	

⁶ Worksheet created for purposes of this project, assembled with images from the internet

Appendix 6⁷: Session 2-Activity1- Blog- “Types of Rock”

Session 2-Activity 1-Types of Rocks and Rock Cycle

October 09, 2022



The diagram illustrates the formation of igneous rocks. A volcano is shown with a red lava flow erupting from its summit, labeled 'Extrusive Igneous Rock'. Below the surface, a red magma chamber is shown, with a red dike extending upwards from it, labeled 'Intrusive Igneous Rock'.

Dear students, click on the attached links concerning the types of rocks and the rock cycle. Watch the videos as many times as you consider necessary for a good understanding. [Video 1 types of rocks](#) [Video 2 Rocks-cycle](#)

Session 2-Activity 2 -Conjunctions

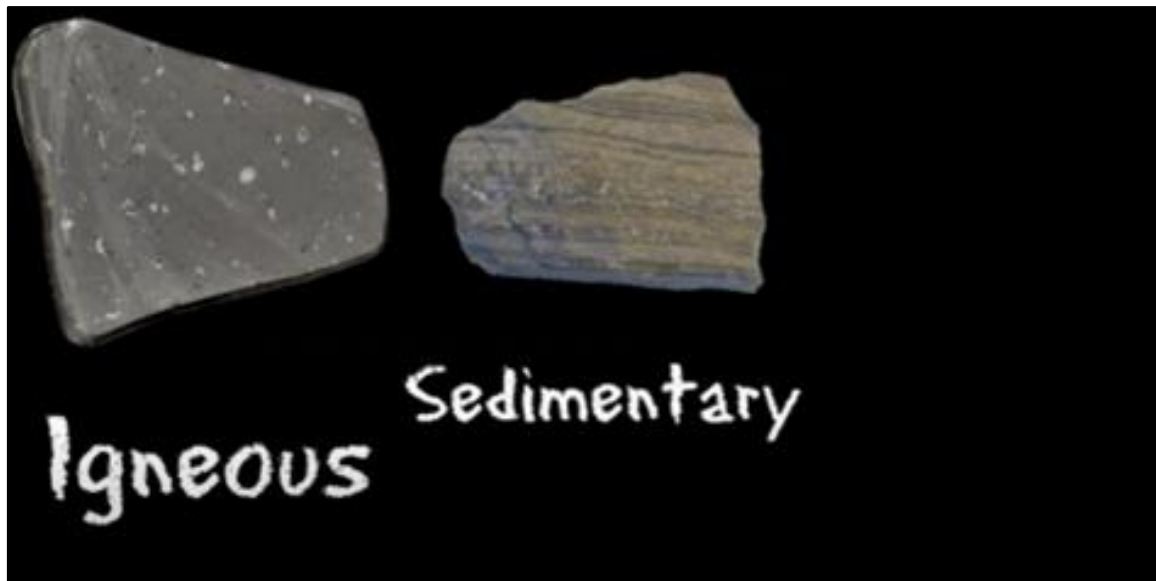
October 09, 2022

Dear students, now please review the information regarding conjunctions in the attached link. Once you understand this topic, you are asked to contribute to the blog by summarizing each video from activity one in a minimum of 100 words each, using at least 4 conjunctions. [Link-Conjunctions](#)

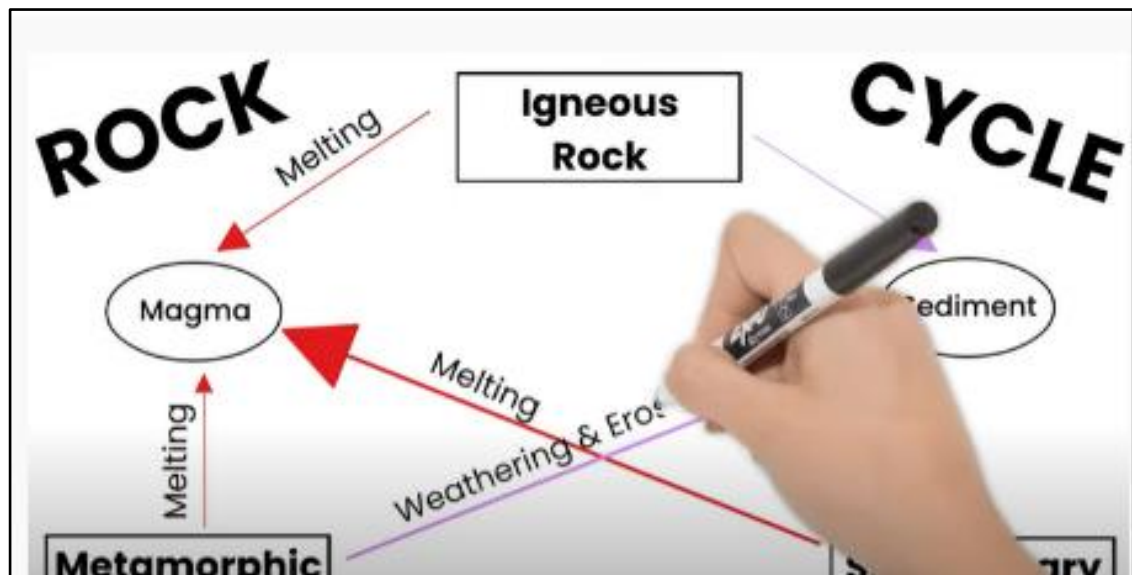
[Post a Comment](#) [READ MORE](#)

⁷ Bog created on Blogger for the present didactic proposal. Access with the hyperlink in the appendix title

Appendix 7⁸: Session 2-Activity 1-Video-Types of rocks



Appendix 8⁹: Session 2- Activity 1-Video-The Rock Cycle



⁸ Video-Types of rocks (Tsang Sau Hing Debbi, 2016). Access with the hyperlink in the appendix title

⁹ Video-The Rock Cycle (Short Simple Science, 2021). Access with the hyperlink in the appendix title

Appendix 9¹⁰: Session 2-Activity2-Conjunctions



LEARN ENGLISH

HOME

GRAMMAR

VOCABULARY

OTHERS ▾

EXERCISES

Conjunction: Definition & Types

☆☆☆☆☆ (5/5, 288 votes)

Share 10

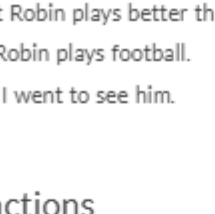
Tweet

What is Conjunctions

Conjunctions are used to join clauses, phrases, and words together for constructing sentences. Conjunctions make a link between/among words or groups of words to other parts of the sentence and show a relationship between/among them.

Example:

- Alex and Robin are playing together.
- Alex plays well, but Robin plays better than him.
- I play cricket, and Robin plays football.
- When he was sick, I went to see him.



Types of Conjunctions

> Coordinating Conjunctions

> Correlative Conjunctions

> Subordinating Conjunctions

> Compound Conjunction

> Adverbial Conjunction

Coordinating Conjunctions

¹⁰ Conjunctions (Learn Grammar, n.d.). Access with the hyperlink in the appendix title

Session 2-Activity 3



Conversation

Have you seen this kind of art before?

Can you describe the images?

Do you think you can make a work art similar to the one in the images?

What other artwork could be made with rocks

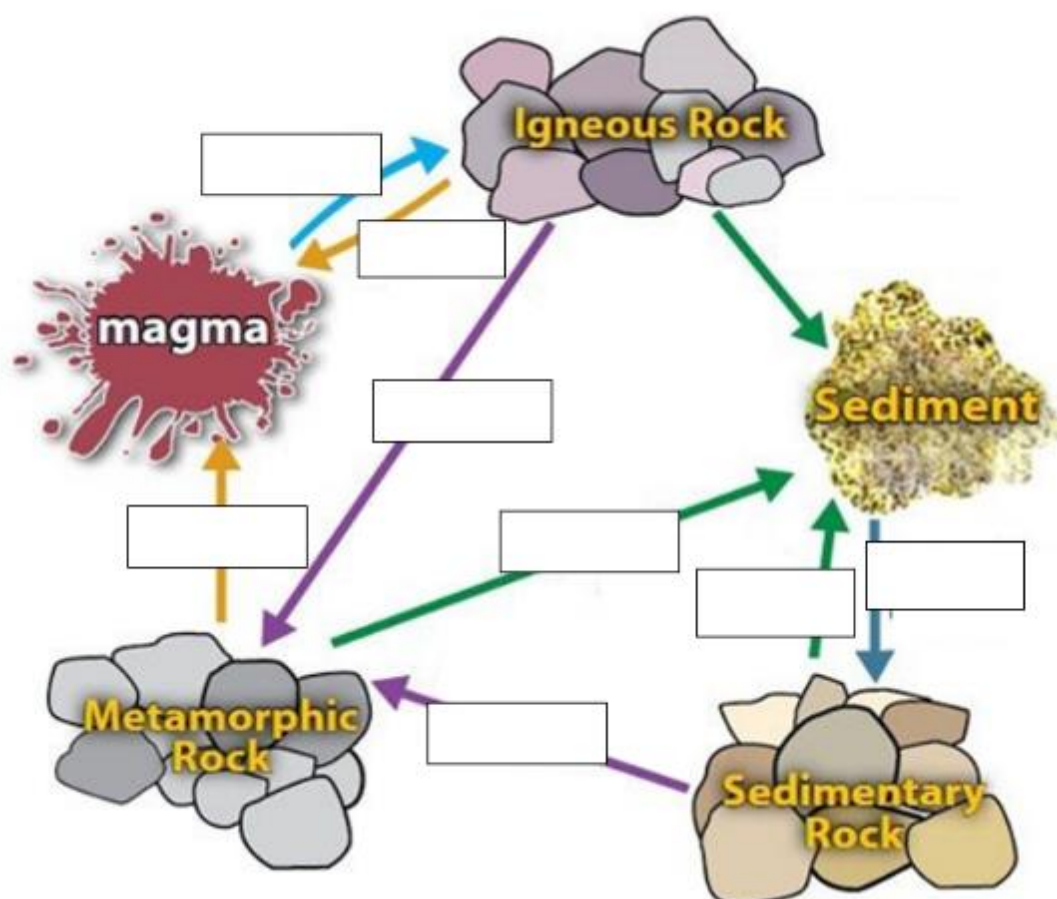
¹¹ Worksheet created for purposes of this project, assembled with images from the internet

Appendix 11¹²: Session 2-Activity 5-Worksheet - “Rock cycle”

Session 2-Activity 5

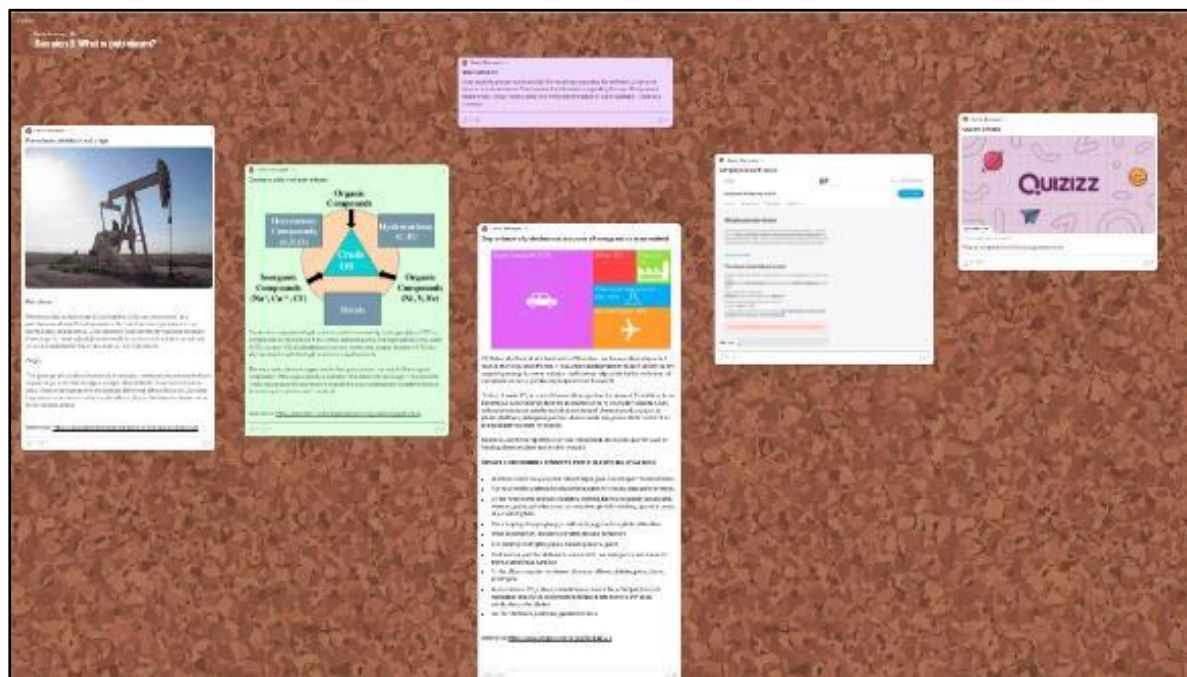
An incomplete diagram of the rock cycle shown below. Use the words in chart to correctly complete the diagram

Cooling	Melting	Heat and Pressure	Weathering and erosion	Compaction and cementation
---------	---------	-------------------	------------------------	----------------------------



¹² Worksheet created for purposes of this project, image adapted from the internet

Appendix 12¹³: Session 3-Padlet-Out of class activities



Appendix 13¹⁴: Session 3-Activity 2-Main uses of present simple

Menu

Resources for learning English

Overview
English Grammar
English Usage
English test

Simple present tense

The simple present tense is one of several forms of present tense in English. It is used to describe **habits, unchanging situations, general truths, and fixed arrangements**. The simple present tense is simple to form. Just use the base form of the verb: (I take, you take, we take, they take) The 3rd person singular takes an -s at the end. (he takes, she takes)

Test your knowledge

The simple present tense is used:

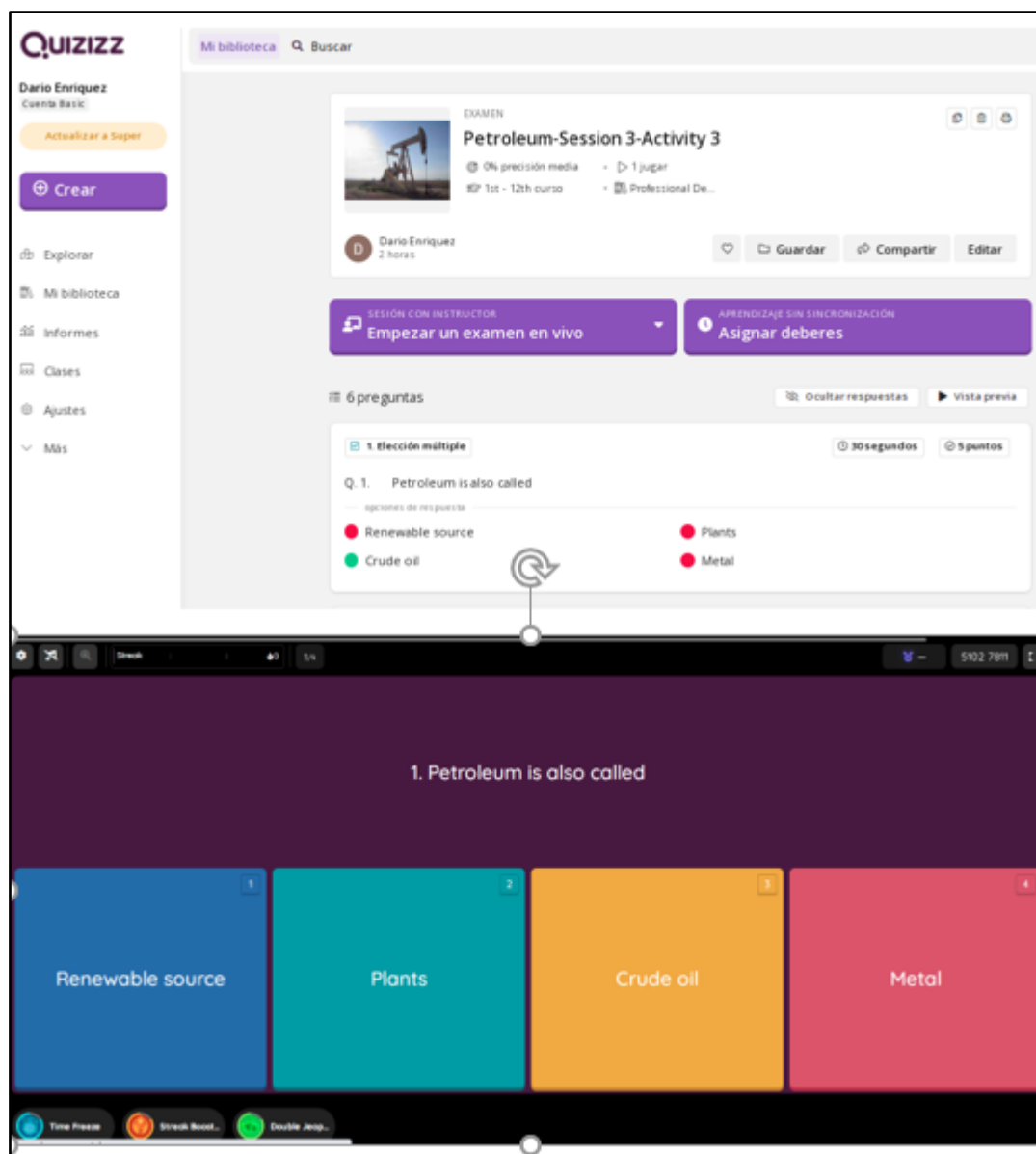
To express habits, general truths, repeated actions or unchanging situations, emotions and wishes:

I smoke (habit); **I work in London** (unchanging situation); **London is a large city** (general truth)

¹³ Padlet wall created for the present didactic purpose. Access with the hyperlink in the appendix title

¹⁴ Simple present tense (Education First, n.d.). Access with the hyperlink in the appendix title.

Appendix 14¹⁵: Session 3-Activity 3- Questionnaire



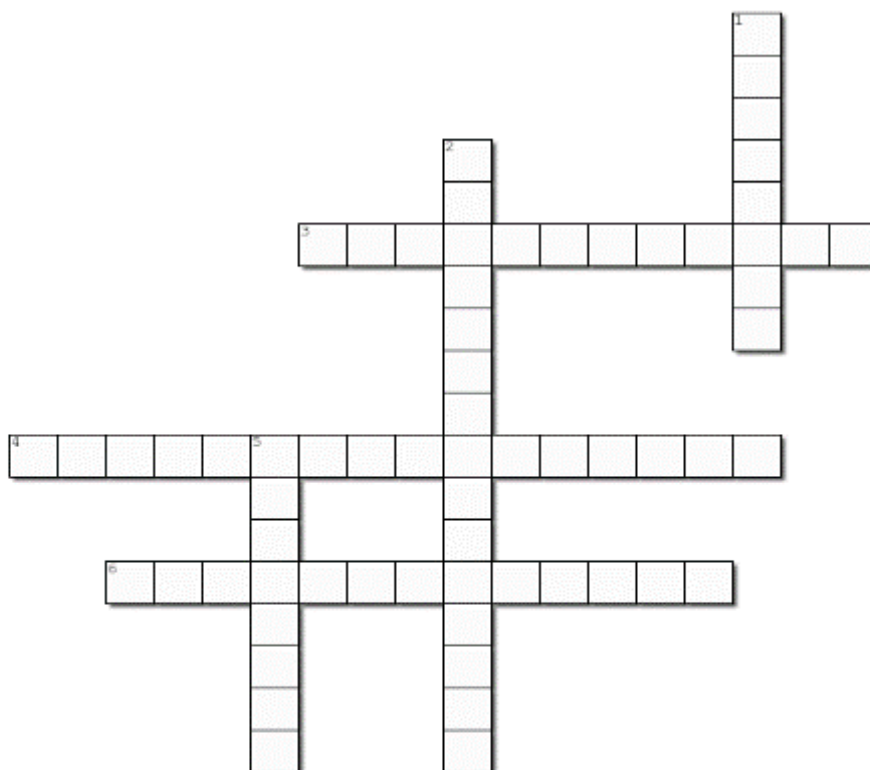
¹⁵ Questionnaire created on Quizizz for purposes of this didactic unit. Access with the hyperlink in the appendix title.

Appendix 15¹⁶: Session 3-Activity 4-Crossword puzzle

Session 3-Activity 4

Petroleum-Session 3-Activity 4

Complete the crossword puzzle below



Created using the Crossword Maker on TheTeachersCorner.net

Across

- 3. Petroleum is composed mainly of
- 4. Petroleum's refined products are used to manufacture almost all
- 6. The main use of petroleum around the world is

Down

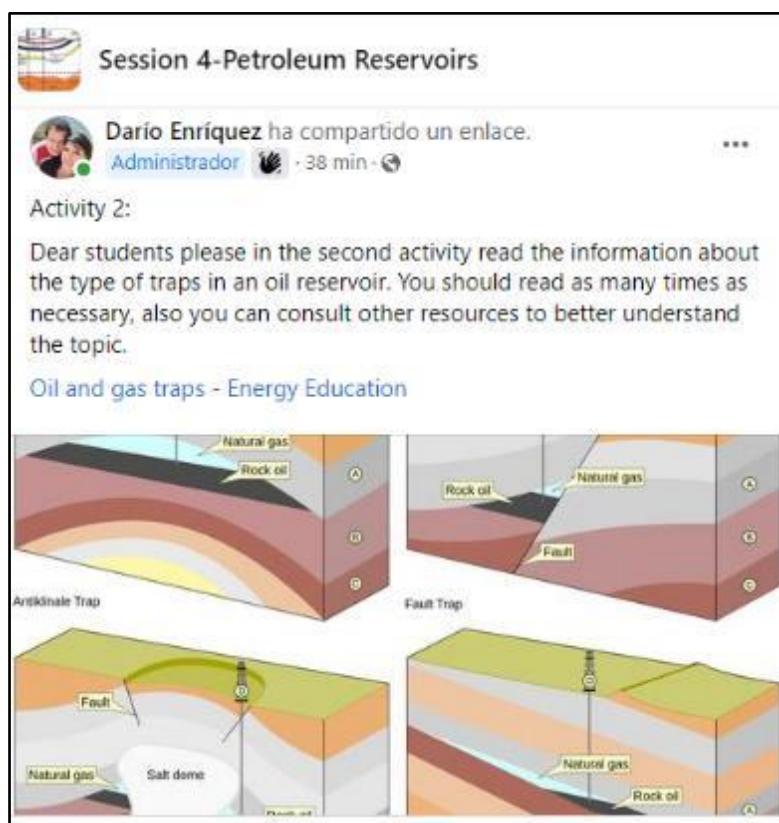
- 1. The geological conditions that would eventually create petroleum formed years ago
- 2. Petroleum was formed from the remains of
- 5. Petroleum is also called

Sentences

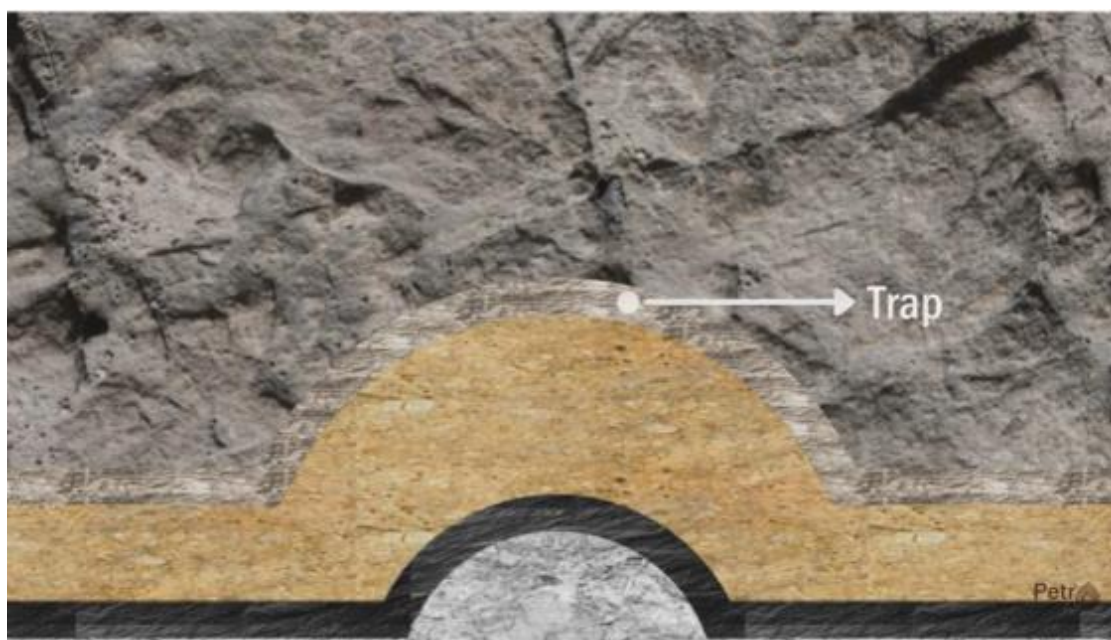
- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____
- 6. _____

¹⁶ Worksheet created on theteacherscorner.net for purposes of this project

Appendix 16¹⁷: Session 4-Facebook group “Session 4-Petroleum Reservoirs”



Appendix 17¹⁸: Session 4-Activity 2- Video- “Petroleum reservoirs”



¹⁷ Facebook group created for the present didactic proposal Access with the hyperlink in the appendix title.

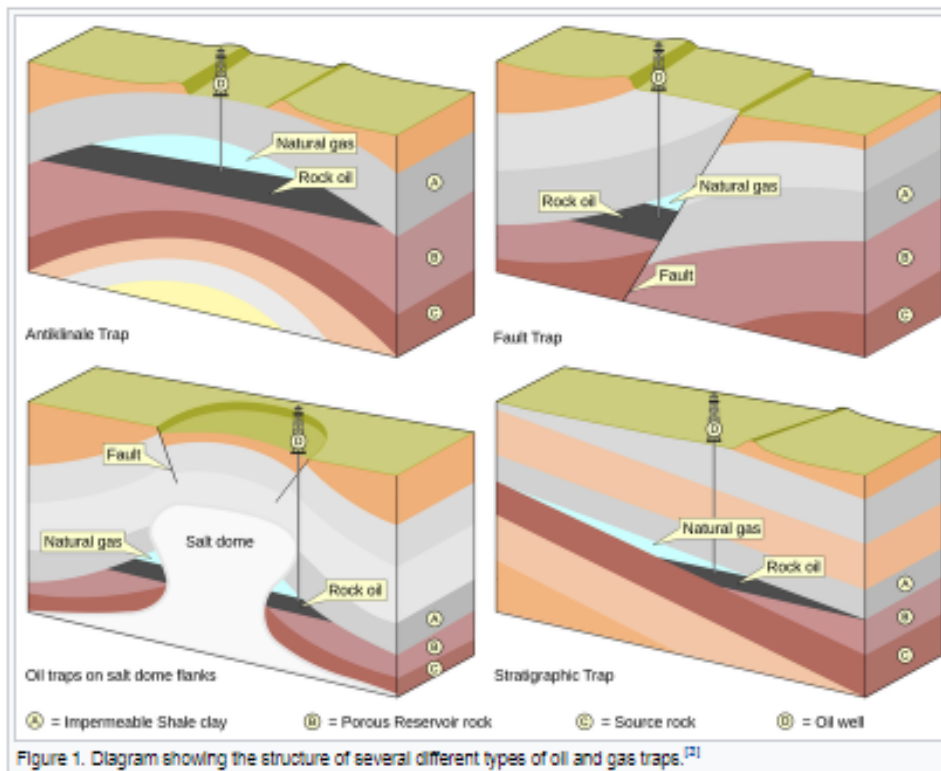
¹⁸ Video-Petroleum reservoirs (Petro Learn, 2020). Access with the hyperlink in the appendix title.

Appendix 18¹⁹: Session 4-Activity 3-Reading- “Types of oil traps”

Oil and gas traps

Oil and gas traps, sometimes referred to as **petroleum traps** are below ground traps where a permeable **reservoir rock** is covered by some low permeability **cap rock**. This combination of rock can take several forms, but they all prevent the upward migration of **oil** and **natural gas** up through the reservoir rock. Once oil and natural gas are in the reservoir rock, they continue to migrate upwards through the pore spaces of the rock until blocked by some sort of seal with a cap rock.^[1] The low permeability cap rocks are generally **shale** or low permeability sandstones and carbonate rocks.^[2]

There are two major categories of traps, and are classified based on how the petroleum accumulates. The two main groups are **structural traps** and **stratigraphic traps**.^[2] For a more in-depth description of the overall structure of oil and gas deposits, see **oil and gas reservoir**.



Structural Traps

These traps are types that form as a result of some structural deformation - a bend or dip - of rock. These traps take on several forms and shapes as a result of different types of deformation. This deformation tends to take place over tens or hundreds of millions of years after sediment that creates the seals and rocks themselves have been deposited.^[1] In these traps, the pores of the reservoir rock contain oil, gas, or water. Gas moves up in the trap as it is the lightest, with oil below it and water at the bottom. The cap rock prevents upward migration of these fluids.

¹⁹ Types of oil traps (Energy Education, n.d.) Access with the hyperlink in the appendix title.

Appendix 19²⁰: Session4-Activity 3-Flash cards

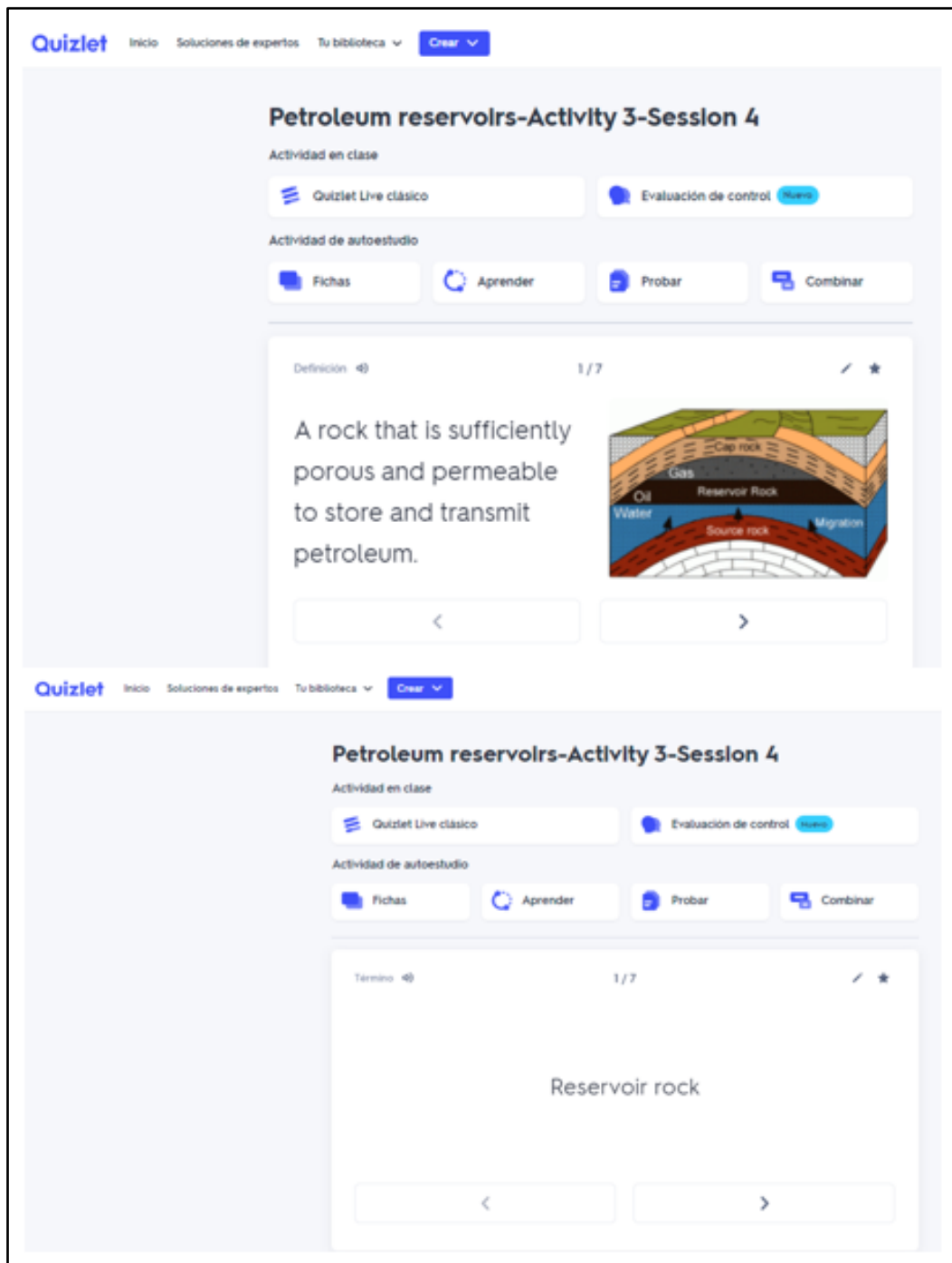


Figure: Session 4-Activity 3-Flash cards

²⁰ Flash cards created on Quizlet for purposes of this didactic unit. Access with the hyperlink in the appendix title.

Appendix 20²¹: Session 4- Activity 4-Words to describe the steps in a process

[Home](#) [Our Services](#) [Videos](#) [Podcast](#) [Blog](#) [About](#) [Contact](#)

Melanie Johnson 

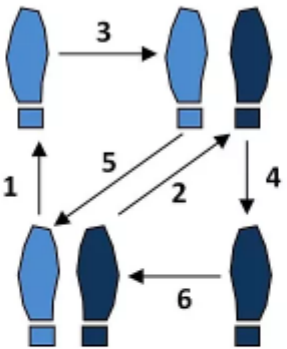
HELPFUL WORDS AND PHRASES TO ORDER STEPS IN A PROCESS

Updated: Sep 15, 2019

Are you taking IELTS Writing soon? Are you nervous about getting a process diagram to write about on Task 1? Here's some help!

Some IELTS Writing exams require you to write about a process in Task 1.

Basic Box



I don't know about you, but when I hear the word "process", or it's plural "processes", I get nervous! It sounds hard. I mean the word "processes" just seems fancy!

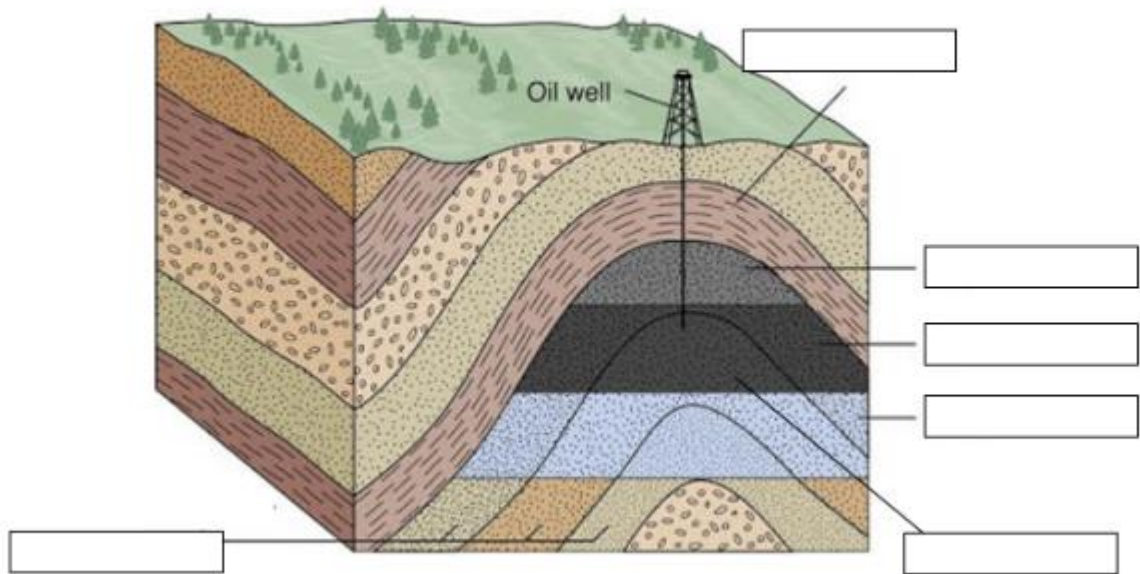
But the truth is - we use processes every day! Whether it is making a cup of tea, cooking dinner or going to a movie, most activities can be described as a process.

Today, we are going to look at some vocabulary to help you write about processes!

²¹ Words to describe the steps in a process (Johnson, 2019). Access with the hyperlink in the appendix title.

Session 4-Activity 5

Labeling the different parts of the petroleum reservoir



Develop the following activities

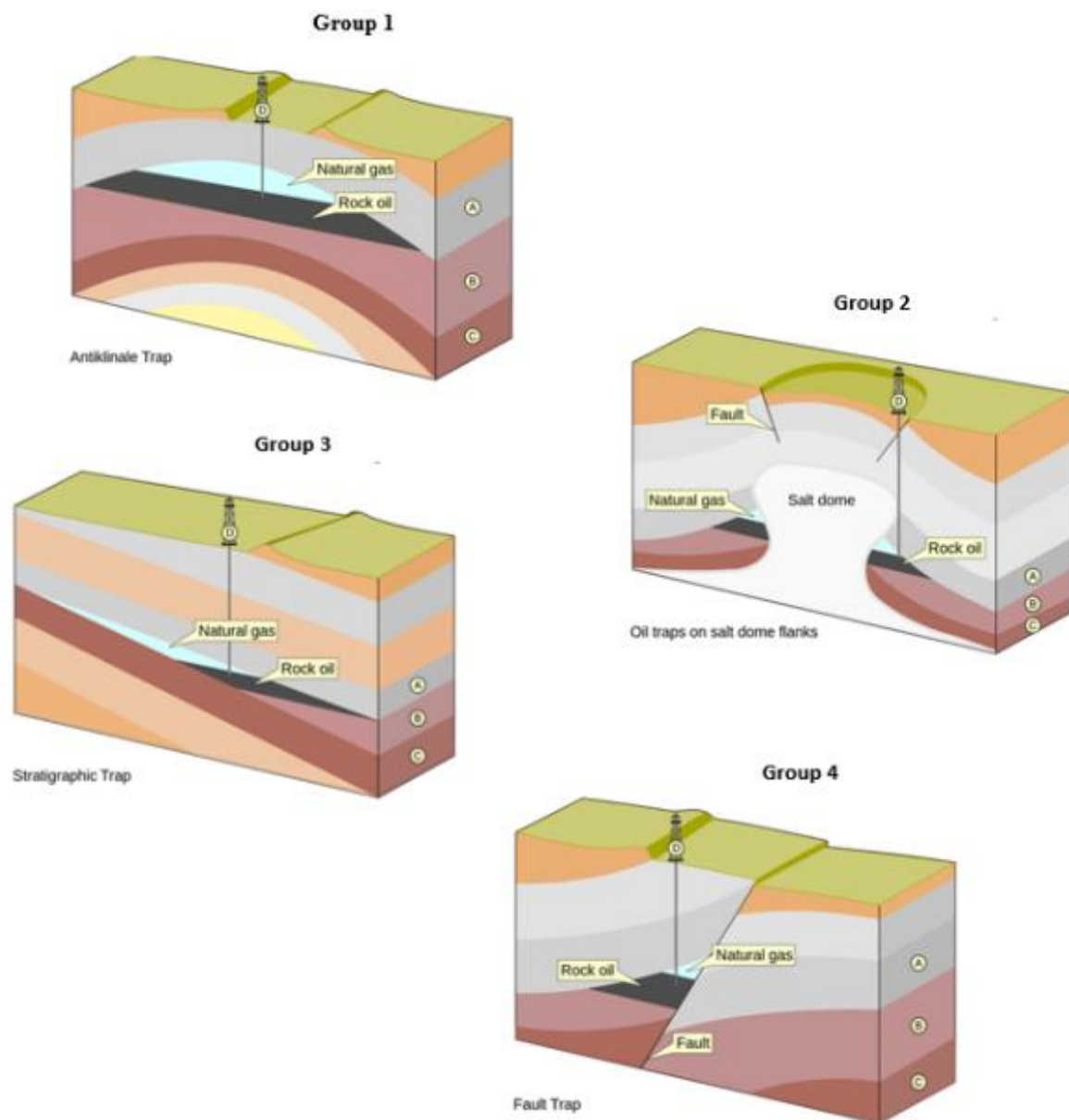
- According to the types of rocks previously studied, what type of rock can be a source rock, reservoir rock, and seal (trap) rock?
- Explain why in an oil field the substances water, petroleum, and petroleum gas have the same location.
- Outline the process of petroleum migration, using words to describe the processes reviewed at home.

²² Worksheet created for purposes of this project; image adapted from the internet.

Appendix 22²³: Session 4-Activity 6-Types of traps

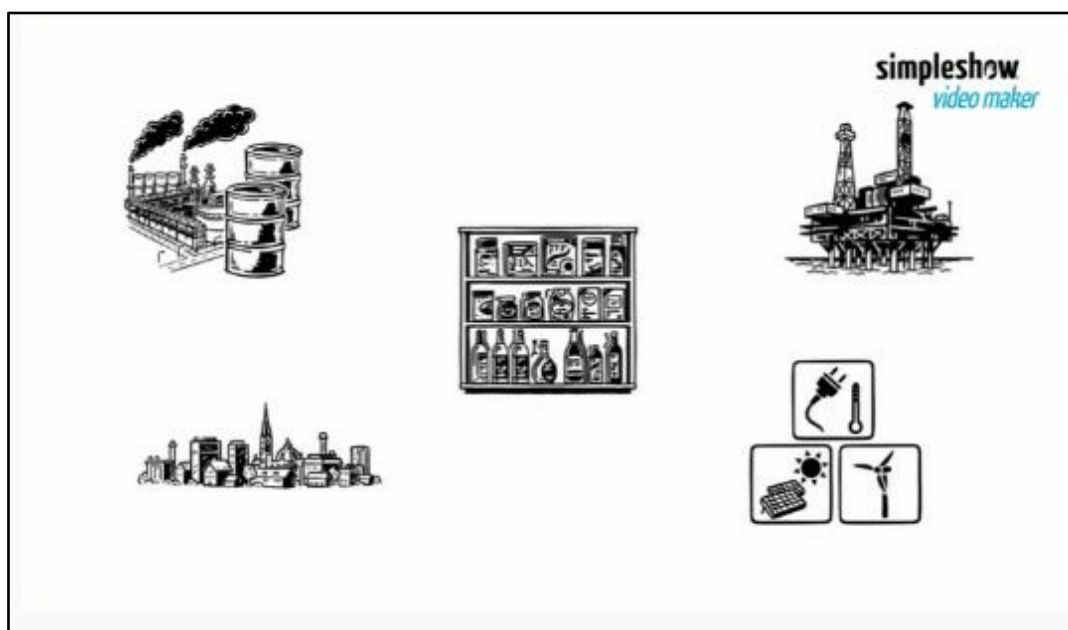
Session 4-Activity 6

Draw a diagram of the corresponding trap type for each group using the materials provided by the teacher. Also identify the main parts of a reservoir. Explain the work process and the main parts of the reservoir according to the type of trap assigned.

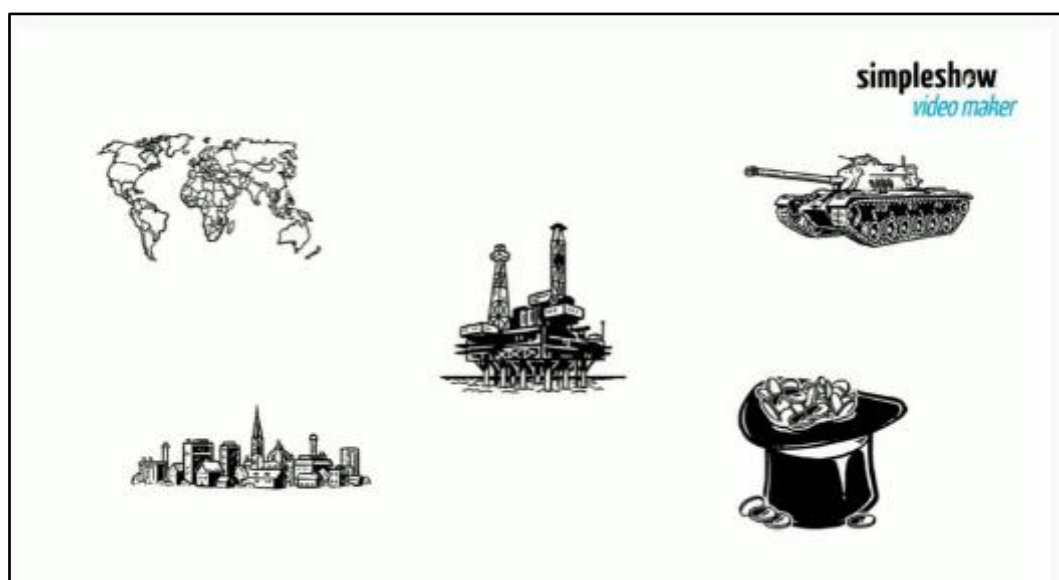


²³ Worksheet created for purposes of this project; image from Energy Education (n.d)

Appendix 23²⁴: Session 5-pre-task- Video- “Advantages of oil extraction”



Appendix 24²⁵: Session 5-pre-task- Video- “Disadvantages of oil extraction”



²⁴ Video-Advantages of oil extraction (Trickster brothers, 2021). Access with the hyperlink in the appendix title

²⁵ Video-Disadvantages of oil extraction (Trickster brothers, 2021b) Access with the hyperlink in the appendix title

Appendix 25²⁶: Session 5-Words and expressions for discussion or debate

EXPRESSIONS FOR DISCUSSION AND DEBATE

Asking someone for their opinion about a topic

Yes/No Questions

- *Do you believe in ...?*
- *Do you believe in ...?*
- *Do you think we should ...?*
- *Do you think everybody should ...?*
- *Do you think that...?*
- *Would you consider ...?*
- *Would you ever consider ...?*

OR Questions

- *Are you for or against ...?*
- *Would you prefer...?*
- *Would you rather ...?*
- *What is better: - ... or ...?*

WH Questions

- *What do you think of ...?*
- *What do you think of ...?*
- *What do you think of package holidays?*
- *What do you think is the problem between ... and ...?*
- *What do you think is the problem with ...?*
- *What do you think are the causes of ...?*
- *What are the advantages and disadvantages...?*

Negative Yes/No Questions

- *Don't they...?*
- *Don't you think it's better to ...?*
- *Don't you understand that ...?*
- *Don't you see that ...?*
- *Can't you see that ...?*
- *Wouldn't it be better to ...?*
- *Wouldn't it be wiser to ...?*
- *Wouldn't you agree that ...?*
- *Why shouldn't they?*

Delaying Strategies

- *I can't answer that directly.*
- *I'll need time to think about that.*
- *That's a very interesting question, because...*

- *That's a difficult question to answer, because...*
- *That's a tough question to answer, because...*
- *To be honest, that's a difficult question, because ...*
- *That's a very good question. The reality is that ...*
- *What do you mean by that?*
- *What do you mean by ...?*
- *Well, it depends on what you mean ...*
- *Well, if you ask me, it all depends on your circumstances...*
- *Well....*

Asking someone information

- *I'd like to know*
- *I'm interested in*
- *Could you tell me...?*
- *Could I ask about ...?*
- *Do you know if...?*
- *Do you know what....is?*
- *Do you happen to know whether or not...?*
- *Do you happen to know what.... Is?*

Presenting arguments

Presenting the most important point

- *The main thing is...*
- *The most important thing is...*
- *Primarily*
- *Most importantly,*

Presenting a number of arguments

- *First of all, ...*
- *Firstly, ...*
- *Well, firstly ...*
- *To begin with, ...*
- *I'd start by ...*
- *For a start, ...*
- *There're two points here. Firstly, ... Secondly, ...*
- *There are two problems here.... Moreover*
- *You also have to consider*

²⁶ Expressions for discussion and debate retrieved from teflsites.com. Access with the hyperlink in the appendix title

Appendix 26²⁷: Session 6-Reading- Fragment of: Oiled forests-the case of Ecuador

Session 6-Pre task

Read the text carefully, then using a dictionary on the web look up the definitions of 5 words that you do not understand. Finally, in your own words write down the main idea of the text.

Oil in the Ecuadorian Amazon

"In Ecuador, current exploration campaigns are concentrated in the north of the Amazon region, especially at the foothills of the 'Cordillera Oriental'. This area is the ancestral territory of the Cofan, Siona, Secoya and Waorani indigenous people. It is also the territory of the Napo-Kichwas and several Shuar families that settled there during the rubber boom. There are attempts to bring oil exploitation also to the South of the Amazon in the next round of oil concessions in 2013.

Before oil activities arrived to this part of the Amazon the main characteristics of the area were:

1. Hunting, fishing and gathering.
2. Itinerant agriculture that allowed the indigenous peoples to conserve and create productive soils in zones where the previous conditions of clay soils did not allow agricultural practices; and generate and preserve biodiversity in these tropical forests.
3. Cultural, religious and recreational activities through land use regulation and respect of the territory.

The first economic activities directed to external markets were rubber and timber. Then along with oil expansion, new protected areas were created such as the Cuyabeno Wildlife Reserve, the Yasuní National Park, the Cayambe Coca Ecological Reserve, the Limoncocha Biological Reserve" World Rainforest Movement (2013).

Word

Definition

Main idea

²⁷ Worksheet created for the present didactic proposal. Fragment retrieved from World Rainforest Movement (2013)

Appendix 27²⁸: Session 7- pre-task-Video- Renewable Energies



Appendix 28²⁹: Session 7-Words for compare and contrast

Key Words for Compare and Contrast

The following words signal that two pieces are being compared:

also	just as
as well as	like
both	most important
comparatively	similarly
in the same way	the same as
in addition	too

The following words signal that two pieces are being contrasted:

although	more than
besides	nevertheless
but	notwithstanding
compared with	on the other hand
conversely	otherwise
differ	rather than
even though	regardless
furthermore	though
however	unless
in contrast to	unlike
instead	while
less than	yet

²⁸ Video- Renewable Energies (National Geographic, 2017) Access with the hyperlink in the appendix title

²⁹ Words for compare and contrast. Retrieved from resources.corwin.com Access with the hyperlink in the appendix title