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**THE IMPACT OF PROJECT-BASED
METHODOLOGY ON VOCABULARY
LEARNING IN EFL: A QUASI-
EXPERIMENTAL STUDY IN A
VALENCIAN SCHOOL**

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ABSTRACT

The aim of this dissertation is to explore the impact of interdisciplinary projects in English as a Foreign Language (henceforth EFL) classes, particularly on secondary students' vocabulary gaining and on their motivation to learn. To accomplish this aim, a mixed method study was carried out. On the one hand, a quasi-experimental research was launched in four groups of English in 1st ESO in a Valencian school. A pre-post test design was used to investigate whether project-based methodology could improve vocabulary gaining in EFL. On the other, qualitative instruments were designed to gather information on the students' perceptions and opinions about the methodology employed and their motivation. Findings indicate that there is vocabulary gaining in both the experimental and the control groups, but student's motivation is higher in the experimental ones.

KEYWORDS

Project-based methodology, project-based learning, interdisciplinary projects, Teaching English as a foreign language.

RESUMEN

El objetivo de este trabajo es explorar el impacto de los proyectos interdisciplinarios en las clases de inglés como lengua extranjera (en adelante ILE), particularmente en el aprendizaje de vocabulario de los estudiantes de secundaria y en su motivación para aprender. Para lograr este objetivo, se ha llevado a cabo un estudio de método mixto. Por un lado, se ha puesto en marcha una investigación cuasi-experimental en cuatro grupos de inglés en 1º de ESO en un colegio valenciano. Se ha utilizado un diseño de prueba previa y posterior para investigar si la metodología basada en proyectos podría mejorar el aprendizaje de vocabulario en ILE. Por otro lado, se han diseñado instrumentos cualitativos para recopilar información sobre las percepciones y opiniones de los estudiantes sobre la metodología empleada. Los resultados indican que los estudiantes aprenden vocabulario tanto en los grupos experimentales como en los de control, pero su motivación para hacerlo es mayor en los experimentales.

PALABRAS CLAVE

Metodología basada en proyectos, aprendizaje basado en proyectos, proyectos interdisciplinarios, Enseñanza del inglés como lengua extranjera.

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1. INTRODUCTION

The American pedagogue John Dewey once said, "If we teach today as we taught yesterday, we rob our children of tomorrow". This quote helps us to reflect about the teaching style that we have in our lessons and the need to adapt this to the current reality. Are we teaching our pupils as yesterday? Are we robbing our student's tomorrow?

The present research deals with the impact that the project-based learning methodology, an alternative to the teaching of yesterday, can have on the vocabulary acquisition in the English as a foreign language lessons. This investigation, which involves the implementation of a designed multidisciplinary project in two of the four groups participating, will be carried out in a Valencian school with a total of 83 students from 1st Secondary school.

It is popularly accepted that the Project-based methodology has positive effects on the learning process and there is scientific research that has validated this hypothesis (Sánchez, n. d.). Some research has made clear that if the project-based learning methodology is employed properly and it is compared to the traditional way, the projects contribute to the increase of the content retention in the long term, they help students to obtain equal or even better outcomes in the assessment processes, they improve the collaboration and problem resolution capacities, as well as the students' attitude towards the learning process (cited in Vega, 2012).

If attention with more details is paid to some of this research, Willard and Duffrin (2003) pointed out that the project-based methodology improves the pupils' satisfaction with the learning process and prepares better the students to face the real situations that they will find in the labour market. Restrepo (2005) also explained that the project-based learning methodology activates the previous knowledge, the interest towards the field of study and it boosts the autonomy and the problem-solving capacities. This author also stated that this methodology develops the critical thinking and the metacognition. In a similar way, Martínez, Herrero, González and Dominguez (2007) emphasized that pupils that work by means of this methodology improve their group work capacity, detect mistakes earlier, show more effort, motivation and interest and they learn to deliver oral expositions and presentations. These made clear that students improve their insight of the concepts and suffer less stress in the exam periods. Furthermore, in a project-based classroom, the learners find easier the subject as well as funnier and more interesting and they establish a better relationship with the teacher and their classmates. According to Mioduser &

Betzer (2007), the projects help to improve the students' marks, develop autonomy and promote that students learn to have an open mind and remember what they have learnt during a longer period of time than in the traditional system. Some years later, De la Calle (2013) made clear the transformative character that projects can have. These projects do not remain in the classroom, but instead of that, they look for external collaborators such as families, teachers and students from different classes, outsiders and institutions that can help and become interested in the project. (p. 9) Bermejo and Ballesteros (2014) believed that the project-based methodology approaches pupils to the world of investigation. With the project-based learning, the content relationship is established in a natural way since students are investigating on the practice.

1.1 Objectives and hypotheses

General objective

- 1- To explore the advantages and drawbacks of using the Project-based Learning methodology for teaching English as a foreign language.

Specific objectives

- 1- To design an interdisciplinary project in English language and to implement it with students of 1st ESO in a Valencian school.
- 2- To carry out a quasi-experimental research with two treatment groups and two control groups.
- 3- To test students' vocabulary learning progress in the experimental groups before and after the implementation of the interdisciplinary project.
- 4- To test students' vocabulary learning progress in the control groups.
- 5- To compare the results of the experimental groups and the control groups.
- 6- To analyse the experimental group students' motivation and interest during their learning process.

Hypotheses

This dissertation aims at testing the following hypotheses:

- H1: The use of interdisciplinary projects in TEFL lessons improves students' range of vocabulary.
- H0: There is not a meaningful statistical relationship between project-based methodology and vocabulary gaining.

-H1: Students' motivation increases with the use of interdisciplinary projects in TEFL lessons.

-H0: There is not a meaningful statistical relationship between project-based methodology and motivation.

1.2 Justification and relevance

Current societies are far from the ones that used to be some decades ago. The development of technology and the fact of living in the communication era affect the students' lifestyles and their way of learning. Pupils have instant access to the information in just one click. Browsers such as Google are part of their day to day and these give immediate answers to their questions. Focusing on the role of English as a foreign language, some years ago the input of this language was mainly limited to the one received during the language sessions. Now, English surrounds them. English is found in the gadgets that pupils use in their daily life, in the online games they play to or in the online platforms that they use to watch series or films.

As a consequence of that, there is a need of adapting the teaching sessions and syllabus to the current reality. Master classes have no sense anymore. Teachers are no longer the only transmitters of information. Their roles have changed, or at least, they should have changed.

Nowadays, teachers need to become the facilitators of the learning situations and it is essential to involve students in the teaching learning process and learn by doing.

Vergara, a specialist in innovative education and active methodologies, explains in one of his publications (Vergara, 2016) that we had never had such a great power in the construction of our own learning thanks to the development of the new technologies. According to this author, the Project-based learning methodology is the strategy that gives answer to the new framework in education. This methodology is compromised with the real formative needs that students have, it connects with the learners' interests, it does not exclude the cooperative learning, it allows the exchange of information or the connection, as well as it enhances the ability of commitment that pupils should have with the context in which they live. This particular research tries to discover if the project-based methodology is beneficial for the development of the lessons of English as a foreign language, and to be more specific if it allows the vocabulary gaining and if it affects the pupils' motivation. Although there is quite research on the project-based learning methodology, there is not much that deals with it as a means for teaching English as a

foreign language- Some examples are Baş (2011), Lam (2011), Marwan (2015) or Poonpon (2017).

1.3 Sections

This dissertation is divided into different chapters and sections. Once the introduction to the research has been done with the explanation of the objectives and the different hypotheses, as well as the justification and relevance of the topic, the literature review will be found. On it, information about what the project-based learning methodology is and what it consist in and its origins will be given. After that, the key aspects of the research will be provided. In the section named “methodology”, data about the research design, the participants and the school context in which the experiment will take place is given. The instruments employed for collecting the data and the data analysis will be also explained in detail. Following this, the results of the research will be shown. These outcome will be classified according to the different instruments used to collect them and regarding the type of group, treatment or control.

A further discussion of these results and the lines for future research will be given too. To sum up, the conclusions of the research will be found and at the end of the dissertation the references and the annexes will be shown.

2. LITERATURE REVIEW

2.1 Project-based learning methodology

According to Trujillo (2016), a lecturer from the university of Granada and expert in the project-based learning methodology, in this approach the student's role does not just consist in listening to the teacher's explanations but instead of that, the student participates actively in the cognitive processes of higher rank. Pupils recognise problems, prioritize, collect information, understand and interpret data, establish logical relationships, draw conclusions or revise critically the preconceptions and believes. Focusing on the teachers' role, this goes beyond the explanation of the content. Their main goal is to provide pupils with a learning situation that allows them the possibility of developing the project. This consists in looking for materials and sources of information, control the group work, value the development of the project, solve difficulties, control the rhythm, enhance the success and assess the result.

Considering this, the project-based methodology is part of what Dale names the active learning. According to him, there are two types of learning, the active and the passive. While the active teaches to evaluate, create, design and analyse, the passive teaches to

practise, apply, demonstrate, explain, list, describe and define. Besides that, it is important to point out that according to this author's Cone of Experience¹, people are capable of remembering a 90% of what they do, a 70% of what they say and write, a 50% of what they see and hear, a 30% of what they see, a 20% what they hear, and a 10% of what they read (Milia, n.d, p.1).

The eight essential elements that the project-based learning methodology needs to consider are the following ones (Trujillo, 2016, p.13-15):

1. The content of the project needs to be meaningful. The teachers have to plan the project by focusing on the learning standards, they must reflect what is essential in the curriculum and pupils have to find it significant, real and close to their surrounding and interests.
2. The need for knowing has to be generated among pupils. The starting of the project must be shocking and it needs to raise questions in the students towards the teacher. This fact will help to activate pupils and generate the need to know in them.
3. There must be a question that leads the investigation. This has to be a provocative question, with an open answer, complex and connected to what the teacher wants the students to learn.
4. Students need to have a voice and a vote. Once the interest is captured, the teacher offers the tasks to be done. It is important that pupils can choose during the project.
5. 21st century competences. After the presentation of the project, the collaborative work appears. In groups made of 3 or 4 members, these identify tasks and responsibilities and these are assigned. The 21st project is reflected in tools from the 21st century. Pupils need to know how to elaborate videos, expose presentations, reflect about ideas and processes in blogs... A good project should give students the possibility of practising and therefore learning the competences requested for these times: expression of the critical thinking, effective communication, use of technologies and work in groups.
6. Investigation leads to innovation. With the trigger of the project and the discussion after it, the teacher collects questions that help to define the driving

¹“Dale's Cone of Experience is a model that incorporates several theories related to instructional design and learning processes” (Milia, n.d, p.1).

question. The different groups must work on those questions by means of books, webs, documents, pieces of news... Pupils must follow a thread that leads them to more question, to look for new resources and to conclusions and ideas about how to solve the problem. It is very important to create an atmosphere in class that encourages students to make questions, make assumptions and be opened to new perspectives.

7. Assessment, feedback and revision must be present in the project. The teacher needs to be behind the work, supervising drafts, plans, checking their references and monitoring the development. The assessment during the project is essential. This may help learners to realize that the quality of the work does not come from a first attempt. In life, our work is being continuously revised. Critical construction among students needs to be promoted.

8. Presenting the product in front of an audience. The results of the project have to be shown to a real audience with the aim of making pupils reflect about their work once it is finished, about what they will do next and what they have learnt. Also, pupils will feel proud of the good work.

2.2 Origins of the project-based learning methodology

The Project-based learning methodology has its origins in the constructivist ideologies. These doctrines argue that one ideology is influenced by different psychological, philosophical and educative tendencies. Among the funders of this ideology, it is possible to find pedagogues, psychologists or teachers such Piaget, Ausubel, Bruner, Vygotsky or Dewey. One of the aspects than can summarise the correct idea of the constructivist approach is that education demands experimentation and resolution of problems. In education, mistakes are not contrary to the learning process, in fact they are the base of it (Pérez De Albéniz Iturriaga et al., 2021)

Even though he did not consider himself the creator of this approach, Kilpatrick is identified as the inventor of the Project-based learning methodology. The American described and determined the method for the first time in one of his essays, “The project method. The Use of the Purposeful Act in the Educative Process” in 1918. This fact has enhanced its spread to the rest of the world and the current state of this methodology (Pérez De Albéniz Iturriaga et al., 2021). According to López (2018), this educator believed that during the learning process, pupils had to experiment an intrinsic motivation rather than an extrinsic one. For him, a funny learning needs to be promoted and that

helps to boost the pupils' interest towards the learning process. In Kilpatrick's classes, pupils worked on different learning projects in which tasks implied social interaction. This experiment had good outcomes. The American believed that the work by means of projects was an optimal way of approaching students to the real world in a more practical way and benefiting the students' interest and curiosity. (Pérez De Albéniz Iturriaga et al., 2021). Kilpatrick described and delimited the project-based methodology not only as a way of organizing the teaching-learning process, instead of that, this has the objective of promoting autonomy and responsibility and practising the social and democratic behaviour (cited in Torrego Egido & Martínez Scott, 2018),

According to Torrego and Martínez (2018), in January 1934, a Spanish teacher called Bayón published an article called "Fundamentos del Método de Proyectos" in the magazine "Escuelas de España". In this article, the author used mainly Dewey's theory to explain this method and define it. According to him, a project was a controversial act lead to its complete implementation in its natural setting. Some years before, Sainz, another Spanish revolutionary educator, had published a book in which he described the essence of this approach too. For him, working by means of projects was the exact interpretation of working by doing. Sainz reflected about why not including in the classes a similar plan of doing to the one developed in the street, in the society.

3. METHODOLOGY

3.1 Research design

The present investigation is a quasi-experimental research with four groups, two experimental and two control groups. The independent variable is the use of the project-based learning methodology in the treatment groups to analyse the cause-effect relationship with the aim of evaluating the efficiency of multidisciplinary projects in the EFL students' vocabulary gaining. Students are not randomly assigned into the four groups. This distribution is consequence of the pre-existing group classes in the school where the investigation will take place.

The total number of participants is 83 pupils. In the experimental groups, it is possible to find 41 learners. Among them, 21 participants are part of the class 1ESOA and 20 are from the group 1ESOC. These two classes will work on the unit by means of an interdisciplinary project named "Journey to the Centre of the Earth"². As we will see in

² Annex 1: Project "Journey to the Centre of the Earth".

detail in section 3.4 Instruments, the project has Jules Verne's story as the connecting thread and it includes other fields of study such as science, geography or maths. The remaining 42 participants, 21 from 1ESOB and 21 from 1ESOD, will be the two control groups and these will not participate in the project. On the contrary, 1ESOB and 1ESOD will work on the activities provided by the reading book used by all the groups- experimental and control- adapted and published by the editorial Oxford (Verne J, 2006) and the textbook used as the book of reference throughout the whole course, New English in Use 1 by Burlington books (Linda M. and C. Addison, 2019).

3.2 Participants

The participants of the study are 83 students from 1st of Secondary school who are learning English as a foreign language in a Valencian school named "Florida Secundària". Concerning the gender, among the participants it is possible to find 43 boys and 40 girls. All pupils except from three were born in 2008, so they are 12 or 13 years old and it is their first academic year in the high school after having completed their studies in Primary education. There are three pupils who repeated one school year in primary education and they were born in 2007.

Regarding the academic results in the subject of English language obtained by the different groups during the first two terms of 1ESO, it is crucial to point out that during the present academic course, 2020-2021, all the groups have acquired a pass rate higher than a 70%. In more detail, in the treatment groups, in 1ESOA a 90.48% and a 95.24% of students passed the English subject in the first and the second term respectively, being the group with better marks. In 1ESOC, the pass rate was 78.26% in the first trimester and 95.65% in the second one. Concerning the control groups, in 1ESOB the pass rate was 72.73% in the first term and 86.36% in the second. Eventually, in 1ESOD a 78.26% of the pupils passed the subject in the first trimester and a 95.65% in the second one.

	EXPERIMENTAL GROUPS		CONTROL GROUPS	
	1ESOA	1ESOC	1ESOB	1ESOD
PASS RATE 1 ST TERM	90.48%	78.26%	72.73%	78.26%
PASS RATE 2 ND TERM	95.24%	95.65%	86.36%	95.65%

Table 1. Results of experimental and control groups in the first and second term

3.3 School context

Focusing on the school where the educational intervention is going to take place, Florida Secundària is an institution that is a state-funded cooperative with 40 years of experience. In this school, it is possible to study from 1st of Secondary school to 2nd of Bachillerato. Besides that, this education group offers the service of university studies and vocational training. The vast majority of students from the school come from middle income families who are living in the town where it is located, Catarroja, or in the surrounding area.

Catarroja is a city near Valencia with a population around 28.600 inhabitants. Traditionally, Catarroja has been a town for fishers and farmers. Regarding its industry, there are important factories in the furniture sector and fabric sector. It is necessary to point out that Catarroja is a dormitory town for many people who work in the capital city of the province, Valencia.

3.4 Instruments

One of the main instruments of the investigation is the multidisciplinary project³ designed and used for the educational intervention with the treatment groups. The content of the multidisciplinary project has been based on the Spanish curriculum for 1st of Secondary school (LOMCE) and the Decree 51/2018, on 27th April that modifies the Decree 87/2015 and establishes the curriculum from Secondary school and baccalaureate in the Valencian community. This is called “Journey to the Centre of the Earth” and it has Jules Verne’s story as the guiding thread. By means of this project and during eight sessions, students will not only work on linguistic aspects such as grammatical features like the Present Simple and the Present Continuous or vocabulary dealing with the story but these will also work on content from other fields of study like combined operations from Maths, the localization of European countries from Geography or the importance of water in humans’ life or key aspects about the volcanoes from Science. The final product of the project will involve designing a comic with an alternative ending to the story and explain it before an audience. “Journey to the Centre of the Earth” is composed of a dossier with the different activities, a glossary and a learning diary. The glossary⁴ will help pupils to consolidate the acquisition of the new vocabulary terms found in Verne’s story. Learners will have to identify the new words, discover the meaning and contextualise them in a

³Annex 1: Project “Journey to the Centre of the Earth”.

⁴Annex 7: Glossary

sentence in the glossary booklet. The learning diary⁵ will be useful for collecting qualitative data for the investigation but this will also help students to reflect about which are in their opinion the most interesting aspects of the eight sessions, to express their likes and dislikes or to check if they have doubts or curiosities about any of the aspects worked in class. This learning diary has been designed following the guide for teachers, assessors and verifiers created by OCN London (2020). Throughout the project pupils will have to look for their own answers and draw their own conclusions as well as work autonomously, in pairs or in cooperative groups.

PROJECT” JOURNEY TO THE CENTRE OF THE EARTH”					
COURSE	1ESO	TERM	3RD	DURATION	8 SESSIONS
LEARNING OBJECTIVES					
-To listen and to understand general and specific information in oral texts in varied communicative situations. -To express orally in common situations and to develop communicative skills, in and out of the classroom, effectively, properly and with some level of autonomy and correction, at the same time that tools that help to the correct interaction with others are used. -To read in a comprehensive and autonomous way different texts and to be capable to extract general and specific information, and also to use the reading as a source of information, of personal enrichment and of knowing other cultures. -To write effectively simple texts with varied purposes about distinct topics and with adapted resources of cohesion and coherence. -To use reflexively and correctly the basic elements of the language (phonetics, lexicon, structures and functions) in several contexts of oral and written communication. -To acquire a group of dynamics that facilitate the cooperation among pupils during the development of learning tasks employing always the vehicular foreign language in the classroom. -To develop the autonomy during the learning, to reflect on this process and to transfer the knowledge acquired about the first language or any other languages during the study of the foreign language. -To foster the spirit of enquiry and personal autonomy using the available didactic resources such as Internet, multimedia materials, books of query, etc. -To reflect about the foreign language working and appreciate it as an instrument that allows the access to the information and as a tool of learning varied contents. -To value the foreign language and the languages in general as a communication and understanding means among people from different places, languages and cultures avoiding any type of discrimination. -To acquire confidence at the use of the foreign language and in relation to the own capacity of learning.					
ASSESSMENT					
CONTENT			COMPETENCE		
-Identification of the type of text, support and structure: formal and informal conversation. -Distinction of the type of comprehension. - General meaning, essential information and main points. -Techniques for active listening: listen without interrupting, show attention, interest and empathy. -Sociocultural and sociolinguistic aspects.			-Competence in Linguistic Communication. (CLC) -Competence in Mathematics, Science and Technology. (CMST) -Digital Competence (DC) -Learning to Learn. (L2L) -Social and Civic Competences. (SCC) -Sense of Initiative and Entrepreneurship. (SIE) -Cultural Awareness and Expression. (CAE)		
			INSTRUMENT OF ASSESSMENT		

⁵ Annex 4: Learning diary

-Establishment and maintenance of the communication and organisation of the speech: showing what is understood or asking if it has been understood. - Description of people, objects and places. -Initiation of some basic structures. -Usual vocabulary. -Audible, accentual, rhythmic and intonation patterns and their relationship with the communicative intentions. -Identification and articulation of basic vocalic sounds - Recognition and articulation of basic rhythm, intonation and accentuation patterns of words and sentences for the communicative functions of the level. -Composition of the message with clarity, distinguishing the idea or main ideas and their basic structure. -Adequacy to the monologue or dialogue, context and channel, applying the registry and the structure of speech adapted to each case. -Expression of the message with clarity and coherence, structuring and adjusting it, if that's the case, at the models and formulas of each type of text. -Self-confidence and assertiveness. -Review of the task or the message to simplify, improve and clear the content after valuing the difficulties and the available resources. - Definition or reformulation of a term or an expression. - Use of techniques for oral expression-. -Use of the corporal language culturally pertinent: gestures, facial expressions, postures, visual or corporal contact and proxemics. -Oral interaction: formulas or simple gestures to take or cede the speaking time. -Expressive reading aloud to improve the pronunciation, the intonation and the necessary rhythm for the understanding of the text.	-Pre-test -Post-test -Glossary -Project dossier -Attitude and effort -Automated understanding of words of high frequency at distinct contexts of reading. - Digital tools of research and visualisation such as search at blogs, forums, banks of sounds, skilled websites, dictionaries and virtual encyclopedias, skilled databases -Use of the most common ICTs and audio-visual tools to collaborate and communicate with the rest of the group with the purpose of scheduling the work, giving constructive ideas and understanding others' ideas, etc. -Initiative and innovation. -Self-knowledge. Appraisal of strengths and weaknesses. -Self-regulation of emotions, control of the anxiety and uncertainty and capacity of self-motivation. -Resilience, overcoming of obstacles and failures. Perseverance, flexibility. -Alternative thought. -Critical sense. -Responsibility and efficacy at the resolution of tasks. -Assumption of distinct roles in group works. -Thought of perspective. -Solidarity, tolerance, respect and kindness -Techniques for active listening. -Egalitarian dialogue.
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METHODOLOGY AND DIDACTICAL SEQUENCE

ACTIVITY	DESCRIPTION	METHODOLOGY	RESOURCE(s)	SESSION
ACTIVITY 1	Read and listen to some pages of the story "Journey to the Centre of the Earth" and complete the glossary.	-Individual work	-Audiobook "Journey to the Centre of the Earth" -Book "Journey to the Centre of the Earth" -Dossier -Glossary	1
ACTIVITY 2	Decode a message calculating combined operations.	-Cooperative work	-Dossier	1
ACTIVITY 3	Reflect about the possibility of travelling to the centre of the Earth and discuss.	-Individual work -Group work	-Dossier	1

ACTIVITY 4	Explain if the opinion has changed.	-Individual work	-Dossier	1
ACTIVITY 5	Reflect and fill in reading diary	-Individual work	-Learning diary	1
ACTIVITY 6	Read and listen to some pages of the story "Journey to the Centre of the Earth" and complete the glossary.	-Individual work	-Audiobook "Journey to the Centre of the Earth" -Book "Journey to the Centre of the Earth" -Dossier -Glossary	2
ACTIVITY 7	Visit different webpages to answer questions. Discuss.	-Individual work -Work in pairs	-Computer -Dossier	2
ACTIVITY 8	Reflect and fill in reading diary	-Individual work	-Learning diary	2
ACTIVITY 9	Read and listen to some pages of the story "Journey to the Centre of the Earth" and complete the glossary.	-Individual work	-Audiobook "Journey to the Centre of the Earth" -Book "Journey to the Centre of the Earth" -Dossier -Glossary	3
ACTIVITY 10	Check if the sentences true or false. Discuss them.	-Individual work -Work in pairs	-Dossier	3
ACTIVITY 11	Share answers with the rest of the class and check.	-Individual work -Group work	-Dossier	3
ACTIVITY 12	Visit the link and answer the question below.	-Individual work	-Computer -Dossier	3
ACTIVITY 13	Look for information in the link and share it.	-Individual work -Group work	-Computer -Dossier	3
ACTIVITY 14	Reflect and fill in reading diary	-Individual work	-Learning diary	3
ACTIVITY 15	Read and listen to some pages of the story "Journey to the Centre of the Earth" and complete the glossary.	-Individual work	-Audiobook "Journey to the Centre of the Earth" -Book "Journey to the Centre of the Earth" -Dossier -Glossary	4
ACTIVITY 16	Reflect about the importance of water and answer questions.	-Individual work -Group work	-Dossier	4
ACTIVITY 17	Watch a video and choose the correct option according to the information.	-Individual work	-Video -Dossier	4
ACTIVITY 18	Read a text about 5 curiosities about water.	-Individual work	-Dossier	4

ACTIVITY 19	After reading the text, complete the sentences with the information needed.	-Individual work	-Dossier	4
ACTIVITY 20	Reflect and fill in reading diary	-Individual work	-Learning diary	4
ACTIVITY 21	Read and listen to some pages of the story "Journey to the Centre of the Earth" and complete the glossary.	-Individual work	-Audiobook "Journey to the Centre of the Earth" -Book "Journey to the Centre of the Earth" -Dossier -Glossary	5
ACTIVITY 22	Write a postcard.	-Individual work	-Dossier	5
ACTIVITY 23	Reflect and fill in reading diary	-Individual work	-Learning diary	5
ACTIVITY 24	Read and listen to some pages of the story "Journey to the Centre of the Earth" and complete the glossary.	-Individual work	-Audiobook "Journey to the Centre of the Earth" -Book "Journey to the Centre of the Earth" -Dossier -Glossary	6
ACTIVITY 25	Match the words to the definitions and complete sentences.	-Individual work	-Dossier	6
ACTIVITY 26	Write 5 sentences making use of the Present Simple and the Present Continuous.	-Individual work	-Dossier	6
ACTIVITY 27	Reflect about what a mastodon is and share ideas.	-Individual work -Group work	-Dossier	6
ACTIVITY 28	Listen to a recording and explain what a mastodon is.	-Individual work	-Recoding -Dossier	6
ACTIVITY 29	Listen and check if the sentences are true or false.	-Individual work	-Recoding -Dossier	6
ACTIVITY 30	Reflect and fill in reading diary	-Individual work	-Learning diary	6
ACTIVITY 31	Read and listen to some pages of the story "Journey to the Centre of the Earth" and complete the glossary.	-Individual work	-Audiobook "Journey to the Centre of the Earth" -Book "Journey to the Centre of the Earth" -Dossier -Glossary	7
ACTIVITY 32	Read about a journey into a Volcano.	-Individual work	-Dossier	7
ACTIVITY 33	Read the text and answer the questions.	-Individual work	-Dossier	7

ACTIVITY 34	Look for the price of the tour in ISK and calculate it in Euros.	-Individual work	-Dossier	7
ACTIVITY 35	Watch a video about the volcano tour and discuss.	-Work in pairs	-Video -Dossier	7
ACTIVITY 36	Reflect and fill in reading diary.	-Individual work	-Learning diary	7
ACTIVITY 37	Rewrite an ending of the story by means of a comic.	-In pairs	-Dossier	8
ACTIVITY 38	Reflect about the learning and fill in a self-assessment chart.	-Individual work	-Dossier	8
Legal framework of this syllabus: STATEWIDE LEVEL - Organic Law 2/2006, 3rd May, Education (LOE), modified by Organic Law 8/2013, 9th December, for the improvement of the educative quality (LOMCE). - Royal Decree, 1631/2006, 29th December. - Royal Decree, 132/2010, 12th February. - Royal Decree, 1105/2014, 26th December - Order ECD/65/2015, 21st January. AUTONOMOUS LEVEL: - Order 4th July 2001. - Decree 112/2007, 20th July. - Order 45/2011, 8th June. - Decree 87/2015, 5th June. - Decree 51/2018, 27th April. - Decree 104/2018, 27th July. - Order 20/2019.				

Table 2. Project Journey to the Centre of the Earth

In respect of the instruments for data collection, before the educative intervention, quantitative data from the treatment groups will be acquired thanks to a pre-test⁶ based on vocabulary and prepared to check the students command of the lexis in the unit before the intervention. After the development of the unit, the same test will be repeated in order to know if there has been improvement in their vocabulary command. In addition to that, qualitative information will be obtained thanks to a questionnaire⁷ with closed and open questions in which students will have to rate the relevance in relation to their effect on motivation that 11 elements have during the English lessons. These 11 elements are cooperative work, participation, self-evaluation, reflection about their learning process, performance before an audience, intellectual challenging exercises, the inclusion of other fields of study in the units, the consideration of their interests and needs, the fact of discovering and drawing their own conclusions, the use of technological aids or creativity. Among the open questions, pupils are asked about the importance of learning English, their opinion about the correlation between what is learnt in class and the real world, what

⁶ Annex 2: Pre-test "Journey to the centre of the Earth"

⁷ Annex 3: "Questionnaire on English learning process"

they like about the English lessons, what they would change or any aspect(s) they would like to comment. During the intervention, the qualitative instruments to gather information will be direct observation in the classroom and the students' learning diaries. After the intervention, as well as the repetition of the previous test on vocabulary, a questionnaire⁸ to get qualitative information about the pupils' opinions on the employment of the project-based learning methodology will be used. This questionnaire has six open questions that students will have to answer. The questions asked them if they like working by means of interdisciplinary projects and depending on their answer they need to justify why or why not, if they find correlation between what they have learnt and the real world, if they have enjoyed the project or if there are any aspects that they want to comment.

Concerning the control groups, these will fill in the same pre-test and post-test centered on the vocabulary of the unit that the experimental groups have. In addition to that, before working on the content, the questionnaire about the English learning process completed by the experimental groups will also be employed and once the unit is finished an after questionnaire⁹ -different from the one completed by the experimental groups after the educational intervention- will be provided to the pupils. This questionnaire designed only for the control groups contains six questions concerning their likes and dislikes about the methodology employed by the teacher during the development of the unit, if they find correlation between the content studied and the real world and what they would change from the English sessions.

3.5 Data analysis

Among the statistical operations that have been done for the analysis of the quantitative data, the mean of the results in the pre-test and the post-test of all the participants in the research, experimental and control groups, has been calculated. The mean is "the sum of all scores of all subjects in the group divided by the number of subjects" (Madrid & Bueno, 2015). The variability measure used in this research is the standard deviation and its value in the pre-tests and post-tests have also been calculated. The online statistics calculator *Calcuvio* (*Calcuvio.com*) has been employed to do these operations. The difference between both measures, the mean and the standard deviation, has been also obtained to establish the conclusions.

⁸ Annex 5: "Questionnaire on English learning by means of an interdisciplinary project"

⁹ Annex 6: "Questionnaire on English learning process 2"

The information from the qualitative instruments, the learning diary and the questionnaires, has been collected by reading and selecting the most important aspects. The observation in the classroom has been registered by the teacher by means of a diary.

4. RESULTS

4.1 Questionnaires

Now, attention is going to be paid to the answers given to by all groups to the questionnaires about the English learning process and the methodologies employed. These responses will be organized in two blocks, the ones offered by the experimental or treatment groups and the ones given by the control groups.

In the pre-questionnaire about the English learning process¹⁰, the treatment groups recognise that participation in class motivates them in their learning process. In 1ESOA, 13 students, a 61.9% of the group, have selected the option “always”, 4 students, a 19%, have chosen “frequently” and only 1 person, a 4.8%, has said “never”, while in 1ESOC an 80% have chosen the options “always”, “frequently” or “sometimes” and only 1 has selected “never”.

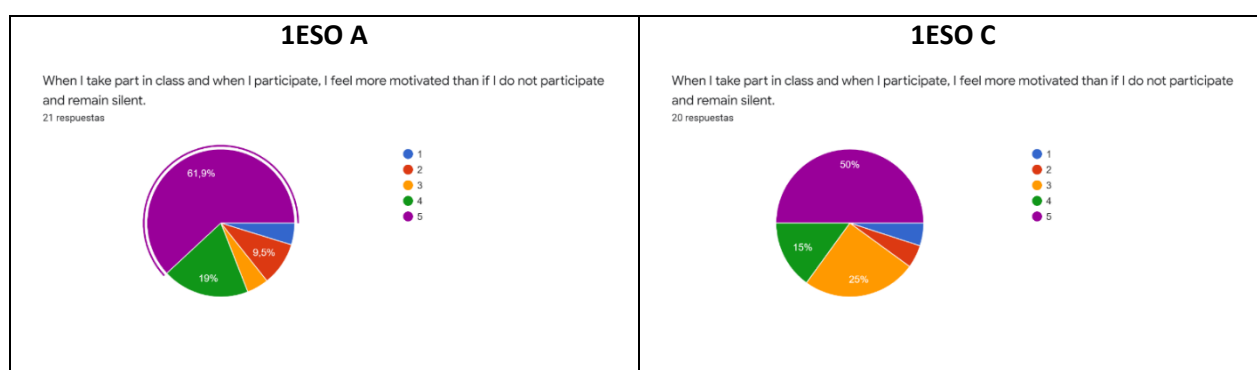


Figure 1. Experimental groups' opinion about the influence of participation on motivation.

When the learners' interests and needs are considered or the relevance of what is being worked is demonstrated, these pupils are more motivated. In 1ESOA, 19 students, a 91.5% of the group, have chosen the options “always”, “frequently” or “sometimes” and only 2 people have said “never” and in 1ESOC a 95% say that they may feel more motivated.

¹⁰ Annex 3: Questionnaire on English learning process”

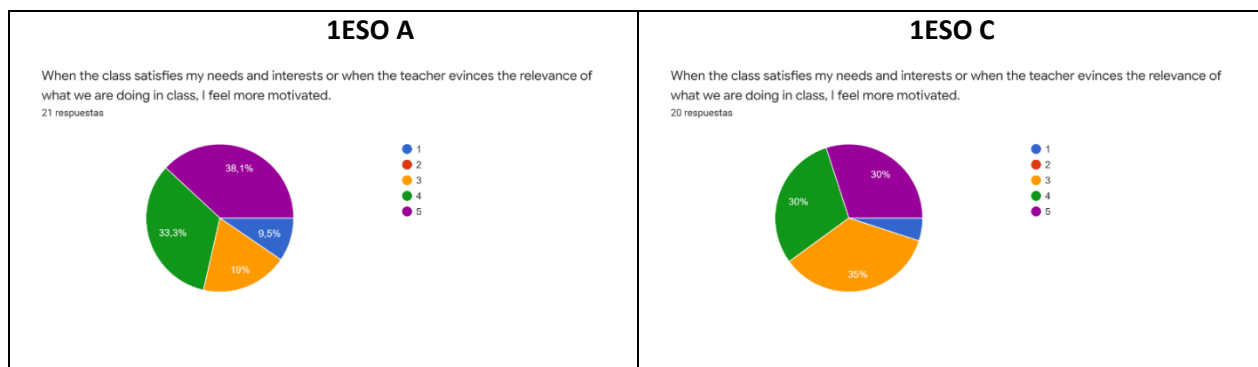


Figure 2. Experimental groups' opinion about the influence that considering their needs and interests and evidencing the relevance of the content has on motivation.

The use of audio-visual and technological aids is really praised. In 1ESOA, 14 students, a 66.7% of the total, have chosen the option “always” and only 1, a 4.8%, has selected “never”. In the other experimental group, 1ESOC, an 80% of the class members have answered the option “always”.

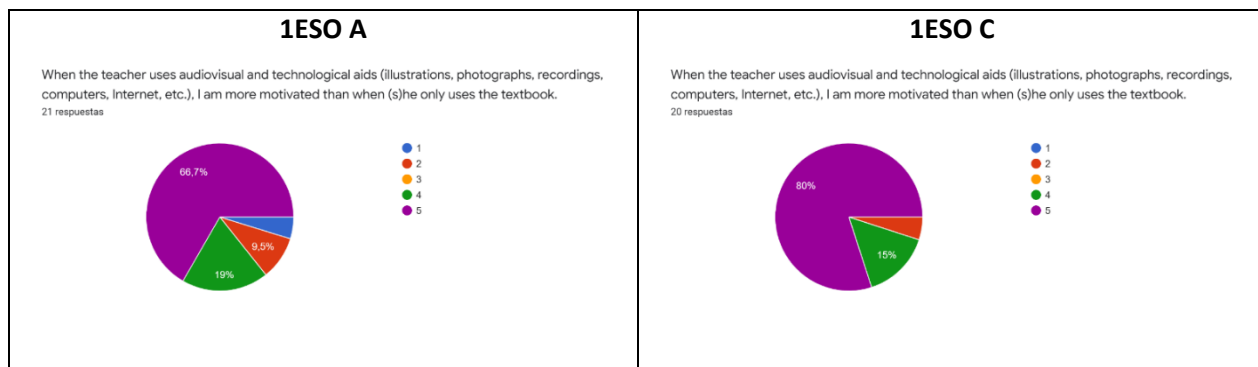


Figure 3. Experimental groups' opinion about the influence of audio-visual and technological aids on motivation.

Working in cooperative groups seems to be a more motivating factor for pupils in 1ESOC than for those in 1ESOA. In 1ESOC, all the pupils have chosen the answers “always”, “frequently” or “sometimes” while in 1ESOA, there are 2 students, a 9.5% who have confessed that they are never motivated by this and 1 that has selected “little”.

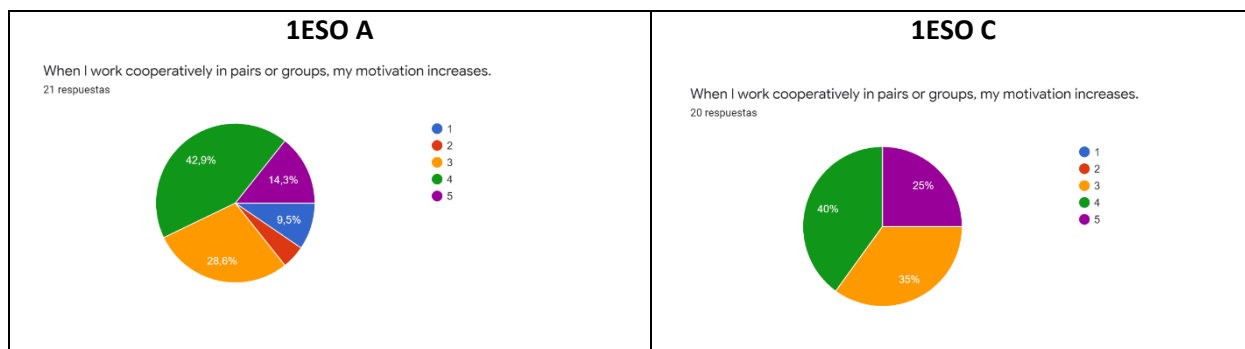


Figure 4. Experimental groups' opinion about the influence of cooperative work on motivation.

In respect to the relevance of performing before an audience and how this becomes a stimulus and a motivational fact, learners in both groups have a similar opinion. In 1ESOA a 61.9% and in 1ESOC a 65% have said “always”, “frequently” or “sometimes” while in 1ESOA a 38,1% have said “little” or “never” and in 1ESOC a 35%.

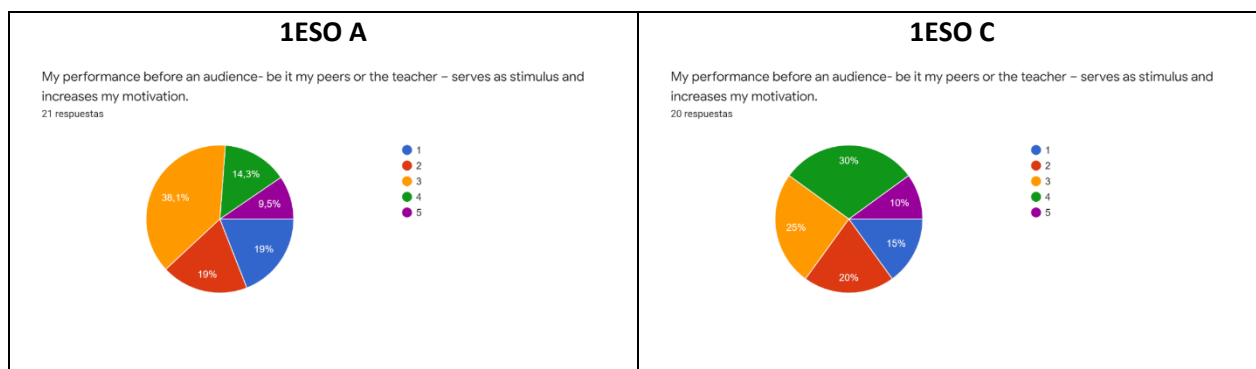


Figure 5. Experimental groups' opinion about the influence of performing before an audience on motivation.

Including other fields of study in the English session, seems to be a controversial issue for students in 1ESOA. Among the answers, it is possible to find the same number of students who said “always” and “never”. In 1ESOC this seems to be a higher motivational factor and a 75% of students state feeling somewhat encouraged because of this.

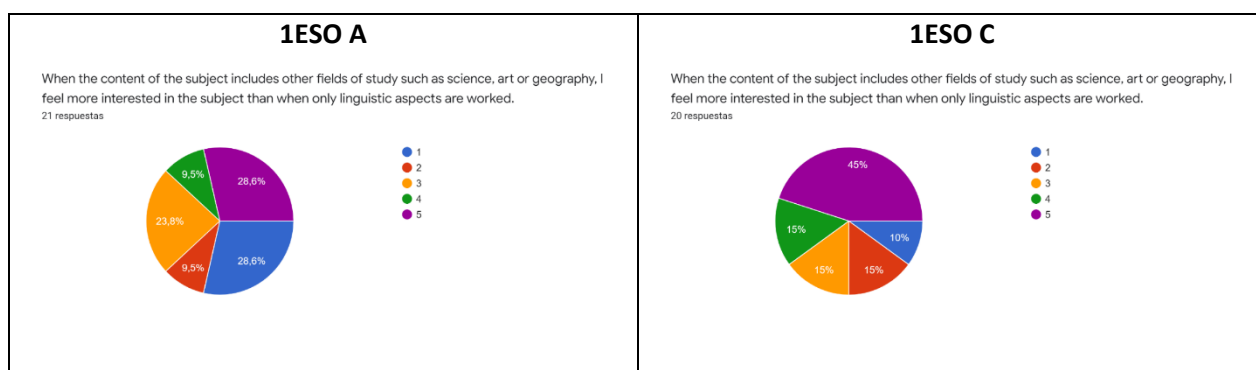


Figure 6. Experimental groups' opinion about the influence of including other fields of study apart from linguistic aspects on motivation.

Concerning the open questions found in this pre-questionnaire, the vast majority of students consider that English is important in their lives. Among the reasons that they offer to support this idea, it is possible to find some such as its relevance to find a job in the future, to travel or to communicate with people from other countries. It is remarkable that students who recognise that they do not like English confess that they think it is important to learn it. Correlation between the English lessons and the real world is found by many students. Only around 8 students out of 41 have answered “somewhat”, “more or less” or a similar response. Among the students’ favourite aspects of the English lessons, they highlight the use of games, songs and videos and working in groups or pairs and learning about other cultures. Things that these pupils would change from the sessions are an increase in the amount of games employed and the use of digital devices such as laptops or tablets, a decrease in the number of exams and using less the textbook.

Once the project has finished, the questionnaire¹¹ that the experimental groups have filled in asks them questions such as if they like learning by means of interdisciplinary projects, what they like about it and depending on their answer why or why not, if there is correlation between the content studied and the real world and if they have enjoyed the lessons.

In the answers that students from groups 1ESOA and 1ESOC have provided, most of them have recognised that they like working by means of interdisciplinary projects. Among the reasons that pupils offer to argue this answer they say that it becomes interesting having to investigate and solutions for the questions and not just looking for them and copying them from the textbook or listening to the teachers’ explanation. Pupils also argue that one of the positive aspects of working using the project-based learning methodology is that they have the opportunity of working in pairs and in groups more than if they work on their textbooks. Learning content from other subjects and not only focusing on linguistic aspects is also praised. Many of the learners have said that the projects are challenging and motivating for them since they make them think and reflect. Pupils find correlation with the real world and many of them have argued this by the fact that they have studied interesting aspects about other countries like Iceland or Germany, about animals like mastodons or about one of the key elements in our life, water.

¹¹ Annex 5: “Questionnaire on English learning by means of an interdisciplinary project”

By contrast, there are only a few students who have said that they do not like working by means of an interdisciplinary project. Among the reasons that these pupils offer they say that the project implies more difficulty than working on the student's book or the workbook. "Journey to the Centre of the Earth" demands more effort and reflection. Furthermore, there are a lot of group or pair activities in the dossier and working with classmates is not always easy. Two of these students have also said that they do not like participating in discussions and many activities ask them to do so in the project.

Once the answers of the pupils in 1ESOA and 1ESOC in both questionnaires have been shown, it is essential to check the responses of the control groups.

Paying attention to the results of the control groups in the questionnaire about the English learning process¹², among the more relevant answers found, these pupils appreciate when they work cooperatively. In 1ESOB, a 38.1%, 8 pupils, feel "always" more motivated, 6 students, a 28.6%, "frequently" and also 6 students feel "sometimes" motivated while in 1ESOD nobody has selected the option that states that they are "never" motivated because of this.

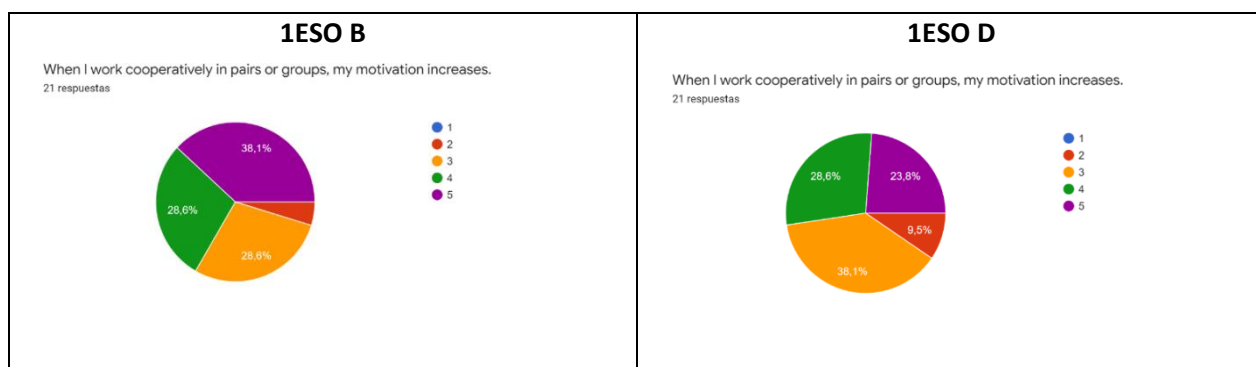


Figure 7. Control groups' opinion about the influence of cooperative work on motivation.

The use of audio-visual and technological aids is very well valued. In 1ESOB a 61.9%, 13 students, have recognised that they "always" feel more motivated thanks to this and only one person has selected the option "never", 4.8%. In 1ESOD, 11 students, a 52.4%, have said "always" and only 1 pupil has chosen "never".

¹² Annex 3: Questionnaire on English learning process"

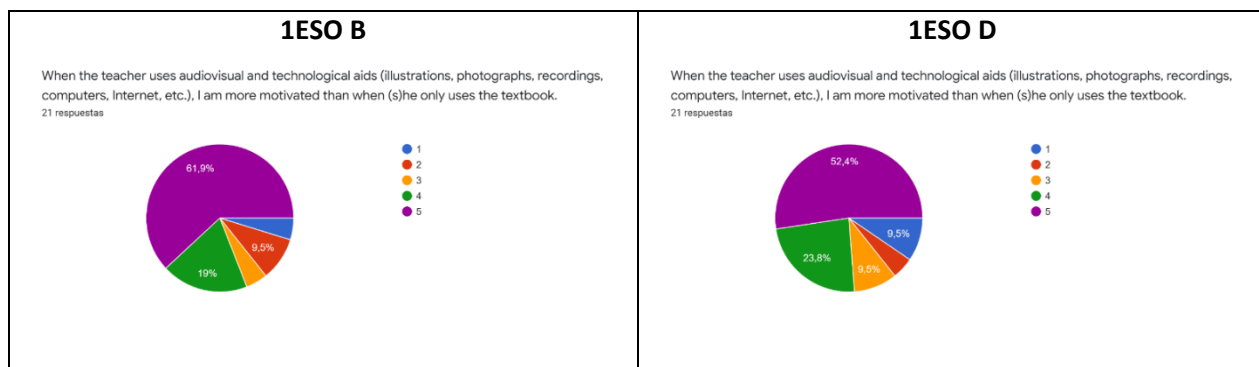


Figure 8. Control groups' opinion about the influence of audio-visual and technological aids on motivation.

Other aspect that needs to be point out is creativity. This is said by students in both groups to help them to be more encouraged in their learning process. While in 1ESOB nobody has answered “never” and 10 pupils have chosen the option” always”, in 1ESOD, except from 3 students, the rest has selected the options “always”, “frequently” or “sometimes”.

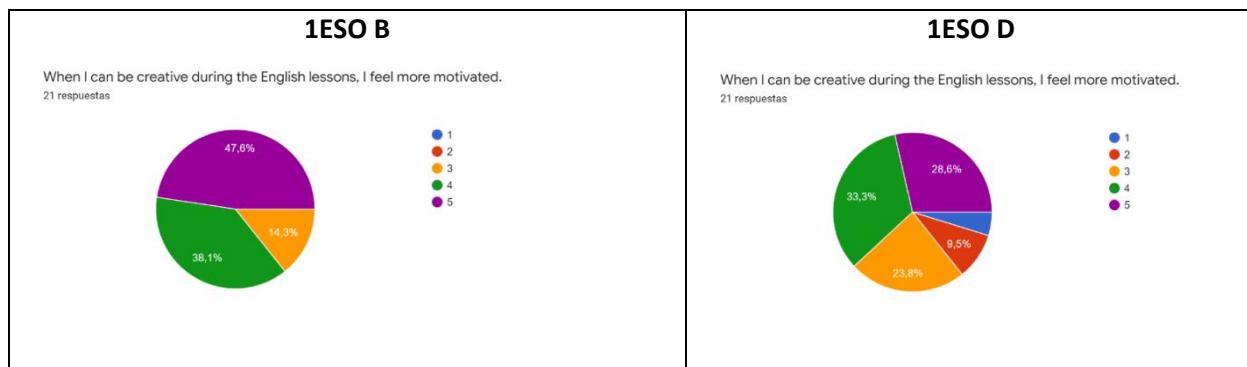


Figure 9. Control groups' opinion about the influence of creativity on motivation.

Including other fields of study in the English lessons is a factor of interest for most of the students in 1ESOB and 1ESOD. In 1ESOB, none of the students have answered “never” and only three have said “little”. In 1ESOD, 1 pupil has chosen the option “never” and all the rest have selected “always”, “frequently” or “sometimes”.

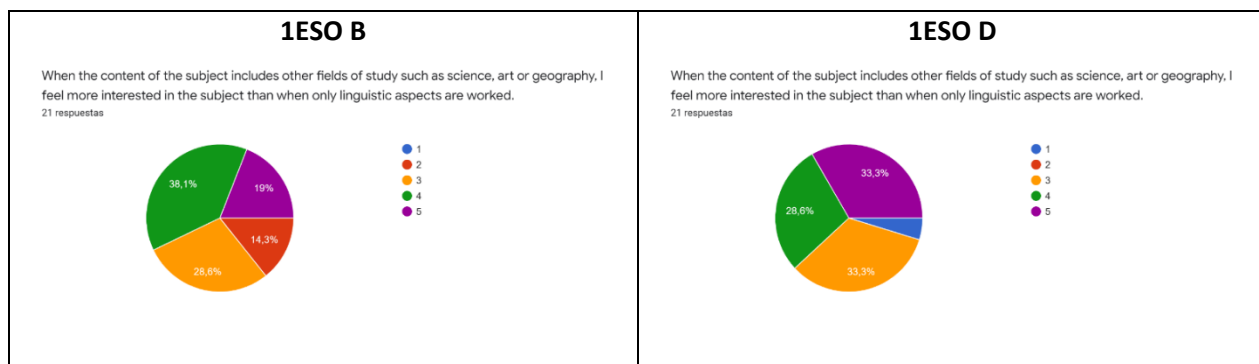


Figure 10. Control groups' opinion about the influence of including other fields of study apart from linguistic aspects on motivation.

Eventually, specially students in 1ESOB like that things are not done for them, they like discovering and drawing their own conclusions since none of them has chosen the option “never” and a 95,3% have selected “always”, “frequently” or “sometimes”. In 1ESOD this fact is less valued but it is also considered as a motivational factor by a 66.6% of the students.

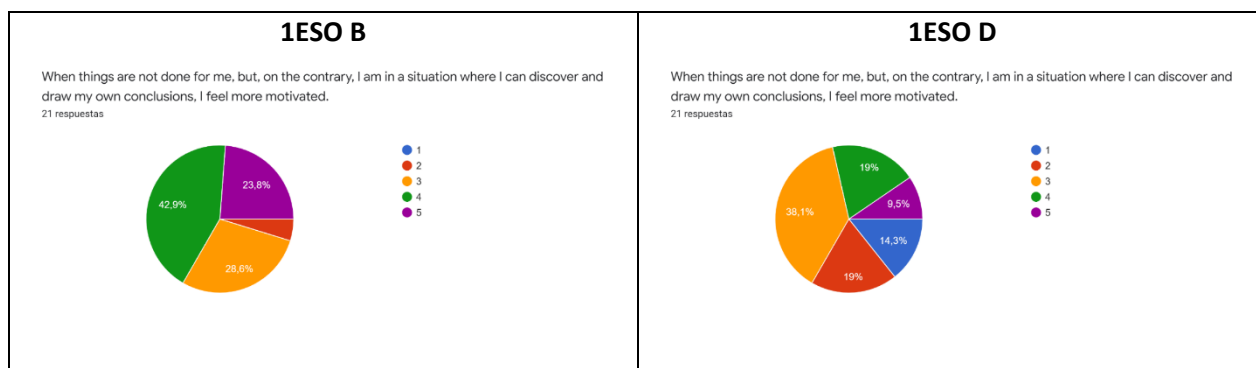


Figure 11. Control groups' opinion about the influence of discovering and drawing conclusions on motivation.

In the open questions, the information found is very similar to the one found in the pre-questionnaire of the treatment groups. For almost everyone in these groups English is important and it can be helpful for communicating, improving their opportunities for being successful in the future or for travelling abroad. Correlation with the real world is found by 35 students out of a total of 42. Games, works in groups and a more frequent use of the computers is also missed by the pupils in 1ESOB and 1ESOD in the English lessons.

The questionnaire¹³ that students that have been part of the control groups have completed once they have finished the unit offers relevant information too. It is necessary to point out that the post-questionnaires are different for the two groups, experimental and control groups, since the latter ones have not worked by means of the project designed.

The answers given seem to be quite divided when pupils are asked if they like the methodology used and what they like about it. Several participants have said that they like learning English in this way as they confess that they like the use of books of reference, the explanations offered by the teacher and her notes in the board, reading stories and listening to recordings in English.

Focusing on those that have explained that they dislike this methodology, they state that they do not like working with their books in all the classes and they get bored in some of the explanations and activities.

¹³Annex 6: “Questionnaire on English learning process 2”

Paying attention to aspects that pupils from the control groups, 1ESOB and 1ESOD, would change, these pupils would add more games in the sessions, they would increase the use of the computers and tablets and they would appreciate having to participate in more works in groups or in pairs.

Correlation between the aspects studied in the English lessons and the real world is found by the vast majority of the students. On the contrary, among the reasons given by those few that confess that they do not always find correlation, they explain that they do not use English once they finish the classes or sessions are only focused on grammar and vocabulary.

4.2 Direct observation

During the direct observation, among the remarkable aspects that can be emphasized, it is possible to say that during the project “Journey to the Centre of the Earth” more students have participated in the sessions. Even those students with a lower command of the English language have tried to make themselves understood and have shared their ideas with the rest of the class or their partners. Some students who do not usually work, seemed to be more interested in the sessions. Two evidences of this fact are that many of these pupils have asked doubts during the sessions and all of them have handed in the dossier, the glossary and the learning diary.

Pupils in both groups have different rhythms of work and the fact of working on their own in many of the activities provided allows the possibility of respecting them,. In addition to that, the use of the dossier helps the disorganized students to keep all the exercises together and avoids the loss of them.

On the contrary, there are some less positive aspects that have also been noticed by the teacher. The glossary and the learning diary are seen, in some cases, as a hindrance by pupils. Several of them complain when they have to fill them in. Besides that, as it happens when they work in groups or in pairs, not all pupils work equally and some try to take benefit from their partners.

Including other fields of study in the subject of English surprises many of the students in class and some of them have asked in many occasions questions such as “Isn’t this part of Maths? We are in English” or they have expressed “This is Science not English!”.

4.3 Learning diaries

The learning diaries¹⁴ completed during the development of the project “Journey to the centre of the Earth” offer us information about the students’ perceptions in the day-to-day work”. After each session, pupils had to fill it in answering to questions such as what has been the most interesting thing for them during the session, aspects that they have liked and disliked, doubts or if they are curious about something.

Once the learning diaries have been revised, it is important to point out some of the most emphasizing answers by students in 1ESOA and 1ESOC.

For instance, the scientific aspects dealt such as what we can find inside the Earth surface, the amount of time we can live without water or the tour inside a volcano in Iceland are the most interesting ones for the majority of students.

Regarding the pupils’ likes and dislikes, some of these like working in pairs, participating in discussions in class and listening to their classmates’ opinions or practising maths during the English sessions. On the contrary, many of them do not like filling in the glossary¹⁵ or reflecting on the learning diary. In addition to that, it is necessary to highlight that the reading of the book “Journey to the centre of the Earth” and the listening to the audiobook generates different opinions. Some students like it because they say that the story is funny and interesting and other confess that they dislike it since it is long, difficult and they do not always understand the development of the plot.

Surprisingly, only 7 people say that they do not understand some of the words in the chapter. The remaining pupils say that they do not have doubts.

The aspects that generate curiosity are the development of the story by Jules Verne, the possibility of visiting the centre of the Earth one day or the tour inside one volcano in Iceland.

4.4 Pre-test and post-test on vocabulary

First of all, the qualitative data will be contrasted. The following table shows the data obtained by the four groups on the pre-test and the post-test¹⁶ about vocabulary gaining:

¹⁴ Annex 4: “Learning diary”

¹⁵ Annex 7: “Glossary”

¹⁶ Annex 2: Pre-test “Journey to the centre of the Earth”

	1 ESO A		1 ESO C		1 ESO B		1 ESO D	
	MEAN	SD ¹⁷	MEAN	SD	MEAN	SD	MEAN	SD
PRE-TEST	3.762	2.315	4.1	1.429	4.19	2.428	3.2	1.42
POST-TEST	5.486	2.723	6.275	2.164	5.633	2.34	4.905	1.963
DIFFERENCE	+1.724	+0.408	+2.075	+0.735	+1.443	-0.078	+1.705	+0.543
Note: The marks of the pre-tests and post-tests are out of 10. 1ESOA and 1ESOC have been the experimental groups while 1ESOB and 1ESOD have been the control groups.								

Table 3. Results of experimental and control groups in the pre-test and post-test

If comparisons are established between the two types of groups, it is possible to realize that the mean in the post-test is the highest in one of the experimental groups, being 1ESOC with a mark 6.275 out of 10 and the lowest mark is found in one of the control groups, 1ESOD with 4,905 out of 10. In all the groups there is an improvement in the first mean obtained in the pre-test.

In the case of the experimental groups, the mean of 1ESOA increases in +1.724 points and in 1ESOC it increases in +2.075 points. Regarding the results in the control groups, both means are also higher in the post-tests than in the pre-tests. In 1ESOB, the mean is higher with +1.443 more points in the post-test and in 1ESOD, it is higher in +1.705 points.

	EXPERIMENTAL GROUPS	CONTROL GROUPS
	1ESOA & 1ESOC	1ESOB & 1ESOD
	MEAN	MEAN
PRE-TEST	3.931	3.695
POST-TEST	5.880	5.269
DIFFERENCE	+1.949	+1.574

Table 4. Results organized by experimental and control groups in the pre-test and post-test.

If data is organized by the type of group, the results are better in the experimental groups. In the pre-test, 1ESOA and 1ESOC obtain a mean of 3.931 while 1ESOB and 1ESOC obtain a 3.695. In the post-test, the improvement of the results in the experimental groups is higher than in the control groups. The experimental groups improve it in +1.949, obtaining a mean of 5.889 after the work on the project, and the control groups do it in +1.574, being a mean of 5.269 after the development of the unit.

Focusing now on the results obtained by each of the groups. In 1ESOA,¹⁸ all the students apart from two improve their marks in their post-tests in relation to their pre-tests results. In the case of these two students, one of them gets a lower mark, being the mark in the

¹⁷ SD stands for Standard Deviation.

¹⁸ Annex 8: Results obtained by students in 1ESOA in the pre-test and post-test

pre-test a 3.6 and a 3.4 in the post-test. In the other case, the student gets the same mark in both tests, a 2.6. The higher

difference of mark between both tests is found in one of the students that improves the mark in +3.4 points, being a 0.8 in the pre-test and a 4.2 in the post- test. If the standard deviation is considered, this increases after the educational intervention what means that there is a lower concentration of results around the mean and the marks are varied.

In 1ESOC¹⁹, all the pupils apart from one, improve their performance in the vocabulary tests. The student that gets a higher mark in reference to the pre-test, has obtained a 4.6 in the first test and a 9.3 in the second test, improving its results in +4.7 points. The only student that does not improve the result, maintains the same mark in the post-test with a 3.2 out of 10. The standard deviation also announces that there is a higher concentration of results around the mean in the pre-test than in the post-test.

In 1ESOB²⁰, 18 students get a higher mark in the post-test in relation to the results obtained in the pre-test. The highest difference is found in one student that got a 3.8 in the first test and a 9.1 in the second test, existing a difference of +5.6 points. The remaining 3 students have obtained lower marks being these ones of a difference of -0.1, -0.2 and -1.2 points. In 1ESOB, the standard deviation shows that the results acquired are more concentrated around the mean after the unit.

In 1ESOD²¹, 20 students perform better in the post-test than in the pre-test. Only one person gets a lower mark, being a 2.6 in the pre-test and a 2.2 in the post-test. The pupil with a higher improvement in the mark has increased its results in +4.4 points. The Standard Deviation indicates that there is a major concentration of results around the mean in the pre-test than in the post-test although the increase is only +0.543 points.

5. DISCUSSION

The general objective of the investigation has been achieved and the advantages and drawbacks of using the project-based learning methodology for teaching English as a foreign language have been explored. Furthermore, the specific objectives have also been accomplished. The interdisciplinary project “Journey to the Centre of the Earth” has been designed and implemented with 83 students of 1st ESO in a Valencian school located in Catarroja, the quasi-experimental research with two treatment groups and two control groups has been carried out, students’ vocabulary learning progress has been tested in the

¹⁹ Annex 9: Results obtained by students in 1ESOC in the pre-test and post-test

²⁰ Annex 10: Results obtained by students in 1ESOB in the pre-test and post-test

²¹ Annex 11: Results obtained by students in 1ESOD in the pre-test and post-test

four groups, the two experimental and the two control groups, before and after the implementation of the interdisciplinary project or the development of the content of the unit and the students' motivation and interest has been analysed.

Once the results have been obtained and analysed, it is possible to say that hypotheses presented have been evaluated. The outcomes confirm that there is vocabulary gaining in the four groups participating in the research- the two treatment and the two control groups-, but the motivation is higher in those pupils that are part of the experimental groups. This statement can be done thanks to the quantitative data obtained in the pre-tests and post-tests based on the assessment of vocabulary and filled in by the 83 participants. In these before and after tests, all the groups improve their mean in the post-test in respect to the ones obtained in the pre-test. Furthermore, the hypotheses are also fostered by the qualitative information found in the learning diaries filled after each session by the students in the groups 1ESOA and 1ESOC and the teacher's direct observation during the eight sessions that has lasted the project. In both instruments, it is evidenced that the majority of the pupils have enjoyed the project and they have liked it. The project also includes aspects that many members of these two groups have appointed as motivational elements in the pre-questionnaire. For instance, the use of audio-visual and technological aids, working cooperatively, including other fields of study, evidencing the relevance of what is being worked and the importance of performing before an audience are present in the project "Journey to the Centre of the Earth" and these are highly valued by students as motivational and interesting. The post-questionnaire filled in by the experimental groups also tell us that most pupils from 1ESOA and 1ESOC like working by means of interdisciplinary projects, they find correlation between the content on it and the real world and they find it pleasant.

6. LINES FOR FUTURE RESEARCH

This study demands further research to obtain more data to be analysed and consequently, draw clearer conclusions. Among some of the aspects that could be improved in the future, for instance, the amount of participants in the different investigation groups could be higher, as well as it could be the number of groups involved. The experiment could be developed with participants from different ages and courses and the duration of the interdisciplinary project could also be longer than just some sessions in a term. One good option could consist in developing the educational intervention during a whole academic course in different educational stages.

Furthermore, more educational centres should be involved in the future research. Schools, high-schools or even universities from different cities or countries could participate in the investigation. This fact would allow the possibility of having a wider perspective and more exact results.

Some of the aspects that could be considered to carry out new investigation on the topic are the teachers' perceptions on the project-based learning methodology, which could also be considered and contrasted with the pupils' opinions, the school contexts or the type of resources employed.

Other data-collection instruments for gathering both qualitative and quantitative data such as interviews, surveys or tests need to be designed and employed. More linguistic aspects such as the influence on grammar acquisition, pronunciation or written and oral comprehension and not just on the vocabulary gaining could be considered in further research.

7. CONCLUSIONS

After the appliance of the educational intervention of the project "Journey to the Centre of the Earth", it is possible to say that the 1st Secondary students that learn English as a foreign language in Florida Secundària school that have participated in the project-based learning methodology, the experimental groups, have gained most of the planned items of vocabulary. Thanks to the use of the interdisciplinary project there has been vocabulary gaining. This statement is argued by the fact that the results obtained by these learners on the tests before and after the development of the unit project have improved considerably. Nevertheless, the type of the research employed helps to realize that although the results in the pre-tests and post-tests of the groups 1ESOA and 1ESOC, the experimental ones, are better than those obtained by the control groups, 1ESOB and 1ESOD, there is also an increase in their vocabulary range in the latter groups, so vocabulary gaining is obtained in both cases.

The questionnaires filled in by the pupils before studying the unit reveal that most of them are concerned about the importance of the English language and many of them do not dislike the English lessons. However, pupils recognize that these sessions and the teaching-learning process could be improved if aspects such as their interests or needs would be more considered and if, among other features, creativity, cooperative works, other fields of study and not only linguistic aspects or more audio-visual aids would be

included. Multidisciplinary projects, as it has been shown in this research, could be a good way of doing so.

Furthermore, the learning diaries during the educational intervention and the questionnaires completed by the experimental groups after working by means of the project “Journey to the Centre of the Earth” show that the pupils’ opinions towards this methodology is positive. This collecting-data instruments together with the classroom observation and the after unit questionnaire completed by 1ESOA and 1ESOC reveal that learners are more motivated in the English learning process when they work following the project-based methodology.

Besides the well-being that these projects may cause in the learners, the results obtained, as it has been previously explained, are more satisfactory than those from pupils who have just worked on answering to the questions found in the reading book and following the book of reference.

Considering this, it is possible to say that in both cases, experimental and control groups, there is vocabulary gaining but in those students who have worked on the project “Journey to the Centre of the Earth”, the motivation is higher. The students that have been part of the experimental groups confess having enjoyed the development of the sessions too.

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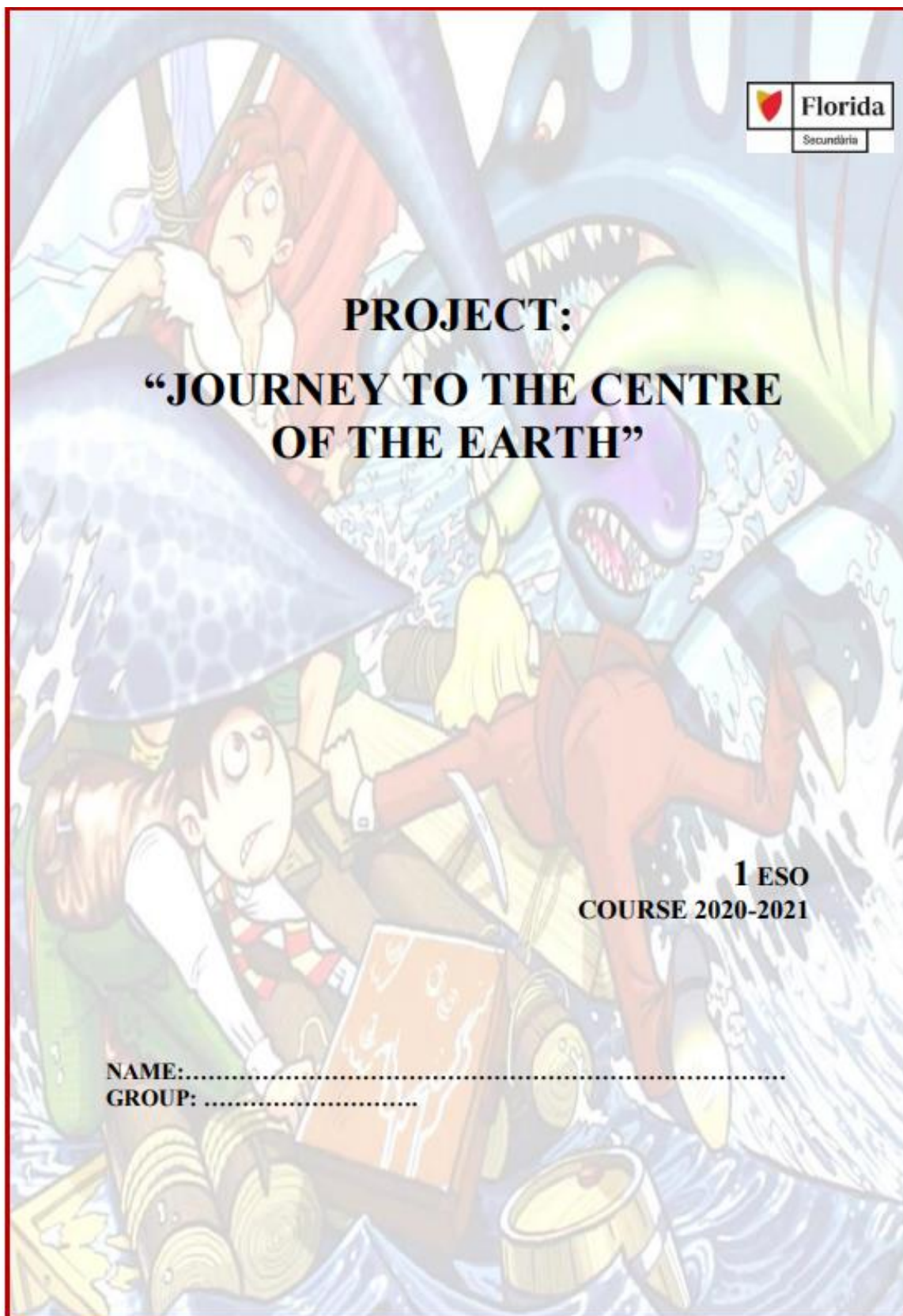
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9. ANNEXES

ANNEX 1: Project “Journey to the Centre of the Earth”



SESSION 1



1-Read and listen to pages 1-4 from the book "Journey to the Centre of the Earth". Fill in the glossary booklet with the new words and contextualise them in a sentence.

2- Can you help Professor Lidenbrock and Axel to understand the message on the paper?
Working cooperatively in groups of three, decode the message using your mathematical knowledge about combined operations. Good luck!

STUDENT 1:



$(24 \div 6) \times 3 =$	$15 - (500) =$				
$(8 \times 5) \div (7 \times 3) =$	$(25 - 10) \div 10 \times 0 =$	$7 \times 3 \div 2 =$	$(3 + 4) \times 2 =$		
$(3 + 3) \div 3 \times 1 =$	$(8 \times 2) \div (12 \div 6) =$	$(5 \times 2) \times 2 =$	$8 \times 3 - 9 =$		
$9 \times 5 \div (4 + 3) =$	$8 - (2 \times 0) =$	$1 \div 4 \times 1 =$			
$2 \times 2 - 1 =$	$(4 + 2) \times 3 =$	$11 \times 2 - 7 \times 3 =$	$(5 \times 8) \div (2 \times 1) =$	$6 + 2 \div 2 =$	$(4 \times 5) \div (7 \times 5) =$
$5 + 5 \times 2 =$	$(4 \times -2) \div (7 \times 2) =$				
$1 \times 1 \div 1 =$	$7 \times 3 - 2 =$	$1 \div 2 - 0 =$	$2 \times 0 - 1 \times 1 =$	$4 \times 1 - (2 \times 2) \div 2 =$	$(4 \times 3) \div (2 \times 3) =$
$6 \times 3 \div (2 - 1) =$	$2 \times 2 \times 3 =$				

STUDENT 2:

$(-4 \times 2) \div (5 \times 2) =$	$5 \times 5 - 4 \times 5 =$	$(6 \times 3) - (2 \times 4) =$	$8 \times 2 \div (-2 \times 1) =$	$3 \times 5 \times 2 =$	$5 \times 1 \times 0 =$
$1 \times 5 \div 3 \times 5 =$	$2 \times 2 \div 2 \times 2 =$	$2 \times 2 \times 5 - (1 \times 5) =$			
$(6 \times 2) \div (2 - 1) =$	$(-8 \times 9) \div 37 =$	$(6 \times 3) \div [(4) \div 5] =$	$3 \times 0 + 4 \times 5 =$		
$(-4) \div (2 \times 4) =$	$18 \div (2) - 8 =$	$(3) \times 4 \times (1) \div 5 =$			
$2 \times 2 - (-1) =$	$3 \times 3 - 3 =$				
$(2 \times 2 \times 5) \div 2 =$	$11 \times 2 - 1 =$	$5 \times 2 + 2 \times 2 =$	$5 \times 3 \div 2 + 1 =$		
$(-7) \times 2 \div (5 \times 3) =$	$7 \times 1 \div 1 =$	$2 \times 2 \times 1 \times 0 + 4 =$			

STUDENT 3



$6 \times 5 - 5 \times 1 =$	$5 \times 4 - 5 =$	$2 \times 2 \times 3 \div 1 =$			
$7 \times 1 - 8 \times 3 =$	$2 \div 3 + 15 - 1 - 9 \times 2 =$	$7 \times 1 - 7 \times 1 =$			
$3 + (2 \times 6) =$	$15 - (500) =$				
$(5 \times 2) \times 2 =$	$(25 - 10) \div 10 \times 0 =$				
$4 \times 5 \div 3 =$	$2 \times 4 \div 0 \times 10 =$	$4 \times 3 - 7 =$			
$5 \times 3 - (2 \times 2 \times 3) =$	$5 \times 2 - 5 \times 1 =$	$(3 + 4) \times 2 =$	$(5 \times 2) \times 2 =$	$3 \times 2 \times 2 \div 2 \times 2 =$	$7 - 2 + 4 \times 0 =$
$5 \times 4 - 5 =$	$4 \times 2 - 2 =$				
$4 \times 5 \div 4 =$	$8 - (2 \times 0) =$	$4 \times 10 - 7 \times 3 =$			
$4 \times 4 - 3 \times 3 - 2 =$	$12 \div (2 \times 2) =$	$9 \times 3 - (4 + 3) =$	$9 \times 3 - (6 + 1) =$	$8 - (2 \times 0) =$	



A: 1	B: 2	C: 3	D: 4	E: 5	F: 6	G: 7
H: 8	I: 9	J: 10	K: 11	L: 12	M: 13	N: 14
O: 15	P: 16	Q: 17	R: 18	S: 19	T: 20	U: 21
V: 22	W: 23	X: 24	Y: 25	Z: 26		



ARNE SAKNUSSEMM

3- Do you think it is possible to travel to the centre of the Earth? Reflect about your answer, write it down and share it with the rest of the class.

I believe ...

Reasons:

4- Has your opinion changed after listening to your classmates' answers? If so, explain what you think now.

5- Reflect about your learning and fill in your reading diary.

SESSION 2



6-Read and listen to pages 5-10 from the book "Journey to the Centre of the Earth". Fill in the glossary booklet with the new words and contextualise them in a sentence.

7- The professor and Axel leave Hamburg and they need to go to Snæfellsjökull, in Iceland. Follow the instructions and answer the questions.

A. Use Google Maps and answer these questions.

<https://www.google.es/maps/preview>

- Calculate the distance in kilometres between Hamburg and Snæfells (Snæfellsjökull).
- How much time does it take to travel from Hamburg to Snæfells by car?
- Is it necessary to use other means of transport? Why?
- Which country or countries do you have to visit to get to Snæfells from Hamburg?

B. Visit the webpage *timeanddate.com* and answer these questions.

<https://www.timeanddate.com/worldclock>

- What's the time in Iceland now?
- What time is it in Germany now?
- What is the time difference between both countries?

C. Can you locate Germany and Iceland in a European map? You can use Google maps if you need help.

<https://www.google.es/maps/preview>



D. Share your findings with one of your classmates. Do you have the same answers?

8-Reflect about your learning and fill in your reading diary.

SESSION 3



9- Read and listen to chapter 2 from the book "Journey to the Centre of the Earth". Fill in the glossary booklet with the new words and contextualise them in a sentence.

10- Before reading what happens to the main characters of the book in their journey to the centre of the Earth, test your knowledge about what you can find there. Are these sentences true or false? Discuss them in pairs and decide before knowing the answer.

Is it true or false?



1. Nil Crocodiles can dig up to 12 metres.
2. There is an underground urban farm at a distance of 33 metres into the Earth near London.
3. The U.S.A submarines operated under 61 metres.
4. Derinkuty is an underground city found 85 metres under the Earth surface.
5. Two diving instructors married at a distance of 130 metres deep.
6. It is possible to sleep in a hotel room in Sweden that is 155 metres into the Earth surface.
7. In 2004, there was a marathon in Poland that took place 212 metres deep.
8. 33 miners were trapped for 69 days in 2010 in a mine located 700 metres deep in Chile.
9. The Grand Canyon reaches 1800 metres under the Earth surface at same points.
10. The pressure at the centre of the Earth is the same as 47,700 elephants balanced on your head.

11- Share your answers with the rest of the class and check your mark. Each correct answer is 1 point. Write down your total number of points in the box below.

MARK

/10

12- In chapter 2, the three men begin to go to the centre of the Earth by going down into the crater of Snæfells. Let's travel to the centre of the Earth. Visit the link and answer the question below.

<http://www.bbc.com/future/bspoke/story/20150306-journey-to-the-centre-of-earth/>

- a) When does the risk of human death appear?

13- Tell us about a curiosity found in the journey to the centre of the Earth of the BBC that has attracted your attention. Give the most important information about it and why you think it is interesting.

14- Reflect about your learning and fill in your reading diary.

SESSION 4



15- Read and listen to chapter 3 from the book "Journey to the Centre of the Earth". Fill in the glossary booklet with the new words and contextualise them in a sentence.

16- In chapter 3, Axel is worried because they do not have any water. Why is water so important for him? How much time do you think a person can survive without water? Share your ideas with the rest of the class.

17-Now, watch the video and choose the correct option according to the information you find on it.

- A healthy young adult in a cool environment can live without water up to...
a) A week b) a few days c) a and b are correct
- A sick person, an athlete running outdoors or a labourer on a hot day need to..... to survive.
a) drink less b) drink more c) a and b are incorrect
- Some of the symptoms of dehydration are...
a) headaches b) hallucinations c) a and b are correct
- In the worst scenario, death can appear after ... without water.
a) 6 days b) 6 hours c) 6 months



18- As you know now, water is very important. There is no life without water so let's discover five curiosities about it.

THERE IS NO LIFE WITHOUT WATER. 5 CURIOSITIES ABOUT IT.

- 1- Almost all Earth's water is in the oceans. 96.5 percent of water on Earth is in our oceans, covering 71 percent of the surface of our planet.
- 2- Just 3.5 percent of Earth's water is fresh. You can find Earth's freshwater in our lakes, rivers, and streams, but don't forget groundwater and glaciers.
- 3- We can find surprising elements in a single drop of ocean water. It can have millions (yes, millions!) of bacteria and viruses. It can also have fish eggs, baby crabs, plankton, or even small worms.
- 4- Some water may have come from comets. The rocky material that formed Earth contained some water.
- 5- Our bodies are mostly water. A newborn baby is 78 percent water. Adults are 55-60 percent water. Water is involved in just about everything our body does. It's a big part of the blood that brings nutrients to all our cells. We use it to get rid of wastes. It helps us regulate our body temperature. It acts as a shock absorber for our brain and spinal cord. We are very dependent on water.



(Adapted from <https://climatekids.nasa.gov/10-things-water/>)

19- After reading the text, complete the sentences with the information needed.

- a. contain 96.5% of water on Earth.
- b. Groundwater and glaciers contain water.
- c. We can find bacteria, viruses, fish eggs, baby crabs, plankton or small worms in a drop of.....
- d. Comets can contain
- e. More than % of adults are water.

20- Reflect about your learning and fill in your reading diary.

SESSION 5



21- Read and listen to chapter 4 from the book "Journey to the Centre of the Earth". Fill in the glossary booklet with the new words and contextualise them in a sentence.

22-In chapter 4, Lidenbrock explains that he is writing about their journey. Imagine that you are Professor Otto Lidenbrock and you want to send a postcard to one of your friends in Hamburg. Follow the pieces of advice and write down your postcard. Write about 50 words.

- 1- Start your postcard saying: "Dear + name, ". For example: "Dear William,"
- 2- Use the present simple and the present continuous to explain what you are doing. You can talk about where you are, who is with you and what you are doing. You can also talk about your feelings.
- 3- Use "be going to" to express future plans.
- 4- Make use of simple sentences with the structure "Subject + verb+ complements".

Remember to write a draft first and once you have corrected it with the self-assessment rubric, you can write your final version!

	YES	NO	I NEED TO IMPROVE...
I follow the instructions in the exercise.			
I use Present Simple properly (affirmative with -S with 3rd. person singular and negative with don't/doesn't).			
I use Present Continuous properly.			
I use a rich range of vocabulary .			
I use connectors (and, because, but, too, also...)			
The writing has at least 50 words .			

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Affix stamp here

23- Reflect about your learning and fill in your reading diary.

SESSION 6



24- Read and listen to chapter 5 from the book "Journey to the Centre of the Earth". Fill in the glossary booklet with the new words and contextualise them in a sentence.

25-Match the words that appear in this chapter to the definitions:

- | | |
|------------|---|
| 1. raft | to move over the water. |
| 2. sail | a sharp tool used for cutting. |
| 3. tunnel | an underground or underwater passage used by cars, trains, or other vehicles. |
| 4. luggage | a platform made of materials that can float. |
| 5. knife | an underground or underwater passage used by cars, trains, or other vehicles. |

Now, complete these sentences with the words above

- The ships across the ocean.
- Robinson Crusoe is using a to float.
- The adventurer is cutting the rope with a
- The passenger is looking for his
- The bus travels across a

26-It's time for practising grammar. Take a look at this picture and write down 5 sentences making use of the Present Simple and the Present Continuous.



.....

.....

.....

.....

.....

27- In chapter 5 in the book, mastodons appear. Do you know what a mastodon is? What do you know about it? Share your ideas with the rest of the class.

28-Now listen to the audio. Can you explain what a mastodon is?

29-Listen to the recording again and check if these answers are True or False.

- a. Mastodons exist now.
- b. Mastodons lived all over the world.
- c. Mastodons were taller than modern elephants.
- d. Mastodons did not have hair.
- e. Early humans painted mastodons in the walls of some caves in Europe.
- f. Scientists know for sure what happened with Mastodons.



30- Reflect about your learning and fill in your reading diary.

SESSION 7



31- Read and listen to chapter 6 from the book "Journey to the Centre of the Earth". Fill in the glossary booklet with the new words and contextualise them in a sentence.

32-Can you imagine a journey into a Volcano? Do you think it is similar to a journey to the centre of the Earth? Read about it!

INSIDE THE VOLCANO: THE TOUR

The inactive Þríhnúkagígur volcano in Iceland is a unique natural phenomenon and this is a tour that allows you the possibility of visiting it. To enjoy this experience, you need to do a moderate 45–50 minute hike (to get to the crater) and the guts to descend 120 meters to the bottom of the crater in an open cable lift. You can also get to the crater by helicopter.



TOUR FACTS:

Operation dates: From May 10 – October 31

Tour departures: Several departures every day. The first tour is at 8:00 and the last tour is in the afternoon.

Duration: 5–6 hours (about 40 minutes inside the volcano).

Fitness level needed: Moderate (the level of difficulty is 2 out of 5). No knowledge of hiking or climbing is required. It's. This is NOT a tour for those in limited physical shape.

Distance walked: Approximately 3.5 km (2 miles) each way. The walk usually takes around 45–50 minutes (depending on the condition of people in the group). A guide will be with you at all times during the walk.

Minimum age limit: 8 years old.

Price: ISK 44,000 for adults and 22,000 ISK for children (8-12 years old).

INCLUDED:

Pick-up at your hotel in Reykjavik.

All safety equipment.

Small groups, plenty of guides = personal experience.

Volcano tour of a lifetime.

Traditional Icelandic meat soup, coffee/tea and some sweets. We also serve vegetarian soup.

Free Cancellations (min 24-hour notice).

Transfer back to your hotel in Reykjavik.

BRING WITH YOU:

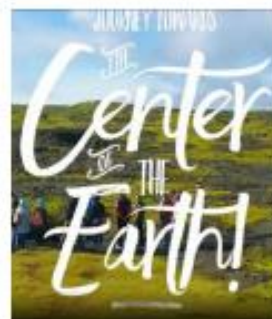
-Good shoes – We recommend wearing hiking boots on the tour because the trail is rocky and can get wet and muddy on a rainy day.

-Outdoor clothing. The weather in the mountains can be very different from the conditions in the city.

-A camera. You will want to remember this trip. Yes, you can take as many pictures as you want!

-A good spirit. This tour is all about having fun.

Adapted from: <https://insidethevolcano.com/>



33-Read the text and answer these questions:

1. How much time do you need to hike during the tour?
2. When is it possible to take the tour?
3. If the tour starts at 9 O'clock, when does it finish?
4. Where does the tour start?
5. What do you need to bring?

34-Check the price of the tour and calculate it in Euros. 1 ISK is 0,0066 euro. What's the price in Euros for an adult? And for a ten-years old child?

35-Watch a video of the tour and discuss in pairs: Do you want to take the Volcano tour one day in your life? Why (not)?

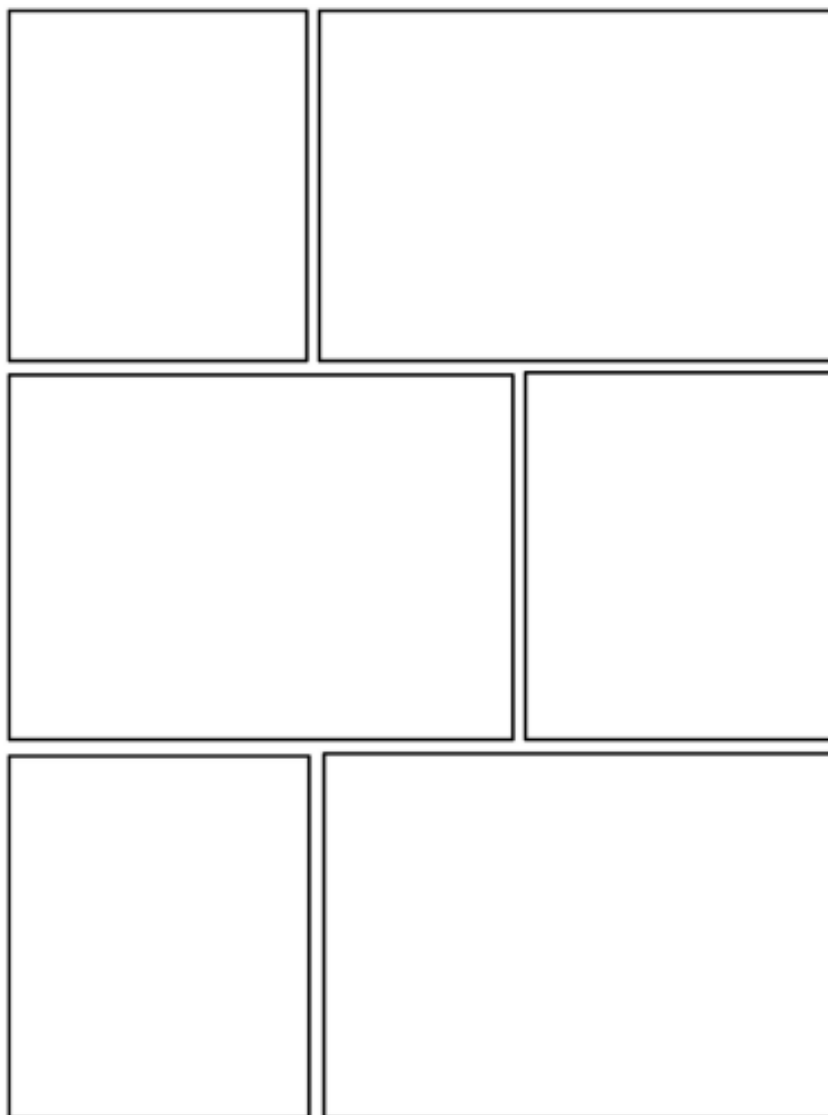


<https://www.youtube.com/watch?v=WhriwgemEvE>

36- Reflect about your learning and fill in your reading diary.

SESSION 8-----

37- In pairs, rewrite your own ending of the story written by Jules Verne, *Journey to the Centre of the Earth*. Use this comic template to fill it in. Be careful with your use of the language. First, write a draft, correct it with the self-assessment chart on exercise 22 and then, draw the final version. Use your imagination!



38- Reflect about your learning and fill in this self-assessment chart.

SELF-ASSESSMENT



	I can	I can't	In process
-I know how to calculate combined operations.			
-I know where Germany and Iceland are located in a European map.			
-I know how to calculate distance using Google Maps.			
-I know key aspects about what can be found under the Earth surface.			
-I know how to calculate money conversions.			
-I can recognise the importance of water in our life.			
-I know what a mastodon is and some of its main features.			
-I can identify new words in my vocabulary and contextualise them in a sentence.			
-I can visit webpages in English language and look for specific information.			
-I know how to write a brief postcard in English language.			
-I know what the story 'Journey to the Centre of the Earth' is about.			
-I can reflect and share my opinions about a topic in English language.			
-I can understand basic information in videos and audios about topics previously worked in class.			
- I can understand basic information in texts about topics previously worked in class.			
OBSERVATIONS: Add information that you can find useful or you want to share:			

ANNEX 2: Pre-test “Journey to the centre of the Earth”



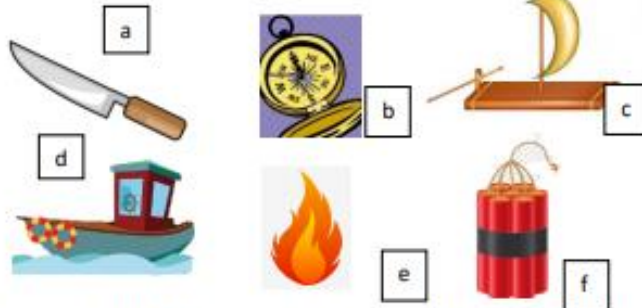
Name:

Group:

PRE-TEST ON THE PROJECT “JOURNEY TO THE CENTRE OF THE EARTH”

A-Match the words to the pictures. 12 points

1. Raft
2. Knife
3. Compass
4. Boat
5. Gunpowder
6. Fire



B-Write the name of these geographical features and elements that you can find in the environment. 22 points



V.....

M.....

S.....

C.....



S.....

R.....

S.....

T.....



W.....



C.....

S.....

C- Complete these sentences with the adjective below. 16 points

Hungry-Tired-Sure-Thirsty-Afraid-Dirty-Ready-Worried

- 1- My sister is of spiders. They scare her a lot!
- 2- I need water, please! I am really
- 3- Your room is very You need to clean it up.
- 4- Kate needs to eat something. She is very
- 5- After eight hours working, the builder feels
- 6- Robert seems about something. He's quiet and thoughtful.
- 7- Are you? Can we start?
- 8- She is hesitating. She's not

D- Write synonyms for these words. 10 points

1. Hot: W _ _ _
2. Fast: Q _ _ _ _
3. Confident: S _ _ _
4. Frightened: A _ _ _ _
5. Amazing: W _ _ _ _ _ _ _

E- Write one sentence with the words below. You need to show that you know their meaning so contextualise them. 20 points

- a) Shadow:
- b) Alive:
- c) Fiancée:
- d) Storm:

F- Circle the verbs in the following list of words. 10 points

nephew, across, fall, backwards, crater, plan, leave, wait, storm, blow up

G- Write one sentence with each of the verbs in exercise F. 20 points

- a)
- b)
- c)
- d)
- e)

QUESTIONNAIRE ON ENGLISH LEARNING PROCESS

A- Indicate to what extent the following motivates you during the English lesson.

5 = always

4 = frequently

2 = little

3 = sometimes

1 = never

1. (.....)When I work cooperatively in pairs or groups, my motivation increases.
2. (.....)When I participate in the process of self-evaluation of my own work, I feel more motivated than if I do not participate.
3. (.....) When I reflect about my learning process and I write it down, I am more aware of what I learn.
4. (.....)When I take part in class and when I participate, I feel more motivated than if I do not participate and remain silent.
5. (.....)My performance before an audience- be it my peers or the teacher – serves as stimulus and increases my motivation.
6. (.....)I am motivated by intellectually challenging exercises.
7. (.....)When the content of the subject includes other fields of study such as science, art or geography, I feel more interested in the subject than when only linguistic aspects are worked.
8. (.....)When the class satisfies my needs and interests or when the teacher evinces the relevance of what we are doing in class, I feel more motivated.
9. (.....) When things are not done for me, but, on the contrary, I am in a situation where I can discover and draw my own conclusions, I feel more motivated.
10. (.....) When the teacher uses audiovisual and technological aids (illustrations, photographs, recordings, computers, Internet, etc.), I am more motivated than when (s)he only uses the textbook.
11. (.....) When I can be creative during the English lessons, I feel more motivated.

Questionnaire adapted from Madrid & Pérez Cañado (2001: 345-346)

B- Answer these questions about you.

- 1- Do you think learning English is important?
- 2- Do you find a correlation between what you learn in your English lessons and the real world?

QUESTIONNAIRE ON ENGLISH LEARNING PROCESS

- 3- What do you like about the English lessons?

- 4- What do you want to change from the English lessons?

- 5- Do you want to say something about the English language learning process?

REFERENCES

Madrid, D. & M.L. Pérez Cañado 2001. "Exploring the student's motivation in the EFL class". In E. García Sánchez (ed.). Present and Future Trends in TEFL. Universidad de Almería: Secretariado de Publicaciones, 321-364.

ANNEX 4: “Learning diary”

 LEARNING DIARY NAME: _____ GROUP: _____ JOURNEY TO THE CENTRE OF THE EARTH PROJECT 	
DATE: _____ 1-Complete these sentences: a. The most interesting aspect of this session is.... b. In this session, I like.... c. In this session, I don't like.... 2-Now, answer these questions: a. Is there anything you do not understand? b. Are you curious about anything? OBSERVATIONS: Add extra information you want to share.	 DATE: _____ 1-Complete these sentences: a. The most interesting aspect of this session is.... b. In this session, I like.... c. In this session, I don't like.... 2-Now, answer these questions: a. Is there anything you do not understand? b. Are you curious about anything? OBSERVATIONS: Add extra information you want to share.

ANNEX 5: “Questionnaire on English learning by means of an interdisciplinary project”

QUESTIONNAIRE ON ENGLISH LEARNING PROCESS BY MEANS OF INTERDISCIPLINARY PROJECTS

Answer these questions about you.

- 1- After working by means of an interdisciplinary project, do you like this methodology for learning English?
- 2- If you like it, what do you like about this methodology?
- 3- If you do not like it, give your reasons.
- 4- Do you find a correlation between what you have learnt in the process and the real world?
- 5- Have you enjoyed the project? Why (not)?
- 6- Do you want to say something about the experience?

ANNEX 6: “Questionnaire on English learning process 2”.

QUESTIONNAIRE ON ENGLISH LEARNING PROCESS 2

Answer these questions about you.

- 1- Do you like this way of learning English?
- 2- If you like it, what do you like about this methodology?
- 3- If you do not like it, give your reasons.
- 4- Do you find a correlation between what you learn in the English lessons and the real world?
- 5- Do you enjoy the English lessons? Why (not)?
- 6- Do you want to change something from the English lessons?



GLOSSARY

NAME:

GROUP:

JOURNEY TO THE CENTRE OF THE EARTH PROJECT



DATE:

NEW WORD	TRANSLATION	SENTENCE

DATE:

NEW WORD	TRANSLATION	SENTENCE



DATE:

NEW WORD	TRANSLATION	SENTENCE

DATE:

NEW WORD	TRANSLATION	SENTENCE

ANNEX 8: Results obtained by students in 1ESOA in the pre-test and post-test

1ESOA	PRE-TEST	POST-TEST	DIFFERENCE
STUDENT 1	2.4	4.8	+2.4
STUDENT 2	3.6	3.4	-0.2
STUDENT 3	0.8	4.2	+3.4
STUDENT 4	6.8	9.1	+2.3
STUDENT 5	4.7	7	+2.3
STUDENT 6	5.2	8.2	+3
STUDENT 7	2.6	2.6	+0
STUDENT 8	7	9.2	+2.2
STUDENT 9	1.4	3.6	+2.2
STUDENT 10	1.6	3.5	+1.9
STUDENT 11	2.8	4.4	+1.6
STUDENT 12	8.7	9.1	+0.4
STUDENT 13	5.5	7.5	+2
STUDENT 14	5.1	8	+3.1
STUDENT 15	2.4	2.8	+0.4
STUDENT 16	1.8	3.2	+1.4
STUDENT 17	2.4	3	+0.6
STUDENT 18	1.8	2.4	+0.6
STUDENT 19	0.6	1.8	+0.8
STUDENT 20	5	7.6	+2.6
STUDENT 21	6.8	9.8	+3
MEAN	3.762	5.486	+1.724
SD	2.315	2.723	+0.408

ANNEX 9: Results obtained by students in 1ESOC in the pre-test and post-test

1ESOC	PRE-TEST	POST-TEST	DIFFERENCE
STUDENT 1	3	6.7	+3.7
STUDENT 2	7.1	9.8	+2.8
STUDENT 3	4	4.2	+0.2
STUDENT 4	4.6	6.5	+1.9
STUDENT 5	4.6	9.3	+4.7
STUDENT 6	1.8	2.8	+1
STUDENT 7	5	9.2	+4.2
STUDENT 8	4.4	8	+3.6
STUDENT 9	3.8	7.6	+3.8
STUDENT 10	4.2	6.5	+2.3
STUDENT 11	3.8	6	+2.2
STUDENT 12	4	4.5	+0.5
STUDENT 13	3.4	5	+1.6
STUDENT 14	2.6	4	+1.4
STUDENT 15	5.4	8	+2.6
STUDENT 16	3.8	7.2	+3.4
STUDENT 17	3.2	3.2	+0
STUDENT 18	2.8	4	+1.2
STUDENT 19	2.8	4.4	+1.6
STUDENT 20	7.7	8.6	+0.9
MEAN	4.1	6.275	+2.075
SD	1.429	2.164	+0.735

ANNEX 10: Results obtained by students in 1ESOB in the pre-test and post-test

1ESOB	PRE-TEST	POST-TEST	DIFFERENCE
STUDENT 1	2.6	3.2	+0,6
STUDENT 2	7.4	7.3	-0.1
STUDENT 3	7.7	8.2	+0.5

STUDENT 4	2	2.8	+0.8
STUDENT 5	9.3	9.4	+0.1
STUDENT 6	2.4	3.2	+0.8
STUDENT 7	1.6	4.4	+2.8
STUDENT 8	4.3	6.1	+1.8
STUDENT 9	4.1	7.6	+3.5
STUDENT 10	1.6	2.4	+0.8
STUDENT 11	4.2	5.9	+1.7
STUDENT 12	4.4	5.8	+1.4
STUDENT 13	3	3.6	+0.6
STUDENT 14	1.2	3.8	+2.6
STUDENT 15	3.7	6.9	+3.2
STUDENT 16	3	3.2	+0.2
STUDENT 17	2	3.2	+1.2
STUDENT 18	5	8.9	+3.9
STUDENT 19	3.8	9.1	+5.6
STUDENT 20	5.4	5.2	-0.2
STUDENT 21	9.3	8.1	-1.2
MEAN	4.19	5.633	+1.443
SD	2.428	2.34	-0.078

ANNEX 11: Results obtained by students in 1ESOD in the pre-test and post-test

1ESO D	PRE-TEST	POST-TEST	DIFFERENCE
STUDENT 1	2,2	4,1	+1.9
STUDENT 2	2,6	2,2	-0.4
STUDENT 3	2	2,6	+0.6
STUDENT 4	4,2	6,6	+2.4
STUDENT 5	3,4	4,1	+0.7
STUDENT 6	5,1	6,1	+1
STUDENT 7	1,4	1,8	+0.4
STUDENT 8	2,6	4,3	+1,7
STUDENT 9	2	3	+1
STUDENT 10	2,1	2,7	+0.6
STUDENT 11	3,4	4,2	+0.8
STUDENT T 12	1,6	5,2	+3.6
STUDENT 13	3	4,2	+1.2
STUDENT 14	2,2	5,4	+3.2
STUDENT 15	4,4	6,2	+2.2
STUDENT 16	7,2	9,6	+2.4
STUDENT 17	3,4	4,5	+1.1
STUDENT 18	2,6	5,1	+2.5
STUDENT 19	5,4	6,8	+1.4
STUDENT 20	2,8	6,3	+3.5
STUDENT 21	3,6	8	+4.4
MEAN	3.2	4.905	+1.705
SD	1.42	1.963	+0.543