FACULTAD DE EDUCACIÓN DE PALENCIA

UNIVERSIDAD DE VALLADOLID

THINKING AND LIVING THE SDGs IN A LEARNING COMMUNITY

(PENSAR Y VIVIR LOS ODSs EN COMUNIDADES DE APRENDIZAJE)

TRABAJO FIN DE GRADO

EN EDUCACIÓN PRIMARIA

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A mi familia, que me ha impulsado, ayudándome a encontrar mi camino y mi lugar en el mundo.

A mis profesoras de la universidad, que han visto mi potencial y me han ayudado a sacarlo.

Resumen

Los Objetivos de Desarrollo Sostenible (ODS) son un conjunto de objetivos de la Agenda 2030 que es necesario trabajar con los alumnos desde Educación Primaria. Por esta razón he diseñado e implementado una situación de aprendizaje que tiene de base el trabajo de los ODS desde una perspectiva experiencial.

La educación experiencial es una manera de involucrar las vidas de los niños en su proceso de aprendizaje, haciéndolos partícipes en dicho proceso, especialmente en la enseñanza de una lengua extranjera, en este caso el inglés. En esta propuesta se buscan también el desarrollo de competencias de comunicación en inglés en el alumnado a través de las ciencias.

Palabras clave

Objetivos de Desarrollo Sostenible, ODS, aprendizaje experiencial, competencias de comunicación en inglés.

Abstract

The Sustainable Development Goals (SDGs) are a set of goals of the 2030 Agenda that need to be worked on with students from Primary Education. For this reason, I have designed and implemented a learning situation that is based on working on the SDGs from an experiential perspective.

Experiential education is a way of involving children's lives in their learning process, making them participants in said process, especially in the teaching of a foreign language, in this case, English. This proposal also seeks to develop pupils' communication skills in English through science.

Keywords

Sustainable Development Goals, SDGs, experiential learning, communication skills in English.

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In this Final Grade Document, I am describing an educative proposal created for a school in Palencia, Spain.

Throughout the years studying the Grade in Primary Education I developed different competences, and some of them were the ones that helped me narrow the topic for this work.

The design and implementation of this document should evidence the development of competences regarding the ability to apply my knowledge of my work or vocation in a professional manner, demonstrating through the development and defence of arguments and problem-solving within my area of study; having the ability to also gather and interpret data within my field of study in order to make judgments that reflect on essential issues; and also being able to transmit information, ideas and solution to both specialist and non-specialist audiences.

The specific competences that are evidenced in this document involve the knowing and understanding of the characteristics of Primary school pupils; the knowing in depth of the fundamentals and general principles of the Primary stage; the knowing of the organisation, normative and legislative elements of Primary schools, going up to European legislation due to the responsibilities Foreign Language teachers assume in Bilingual Schools. Further competences being assumed include the developing of the ability to work in teams and define educational projects for the centre; the capability of selecting and using in the classroom the information and communication technologies that contribute to learning, as well as promoting personal development of the pupils.

 English Foreign Language Teachers in Bilingual Schools must also design processes where students develop their ability to use scientific knowledge to understand the physical world and social reality, developing at the same time skills and attitudes that facilitate the exploration of facts and natural phenomena as well as their subsequent analysis; the capability of adequately transforming the scientific knowledge of reference linked to the Social Sciences into knowledge to be learned by means of the appropriate processes of didactic transposition; the ability to use language as a tool at the service of communication and the understanding of reality.

Besides we have to develop the skills and abilities necessary for the interpretation and creation of literary texts; and the ability to plan learning processes suitable for all the

pupils and assessed in relation to the relevant foreign language, as well as select and to select, devise and develop teaching strategies, types of teaching activities and resources.

All these competences were developed along the previous years studying the degree, but I put them into use specifically with the realization of this project in the school with the pupils.

Through the development of this Final Grade Document I am going to demonstrate that I achieved the different competences mentioned before in the school I implemented it. This school is in the outskirts of the city, but very close to the centre. It is a one-line school.

This project was made with year 5, which were 20 pupils, from ages 10 to 12. The pupils do not have all the same level of English. Some of them have a higher level of understanding, not needing further help with it. Most of the pupils have an average development of competences expected for their age and school year, nevertheless some of the pupils have a lower development and need help to understand information, either from teachers of from other classmates.

I chose to work with this group of pupils because I could identify in them some of the features that are the centre of my work, such as the need of a higher use of the English language for thinking and communicating and the need to develop their social competences, because they were not used to working together in groups, so this project was designed including a process where pupils had to work in pairs, taking a little step into cooperative work.

The school is a bilingual school. Apart from the English subject, English is the vehicular language to learn Arts and Natural Science. For this reason, I decided to develop the project in the Natural Science subject, because it offers the teacher the opportunity to work in a scientific field. Introducing the pupils in the field of investigation and scientific opinion.

This school has a variety of educative programs, either compulsory or optional, from the compulsory programs outstand the Conducting Thread program, regarding the Sustainable Development Goal, each class/level select one or two goals along the school year. Taking advantage of this program I decided to work as well with the SDGs, but focusing on some new goals, different from the ones they had assigned.

The school is a BITS school, where implementing active methodologies is quite common, involving cooperative methodologies in all tutorials, besides bilingual section is provided with Assistant Teachers from English speaking countries who offer opportunities to improve oral expression, interactions and debates.

The school has an "Arts program: *Entusiasmarte"*, which focuses the attention on different artistic expressions, last course it was focused on different XX and XXI artists, some from our city or close. Being one of the artists worked with in the realism style, the pupils had to draw the animal or plant they were investigating using the techniques associated to that style.

Another program that the school works with is related to robotics with LEGOs, the pupils from the Years 3 and 4 had to create different structures, mostly related to water, following different roles (builder, mapper, etc.) and completing different steps and questions.

The school also participated in a program Erasmus+ 2021-2023. In this program some of the teachers went abroad in 4 different occasions. On two occasions the teachers where shadows of teachers from the country they were visiting, and on the other two occasions they attended different courses that would help them in class.

The purpose of this project is to work with experiential learning with the pupils. Having the children experience their learning in their own lives, rather than just listening, doing homework and exams. The specific topic we worked on were animals and plants that live near our school, how they are beneficial to us and how are we endangering them.

Many animal and plant species are becoming endangered nowadays, including some that live close to us, like the bees. There are a lot of movements that promote the help and preservation of these endangered species, but if we, as teachers and part of the educative community, don't promote this with our pupils, who are the future of the population, we cannot expect to help these animals as best as we can.

As it was formerly said the school is involved in this many optional programs, one connected to the Erasmus is linked to the Sustainable Development Goals (SDGs), that have been around since 2015. These goals intend to protect the planet, reduce inequality and end extreme poverty. As I said, some of these goals are focused on protecting the

planet and intertwine with our project of natural species living near us and the human impact in them.

1. OBJECTIVES

The main objective I want to achieve with this project is to get the pupils to mix their lives and their learning, having an active role in their education. I also want to fulfil other goals within the pupils with this proposal:

1. Use their second language as a way of communicating to others to document, look for information, share responsibilities, organise ideas and gather information and be able to share information with people who have no knowledge about the topic; therefore, promoting a scientific mindset within the pupils

2. Generate a sense of responsibility to "take care" of the flora and fauna species that live near the pupils. To take care of them they have to know them, why they are needed and the potential dangers that affect them in a way that they might promote a good relationship with natural environments and their conservation.

3. Get them to identify their role as a citizen and care for their environment, considering what they see and applying the scientific method.

4. Get them aware of the SDGs, starting from the natural surroundings most close to the pupils.

5. Encourage them to investigate their natural surroundings.

2. THEORETICAL BACKGROUND

This proposal is based on different theories, in this section I am going to gather the different authors and ideas that act as a base for my didactic proposal.

Experiential learning theory, mostly developed by Kolb, has its grounds on many other authors who have investigated about life experience and learning as Lewin, Dewey, Jung or Piaget.

D. Kolb and A. Kolb built the theory with six propositions that were based on different authors. These propositions are (page 194, 2005):

1. Learning is best conceived as a process, not in terms of outcomes. To improve learning in higher education, the primary focus should be on engaging students in a process that best enhances their learning - a process that includes feedback on the effectiveness of their learning efforts. [...]

2. All learning is relearning. Learning is best facilitated by a process that draws out the students' beliefs and ideas about a topic so that they can be examined, tested, and integrated with new, more refined ideas.

3. Learning requires the resolution of conflicts between dialectically opposed modes of adaptation to the world. Conflict, differences, and disagreement are what drive the learning process. In the process of learning one is called upon to move back and forth between opposing modes of reflection and action and feeling and thinking.

4. Learning is a holistic process of adaptation to the world. Not just the result of cognition, learning involves the integrated functioning of the total person – thinking feeling, perceiving, and behaving.

5. Learning results from synergetic transactions between the person and the environment. [...]

6.	Learning is the process of creating knowledge. [...]

In experiential learning, the pupils work with multiple intelligences. They work with emotional intelligence, the pupils do outings, they will interact with their surroundings and will feel different emotions.

With the outings, the pupils also use naturalistic intelligence, working in and with their natural surroundings. While being out in natural environments in an educative way they must do fieldwork, which can depend on the type of project the pupils are developing. This fieldwork can vary from a notebook, to pictures, to observation charts, for example.

Working with the scientific method the pupils also develop the scientific intelligence, having to reason and think in a logical way, not only when being outside but also when they construct their knowledge and their work.

Interpersonal intelligence is worked with by the pupils when working cooperatively, taking into account not only one's feelings and intentions but the rest too.

Besides, the pupils will try to convince people though a campaign, in this case we will develop some aspects involved in entrepreneurial intelligence, the pupils have to take initiative.

It is crucial that the pupils develop skills and capabilities, they can help by drawing attention to the learning process, rather than just the results; they engage the pupils into active learning; they empower the pupils to deepen their understanding of topics and not just recollect information; they facilitate positive learning habits; and equip with a new range of criteria for pupils to judge their learning progress.

The different thinking skills and personal capabilities are:

Figure 1

Thinking Skills and Personal Capabilities Framework
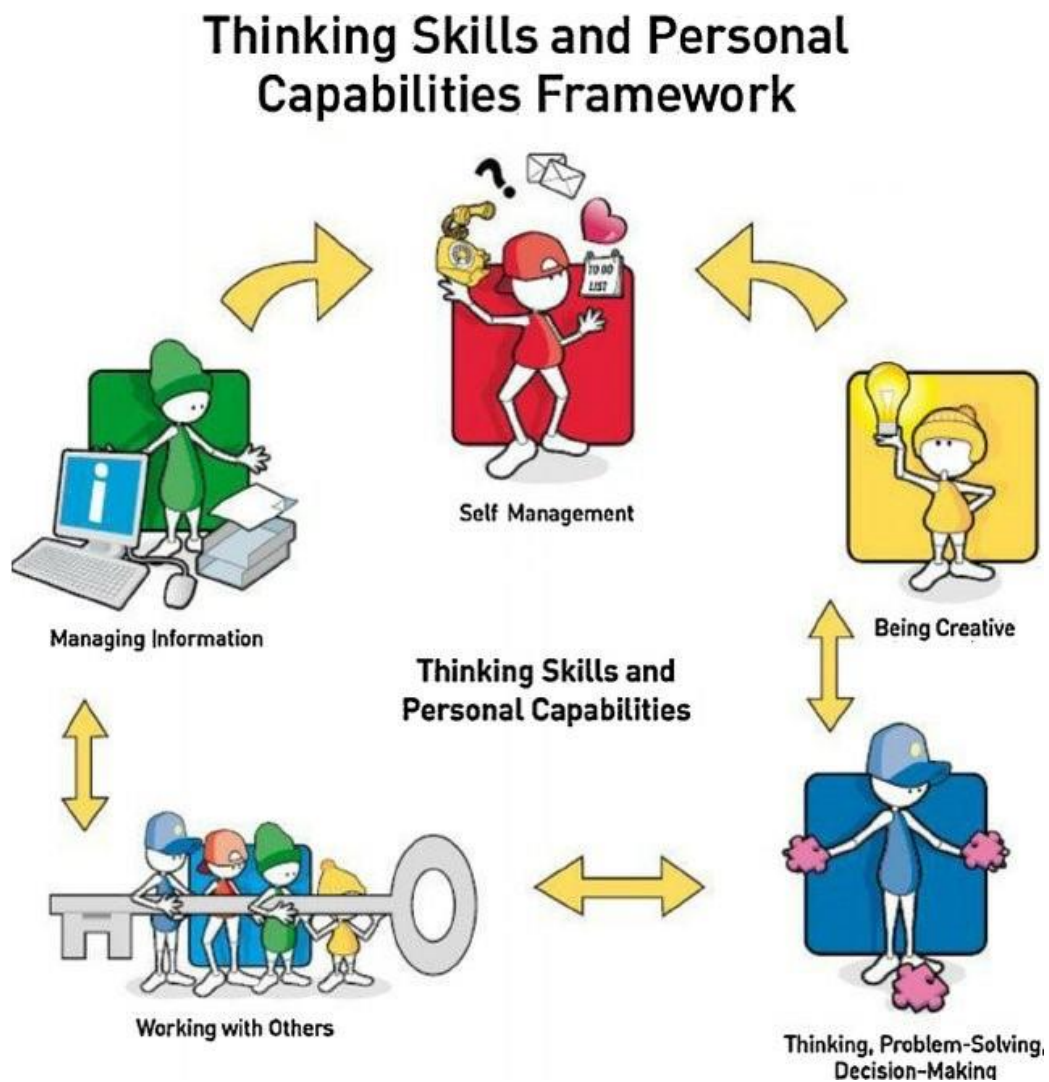
Note. By Northern Ireland Curriculum, 2007.

With the developing of these skills the pupils will be able to "think more skilfully" (Northern Ireland Curriculum, page 2) than before, making their thinking a quality one. Also, with these skills the pupils will be able to have a deeper understanding of their knowledge, being able to evaluate and judge their progress in learning.

With the developing of personal capabilities the pupils can access to opportunities where they can experiment with different ideas and learn from their mistakes while taking initiative and working collaboratively. For this to happen it is important that pupils have self-esteem and confidence, and that they are fostered throughout their learning.

While developing these thinking skills, pupils are also developing some of the competences that appear in the Spanish curriculum, because they are very similar, and can be interconnected.

With the thinking skills the pupils understand that they use a specific type of thinking depending on the situation they are, as well as a different type of intelligence.

Design thinking is a methodology that is human-centred, it provides the structure and tools to help everyone think like a designer, this designer is a person that thinks, plans and takes action using the design process, leading to the improving of a situation or the solving of a problem in particular. To follow this design process, the designer has to follow five phases: "empathize, define, ideate, prototype, and test" (Lee, 2018, p. 20), and each has a particular goal.

To emphasize in the education field, this human-centred methodology also has inquiry-based scaffolding and mindsets that lead to innovation, applying transdisciplinary knowledge and skills from the part of the pupils.

Design thinking will help the pupils develop Seven Survival Skills, which is a creative process that will lead them to approach problems and tasks in innovative and effectives manners.

Wagner identified the Seven Survival Skills for the 21st century (Lee, 2018, pages 13 and 14):

1.   Critical thinking and problem solving: Ability to sift through information, gain a deep understanding of a problem and its context, and apply relevant information to find solutions through a spirit of inquiry.

2.   Collaboration across networks and learning by influence: Ability to learn from and work with groups from diverse cultures harmoniously, and influence others through persuasion and reasoning within a trusting relationship.

3.   Agility and adaptability: Ability to maneuver through distractions and obstacles, to make appropriate changes to better suit a workplace of continuous change, or to pivot an

objective because of a new need discovered through copious amounts of information or the emergence of complex problems.

4.   Initiative and entrepreneurialism. Ability to take self-directed actions and seek new opportunities to bring change, make improvements, and find solutions to difficult problems.

5.   Effective oral and written communication: Ability to clearly and effectively share ideas and thoughts to others form different perspectives and cultures.

6.   Assessing and analysing information: Ability to sift through and evaluate an immerse quantity of readily available information to identify valuable knowledge that can lead to solutions.

7.   Curiosity and imagination: Eagerness to learn about the ambiguous and interesting, and to think about what can be improved or reinvented through the use of creativity.

Design thinking helps pupils became "future-ready citizens", with the abilities and confidence to face challenges in a world that is constantly changing and innovating. Making this a great methodology to implement with Project Based Learning (PBL) and Science, Technology, Engineering and Mathematics (STEM), focusing both in real-world experiences.

With design thinking the pupils learn from their failures, they can see the problems and challenges as opportunities to improve and resolve with the skills and confidence the design thinking provides them with to believe they can have a beneficial impact on any situation.

Design thinking requires six key mindsets to achieve it fullest potential, according to K12 Lab Network wiki these are them:

1.   Human centred.

2.   Mindful of process.

3.   Culture of prototyping.

4.   Bias toward action.

5.   Show, don't tell.

6.   Radical collaboration.

Human centred

Pupils with this mindset can think in the perspective of others, what we usually call "walking in the other person's shoes", in order to understand what they need and want.

Mindful of process

This mindset helps the pupils to think about what they are doing in the different phases of the design process, considering the specific phase they are in.

Culture of prototyping

The pupils apply what they learn to improve what they have created, when building artefacts or solutions. They can create and test their inventions quickly and learn from their failures from the feedback they receive.

Bias toward action

With this mindset the pupils gain the disposition to taking initiative and making decisions while taking self-directed actions. They also get the ability to overcome their fear of failure.

Show, don't tell

The pupils communicate and share their ideas in a visual way, like sketches, prototypes or digital visualizations¸ with this they can bring clarity to the information they want to communicate and helps organizing their thoughts.

Radical collaboration

The pupils with this mindset can learn and work together using their social and interpersonal skills. This mindset values teamwork, that needs a family-like atmosphere for the pupils to build positive relationships through trust and appreciation of each other.

It is very important that the pupils overcome their fear of failure and see it as a way to recognize what needs to be improved. Help the pupils understand that failing is not a synonym to giving up, that if you are wrong you have to learn from your mistakes and perform better the next time, not perfect, but better than before, always improving. It is also important that the pupils themselves are the ones that end up assessing themselves and the product of their work.

For this reason, when my pupils showed me what they were finding and writing, even though I corrected different things, but I wanted them to see the different mistakes they could have had, some of the pupils realised and some didn't. The thing I did intervene the most was when the children where developing their scripts for their presentation, I tried to help them with the language they were using, the way they wanted to present their information, etc.

Design thinking has five phases:

1. Empathize.

2. Define.

3. Ideate.

4. Prototype.

5. Test.

The book by David Lee defines and explains these phases in a specific way, but I am going to explain them in the way I used them in my project.

Empathize

In this phase the pupils focus and learning is in the people they design for and the context. They need to understand the needs and wants of the final user. A good way for this learning is interviews, where the pupils learn about the people they are designing for, and interview experts in the topic.

The people the pupils designed for where their classmates, for the presentations, but most importantly the rest of the school members that would walk in the hallways and pass by the different posters they made. The pupils had to make sure the information they

captured in the posters was understandable for people that knew nothing about those animals and plans, but still had all the information they wanted to show.

Define

In this phase the pupils have to synthesize the information they gathered in the different investigations. Decide which things are the most important, how can they be grouped, how can they write it in order for everyone to understand and learn.

Ideate

In this phase the pupils have to capture everything they decided in the previous one.

For this phase is very important the collaborative work to generate diverse and creative ideas. This collaborative and creative work has to be dan in a learning environment that can conduct to an effective generation of ideas through the creation of shared beliefs and guiding principles.

The previous step to ideation is having a positive mindset, specifically practical optimism, which is a combination of practical beneficial action and positive thinking. With this the pupils can aim for positive results by building onto the ideas of the rest of the teammates.

To choose the best ideas the pupils have to analyse and evaluate them to then choose the best ones through convergent thinking. The ideas that should be chosen are the ones with most potential in innovation or can produce innovative solutions.

Prototype

In this phase the pupils create their own online presentations, using the platforms they prefer, making a prototype of what will be their final poster. For this they need to work cooperatively again between the two members of the pair and decide the best ways to engage with the possible audience and how to organise all the information the gathered and decided in previous phases.

Test

During this phase the pupils gain feedback from the different teachers that are in the room during the project, providing them with different ideas for their posters.

For this to happen the pupils must embrace failure, understand that through failing you can learn, and that everyone can and will fail sometimes.

I decided this project would benefit from an outing, because, as I mentioned before the pupils needed to work on their social competences and work cooperatively. The pupils have to identify and manage their emotions, they have to work in pairs, where they have to address problems arising from human intervention in the surroundings, promoting a respectful a responsible attitude towards nature.

The pupils analyse the different causes and consequences of human intervention in the surroundings, searching for the preservation of the biodiversity in the natural surroundings.

This project is implemented in a bilingual school in a bilingual subject, Natural Sciences. This bilingual education is approached by different curricula. With the Spanish curriculum, we can see the focal point being the pupils' learning. The importance of education is the pupils and how they learn, and that is what is addressed in the curriculum.

In bilingual schools, they also work with the CLIL (Content and Language Integrated Learning) curriculum. One of the basic principles of a CLIL classroom is using the language to learn and to communicate, which means the lessons are not language lessons, but subject lessons given in a different and foreign language, learning a subject and a new language at the same time.

CLIL methodology has different important components (Zemach, 2021):

- Content teacher: they teach a subject (science or mathematics, for example) in a foreign language. It is necessary for them to be experts in the fields of language acquisition or pedagogy, which leads to a training in a technique known as *translanguaging* (using both, the native language of the pupils and the foreign language, in our case English).
- Language teacher: they are responsible for teaching the foreign language (English) and supporting the content teacher with pertinent vocabulary and functional language linked to the subject, highlighting critical thinking.
- Coordinator: they are responsible for organizing sessions for the content and language teachers to be able to meet, talk and coordinate their lessons.

One important factor of a CLIL lesson is involving the different skills in language: listening, reading, speaking, writing and interaction. All of these skills are worked with and deepened in the project developed. The pupils had to read different information to then summarize into a small script for them to show and tell in front of the rest of the classmates, who had to listen and complete two stars and a wish.

To focus on linguistic competence and use a foreign language as a way of communicating information to other people the pupils need to get used to that language in their day to day. As I said, the pupils needed to use more the English language, so I tried to communicate with them as much as possible in just English, without the need for Spanish to clarify, at the beginning it was complicated, but as time passed they were able to understand more of just English, even help each other with understanding different things.

Another important document to take into account when programming lessons in a bilingual setting is the Common European Framework of Reference for Languages. This framework offers an action-oriented approach, where the users and learners of a language are "social agents", and uses different resources, like volitional, emotional and cognitive.

An important part of teaching in a second language is scaffolding. This is a teaching structure introduced by Lev Vygotsky in his sociocultural theory, where he also talks about the *Zone of Proximal Development* (ZPD). As Raymond described, "The zone of proximal development is the distance between what children can do by themselves and the next learning that they can be helped to achieve with competent assistance" (2000, page 176).

Scaffolding involves assistance to the pupils for them to be able to build on their previous knowledge and interiorise the new information. Vygotsky explained scaffolding as the support the teachers and others give the pupil in their development, providing a supporting framework that helps them reach the next level or stage.

Following Vygotsky's language theory, we, as teachers, need to focus on our public language, to generate a private speech in the pupils. The creation a thoughtful public speech, with the correct intonation, paralanguage and non-verbal language needs to generate in the pupils a private speech, in which we can see if they understand us.

Scaffolds are temporary, once they have served their purpose they have to be retired to let in new scaffolds, or as time passes the pupil will be able to fulfil the different tasks or dominate the concepts on their own.

An important part of scaffolding is mediators. Mediators are different tools given to the learners by the teachers to help them in their process. Mediators are composed of concepts worked with at the moment and organised in simple schemes that help the learners arrange the information in their minds. The pupils can progress on their own with just the help of the mediators and feel more independent and autonomous.

The ZPD is not the only theory that involves scaffolding as a language teaching method. The L. A. S. S. (Language Acquisition Support System) from Bruner indicates that children need support when developing linguistic competence. With the baby's maternal language, their mothers, fathers and close family and surroundings are the supporters of that language; but with the second language, the teachers become the main support.

As is former said before, teachers have to provide the scaffolding to the pupils for them to be able to develop the scientific competence following linguistic patterns.

At the beginning, when I explained to the pupils what I wanted them to investigate about the plant or animal they chose I saw they were a bit lost, because they were not used to the language and they had to remember them, they were asking for reminder to annotate the different parts. For that reason, I decided to make a poster of the different parts they had to divide their information into (see appendix 1) and the different data that had to appear in them, they could add more, but those where the basis.

The pupils' assessment has be divided into two different types: assessment of learning (AofL) and assessment for learning (AforL). Assessment of learning is focused on registering the pupils' achievements, progress and improvements sharing these evidences with the families through Reports. Whereas assessment for learning is focused on rising awareness of achievements and failures through the daily evidences, associated to teaching techniques, strategies used and the learning. Pupils take an active role in their learning, like the self or peer-assessment, as well as setting their own targets.

An important part of this learning situation is the self-assessment that pupils assume. Self-assessment has been defined multiple times, nevertheless, all the definitions

have a common base idea, which Panadero et al. (2019, page 3), establish as "learners' engagement with a process or product of their own learning to describe their perceived progress or result". In self-assessment the pupils must reflect on the work they have done and the way they did it, assessing themselves following different items.

With the self-reflection the pupils must do on their own, analysing their work and behaviour with their partner they can see their weak points. With the help of the teacher the pupils can find ways of working on those weak points and improving them.

Another type of assessment that is used in this didactic proposal is peer-assessment. In peer-assessment the pupils should analyse the outcome of their classmates' work and assess them according to different items.

With this type of assessment pupils start to understand what constructive criticism is and learn how to manage it and how other people can see things about their way of doing things that they can't really see.

3. PROJECT

Project overview

The focal point of this project is for the pupils to understand the impact humans have in nature in an experiential way, involving themselves and their lives. To make this investigation have importance in their lives and make it as experiential as possible for them the natural space we focus on is the Ribera Sur Park, which is near the school and where most of them live.

In the Ribera Sur Park, the students from the Higher Technical School of Agricultural Engineering of Palencia celebrate every year a party where the attending people always leave litter around, either because they do not want to throw it at the designated bins or because there is no space in those bins anymore.

The pupils will form a scientific opinion regarding the use of the park and the effects the party has on the different flora and fauna that lives in the park.

Methodology

I based the development and implementation of this project in different methodologies.

Experiential learning

Lewin, Piaget, Roger, Montessori and Kolb "all believed that pupils need to experience the lesson by being involved and not just as passive participants".

The pupil has to be the central point of the learning for it to be experiential since the focal point in this type of learning is, as Rani and Tyagi (2022) "the practical application of knowledge and abilities to situations encountered in everyday life" (p. 179).

Experiential learning is sometimes known as "experiential education", but, as Umar (2018) says, they are not the same, experiential learning is more pupil-centred, with a bigger concern in the individual's learning process; while experiential education is an educational philosophy, being more generic and complex.

Keeton and Tate (1978) defined experiential learning as the learning that involves the learner directly with the experiences that are being studied, but the learner does not encounter those realities during the process.

I decided to follow the experiential learning because, in my opinion, the way to engage the students the most is focusing on their interests and how they collide with our interests as teachers and what we want to work with the students.

Design thinking and thinking skills

With the design thinking methodology, the pupils take an active role in their learning. Pupils look for solutions to specific problems that arise in their environment, applying knowledge from different areas in a transdisciplinary way. This methodology wants the pupils to be able to approach tasks innovatively and effectively.

It is necessary to promote certain feelings within the pupils, like self-esteem and confidence, which helps them get through their learning in a better way.

Project Based Learning (PBL)

Project Based Learning is a teaching method in which pupils gain knowledge and skills by working for an extended period of time to investigate and respond to an authentic, engaging, and complex question, problem, or challenge.

The roots of this methodology go back to the work of John Dewey, who explained that for pupils to develop a personal interest in what they work with they have to engage in real tasks and problems that have a meaning to them, being similar to real-life situations.

In PBL, the pupils need to think critically, solve problems, collaborate and communicate to answer the driving question proposed with high-quality work.

For a project to be meaningful the pupils have to perceive the work with a personal meaning, and it has to have an educational purpose.

This methodology consists of pupils addressing a problem enclosed in a real-life context.

To sequence a project, we have to go through for stages (Lee, 2018, page 24):

1. Driving question.

2. Building knowledge to answer the question.

3. Develop the products that answer the question.

4. Present the products that answer the question.

In the case of our project, the pupils are researching fauna and flora that live in a park close to their school, and close to most of their houses. They all choose freely what plant or animal they wanted to investigate, giving it a personal meaning for each pupil and why they chose that plant or animal. The educational purpose comes with the presentation they create and then explain to the rest of the class and the poster they make to hang in the hallways of the school, letting the rest of the pupils learn about those animals and plants, the benefits they provide to us and their habitats and the dangers they face.

Our driving question was: How do humans impact affect the flora and fauna in our surroundings and how does that affect us?

The pupils presented their final products in two different ways:

- One for the rest of the class group: with a Canva or Word to support their presentation the explained all the information they gathered.
- One for the rest of the members of the school: the pupils stuck in some carboards their presentations printed and put them in the hallway for everyone to see surrounded by drawings of the flora and fauna they investigated made by them.

Scientific method

The scientific method is not wildly used in schools in the correct way. Most teachers teach science and experiment through random experiments that have no connexion between them. Without diving into the scientific method and all the many ways it can be used, not just for laboratory experiments.

The scientific method has various steps: first we start identifying what we know and what we want to know by observing. From that we generate a question and a hypothesis, that we investigate through variables and control, registering everything. Ending with drawing conclusions after the analysis of the data collected.

The steps in the scientific method can be very beneficial for the pupils. By observing their surroundings, they use their senses to explore, they ask questions with the guidance of the teacher to find out what they already know and what they want to know, generating a question, that comes from their interests and what they know and have observed. This helps with developing various skills, such as recognizing or asking and responding questions.

When the pupils decide on the hypothesis the teachers help them by guiding their previous knowledge and asking them to make predictions about what they think would happen. The pupils then experiment, having a control that will not be experimented on and one or more variables that will be experimented on. With the teachers design of different activities the pupils will be guided and scaffolded so they can be able to think and analyse what they see and record. By analysing the data, they record, the pupils have to, with the help of the teacher, draw conclusions, decide if their hypothesis was true or not.

The present "learning experience" marks the steps followed to introduce the scientific method. The pupils had to investigate different animals and plants that live in the Ribera Sur Park. Firstly, they had to remember and guess different animals and plants that can be found in the park. Then, by visiting the park they can verify if the animal or plant they chose is, in fact, found in the park or not, and in that case, they must change to one that is found there. Then they had to find out different information about that species to, finally, create a presentation to explain what they found to their classmates and a poster to show the information in the school hallway.

CLIL methodology

This methodology involves all the different skills in language, which are:

- Listening: the pupils have to listen, not only to the teacher but also to their classmates. Having the ability to listen is crucial for pupils, in their native language and in a foreign language.
- Reading: pupils need to be able to read and look for specific information while doing it, gathering the important and necessary data that they need.
- Speaking: being able to speak and transmit information to the listeners is key in foreign language. Pupils need to know what language to use, considering non-verbal language and paralanguage.
- Writing: writing not only involves words and phrases, it also considers images and symbols, what they mean and represent, where they are located with the text, etc.
- Interaction: pupils participate in different interactions in the classroom, with the teacher and with their classmates, having the ability to understand the interaction queues and intervene correctly.

Scaffolding

It is important that teachers take into account the zone of proximal development of their pupils, either individually, in pairs or as the whole group. Making the necessary adaptations for each necessity.

The help to build new knowledge does not need to come always from the teacher, it can also come from the classmates, especially when working in a cooperatively way.

Contents

A. Scientific culture.

1. Initiation into scientific activity.

- Appropriate instruments and devices to carry out precise observations and measurements in accordance with the needs of the research.

- Encouragement of curiosity, initiative, perseverance and a sense of responsibility in carrying out the various investigations.

2. Life on our planet.

- Biodiversity in our immediate environment. Experiential and experimental studies of biodiversity. Interest in observation and rigorous study. Use of audiovisual and technological media or real samples for the study of living beings. Practice habits of care, respect and conservation of living beings.

B. Technology and digitisation.

1. Digitisation of the personal learning environment.

- Strategies for safe and efficient information searches on the Internet (assessment, discrimination, selection, organisation and intellectual property).

- Strategies for collecting, storing and representing data to facilitate understanding and analysis.

Evaluation criteria

Specific competence 1.

1.1 Search for, analyse and organise information about the natural environment using digital resources in accordance with the needs of the educational context, in personal and/or virtual learning personal and/or virtual learning environments, in a safe and efficient way. (STEM4, CD1, CD3, CD4, CPSAA2, CPSAA4).

1.2 Re-create and create simple digital content about the natural environment using digital applications and digital resources, communicating and working individually, in teams and/or networks. (CCL1, CCL3, STEM4, CD2, CD3, CD5, CPSAA4, CE3, CCEC4).

1.2 Re-elaborate and create simple digital content about the natural environment using digital applications and digital resources, communicating and working individually, in teams and/or networks. (CCL1, CCL3, STEM4, CD2, CD3, CD5, CPSAA4, CE3, CCEC4).

Specific competence 2.

2.2 Seek, select and contrast information from different safe and reliable sources, using it in research related to the environment, using it in research related to the natural environment and acquiring basic scientific vocabulary. (CCL2, CCL3, CD1, CD4).

2.5 Communicate the results of research on the natural environment, in different formats, adapting the message to the different formats, adapting the message to the audience to which it is addressed, using scientific language and scientific language and explaining the steps followed (CCL1, CP2, STEM2, STEM4, CD2, CD4, CPSAA4, CPSAA5)

Specific competence 4.

4.1 Develop attitudes that promote emotional and social well-being by managing one's own emotions and respecting those of others. emotions and respecting those of others, developing intra- and interpersonal skills, promoting interpersonal skills, fostering healthy affective relationships and analysing the uses of technology and leisure (STEM5, CD4, CPSAA1, CPSAA2, CPSAA3, CPSAA2, CPSAA3, CC3, CE2, CCEC3)

Specific competence 5.

5.3 To value, protect and show attitudes of conservation and improvement of the natural heritage through proposals and actions that reflect commitments and behaviours in favour of sustainability. sustainability (CCL4, STEM5, CC3, CC4, CE1, CCEC1).

Leading activities

The moment of the learning situation that was developed at the school was formed by different activities, that took place between the 11th of April and the 18th of May; I am going to talk about the leading ones.

Driving question and brainstorming: we start with the driving question, getting the pupils familiarised with the new way of working for this project, letting them share their ideas. We have a brainstorm of what flora and fauna we think are in the park, each pair decides which one they want to investigate, and they start searching for specific

information about them, especially photos, so they can identify them in the park without problems.

First outing to the park: we go to the park and look for the plants and animals each pair chose and take photos of them in their habitat, see how they are, how they look like, how they interact with each other and the humans (in the case of the animals), see how the park is. The pupils have to document in their field notebook the state in which they found their species.

Searching information: the pupils start with their search of information about the plant or animal they have chosen and start with the presentation. They had to look for the answers to specific questions (can be seen in the appendix 1) in different web pages that were offered by the teacher.

Script: the pupils start preparing the script for their presentation, following a specific structure of what they have to write, like the presentation of both members, the presentation of their animal or plant, the information about the species, the location, the benefits and the dangers, and the ending of the presentation.

Organisation of the poster: the pupils have to decide who to organise the printed information in the posters to put in the hallway, with the decorations of drawings they painted.

In Arts, as I talked before about the program *Entusiasmarte*, we were working with realism drawing, so the pupils drew their animals or plants in a realistic style to display with the poster.
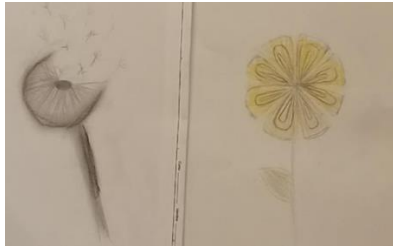
Figure 2

Drawings of a sparrow and a wasp

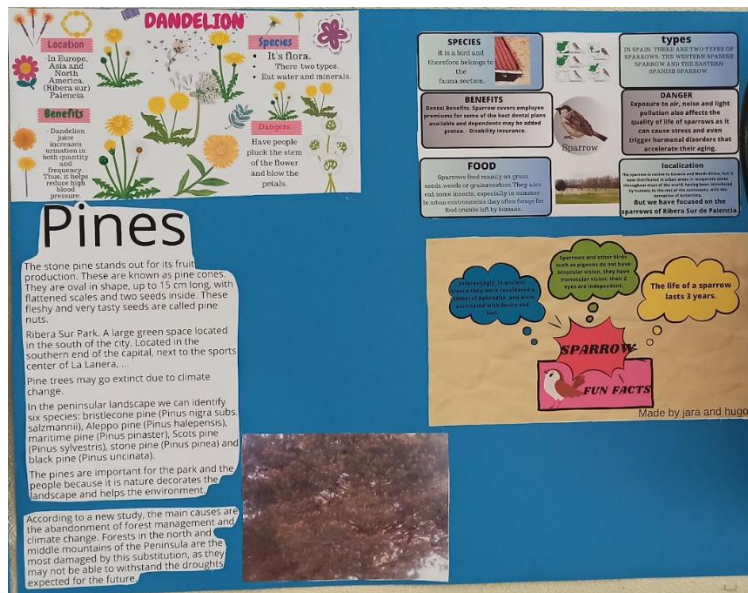Note: drawings created by two of the pupils.

Figure 3

Drawings of a dandelion in its two stages

Note: drawings made by two of the pupils.

Figure 4

One of the posters in the hallway

Note: poster organised by the pupils with my help displayed in the hallway.

Presentation of the information: the pupils present the information found to their classmates, following their script and complete the peer-assessment and the self-assessment sheets.

Second outing to the park: we visit the park again 4 days after the ITA party and see if the park is cleaned or not, take pictures of the place, the animals and plants, see how everything is now in comparison to what they have in their field notebooks from the first outing.

Closing debate: we see pictures of the park right after the party ended, and the days after it to see the evolution of the cleaning. Debate about whether it was cleaned enough and how the animals and plants we investigated are affected by the party and the litter left afterwards.

The role of assessment

As I mentioned before there are two types of assessment that I worked with, assessment of learning and assessment for learning.

To start first with the assessment of learning the activities that helped me gather the achievements and progress of the pupils were:

- Brainstorming about the driving question: I was able to take notes and observation about the different answers the pupils gave, seeing the way they were intrigued by the task.
- The outings: I was able to observe the pupils, see how they behaved and how the completed their field notebooks and took their pictures.
- The search of information: I could observe how the pupils followed the different questions they had to look for in the different provided webpages.
- The script: I could see how they followed the guidelines of the script, using the correct language to give scientific information to people who don't belong to that field.
- The organisation of the poster: I was able to see how they wanted to display the information they gathered, asking them questions about the reasons of their decisions.
- Presentation of the information: I could take notes of how they performed, if they took into consideration the recommendations, like the ones about their non-verbal language.
- Closing debate: I was able to see if all of the pupils participated in the debate, giving their opinions, showing that they interiorised the importance of taking care of our environment.

The activities that carried out the assessment for learning of the pupils were:

- The outings: the pupils were able to see how they completed their field notebooks, seeing if they were able to do it in the pairs or if they needed help for specific things.
- Presentation of the information: the pupils had to complete a self-assessment and a peer-assessment sheet.

As it was formerly mentioned, the pupils had to complete a personal assessment sheet, were they had three different levels of achievement (very good, good and developing) and different categories of work (research and collecting information; sharing; completing tasks; contribution; listening to other group members; and cooperating with my team).

Each level of achievement has different sublevels regarding the type of work they refer to, including what is expected in that level. Half of the pupils understood they had to choose a specific grade of achievement within the level, but the other half just selected the complete level.

The pupils were not very used to assess themselves in a way in which they had to purposely analyse how they performed and worked. This indicates that it would be a good thing to work with them on analysing their work in the future, which was not possible for me, as this was done in the last weeks I had with them.

Figure 5

Self-assessment of one of the pupils

🏛	Very Good	Good	Developing
Research and collecting information 6	I collected *lots of* information from various places, such as books, the internet etc. 6 - 5	I collected *some* information from a few places. ④ - 3	I only collected *a little* information from few places. 2 - 1
Sharing 8	I *always* shared my information or ideas with *all* my team members. 8 - ⑦	I *sometimes* shared information or ideas with my team members. 6 - 5 - 4	I shared *little* information or ideas with my team members. 3 - 2 - 1
Completing tasks 8	I met *all* deadlines and I was not late for meetings or to complete work. 8 - 7	I met *most* deadlines and was only late for *some* meetings and to complete work. 6 - 5 - 4	I missed *many* deadlines and was *often* late for meetings or to complete work. ③ - 2 - 1
Contribution 8	I *always* helped *every* team member with all tasks, such as gathering information, editing work. 8 - 7	I helped *some* of my team members, but not all to gather information and edit work. ⑥ - 5 - 4	I *didn't* help my team mates to gather information, edit work etc. 3 - 2 - 1
Listening to other group members 5	I *always* listened to the ideas and suggestions from my team. 5 - ④	I *sometimes* listened to ideas and suggestions from my team. 3 - 2	I *didn't* listen to my other team members. I often did it my own way. 1
Co-operating with my team 5	I *never* argued with my team members. I *always* talked about ideas and got everyone's opinion. 5 - 4	I *sometimes* argued with my team. I *sometimes* talked about ideas and thought about some opinions. ③ - 2	I *often* argued with my team mates. I *never* listened to their ideas and didn't think about their opinions. 1

Note: Williams, S (2013) Project Rubrics Self-Assessment (V2), provided by my mentor in the internship, completed by a pupil.

Figure 6

Self-assessment of one of the pupils

|	Very Good	Good	Developing
Research and collecting information 6	I collected *lots of* information from various places, such as books, the internet etc. 6 - (5)	I collected *some* information from a few places. 4 - 3	I only collected *a little* information from few places. 2 - 1
Sharing 8	I *always* shared my information or ideas with *all* my team members. 8 - 7	I *sometimes* shared information or ideas with my team members. 6 - 5 - 4	I shared *little* information or ideas with my team members. 3 (2) - 1
Completing tasks 8	I met *all* deadlines and I was not late for meetings or to complete work. (8) - 7	I met *most* deadlines and was only late for *some* meetings and to complete work. 6 - 5 - 4	I missed *many* deadlines and was *often* late for meetings or to complete work. 3 - 2 - 1
Contribution 8	I *always* helped *every* team member with all tasks, such as gathering information, editing work. 8 - (7)	I helped *some* of my team members, but not all to gather information and edit work. 6 - 5 - 4	I *didn't* help my team mates to gather information, edit work etc. 3 - 2 - 1
Listening to other group members 5	I *always* listened to the ideas and suggestions from my team. (5) - 4	I *sometimes* listened to ideas and suggestions from my team. 3 - 2	I *didn't* listen to my other team members. I often did it my own way. 1
Co-operating with my team 5	I *never* argued with my team members. I *always* talked about ideas and got everyone's opinion. 5 - 4	I *sometimes* argued with my team. I *sometimes* talked about ideas and thought about some opinions. 3 - 2	I *often* argued with my team mates. I *never* listened to their ideas and didn't think about their opinions. (1)

Note: Williams, S (2013) Project Rubrics Self-Assessment (V2), provided by my mentor in the internship, completed by a pupil.

Another type of assessment they had to follow was peer-assessment. This peer-assessment is "2 stars & 1 wish", in which, in their pairs, they had to give to their classmates "2 stars", two things they did good, and "1 wish", one thing they could do better, about the presentation they did of their investigation.

Even though my tutor at the school and me tried to remind the pupils to try to complete as much of the photocopy as they could in English, most of them ended completing it in Spanish by the middle of the first day of presentations. This was due to a lack of activities of this type during this and the previous years.

Figure 7

Peer-assessment of two of the pupils
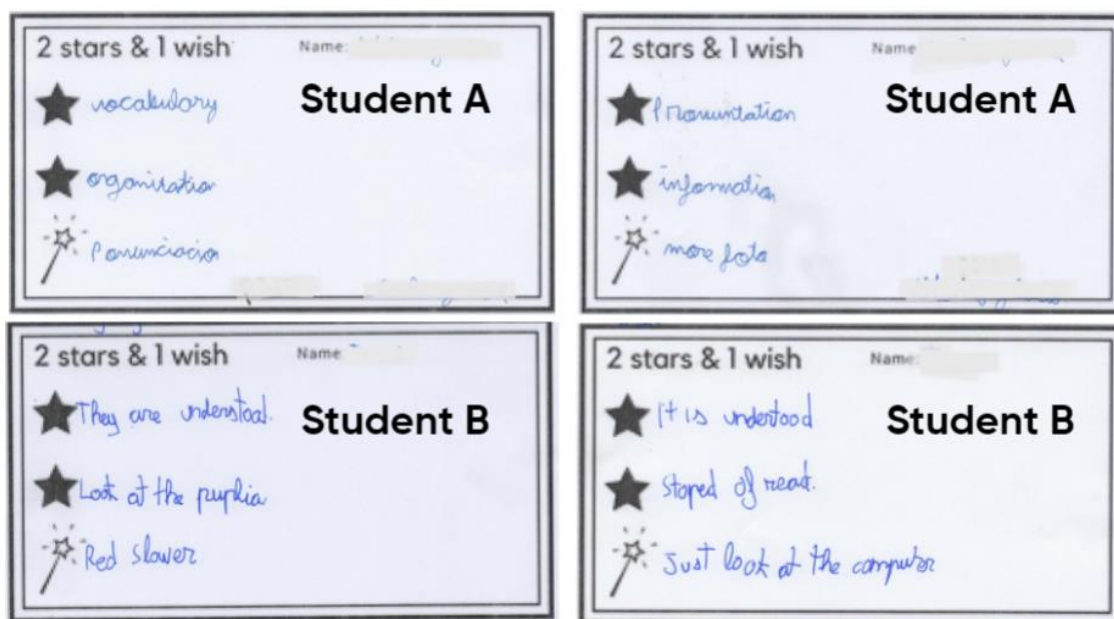
Note: Mack, R (2018) 2 Stars and a Wish, provided by my mentor in the internship, completed by two different pupils.

In this image we can see the "2 stars & 1 wish" completed by two different pupils for different presentations of the classmates. This peer-assessment was completed in pairs, but in these cases, both students were missing their pair for different reasons, which lead to them completing it alone.

To complete the "2 stars & 1 wish" I gave the pupils some parameters to take into account when listening to their classmates:

- Is the information they give clear and structured?
- Is their pronunciation and language correct?
- Is the presentation organised and structured clearly?
- Is the vocabulary about the plant or animal understandable?
- Do they show clear non-verbal language and consider/including paralanguage?
- Do they talk to the listeners or just blurt out the information?

I chose these photocopies because they are the most completed ones, this shows that they understood the parameters that I gave them and completed them with the

language code they knew. It is also clear that it was easier for the pupils to complete them alone, not having to argue with their partners. This indicates that as a follow up the pupils should first complete peer-assessments alone to then move to completing them in pairs.

Following the different evaluation criteria that I extracted from the curriculum I created an observation rubric which I completed for the different pupils all throughout the development of the project.

Results

The pupils created different digital presentations that then ended up as posters. The digital presentations were used for the show and tells they did for their classmates. Then the different elements of those presentations were printed and organised in different cardboards for the pupils to showcase their work and let the different members of the school that walk by learn about all the information they investigated.

Other results I could also see was the improvement the pupils made, when behaving themselves at the park, for example, they were more centred during the second outing, focusing on finding their animal or plant and comparing the data to the one collected from the first outing.

The pupils also show improvement during their presentations, taking into account the different recommendations when speaking in public, feeling confident when talking about something they are "experts" in.

I was also able to see how working from the perspective of the personal experience motivated the pupils to complete the tasks, and, in this case, also by knowing they have impact and contribute as citizens to preserve their environment.

4. FURTHER LINES AND CONCLUSIONS

This proposal has various moments, I just developed in the school the first part. The main line this proposal looks for with the pupils in the further lines would be to make them think scientifically, analyse and be critical of older people.

Having the pupils criticise the actions of older people, whose field of work and studies involve the natural environments, makes them feel interested in their actions, having the leading voice in a problem that affects us all.

The pupils would have to create a video, like a TikTok or an Instagram reel, that show the ways the university students advertise the park will be protected and the ways it was not.

Writing a letter to the Higher Technical School of Agricultural Engineering of Palencia and the students that organise the party, about solutions to the endangering of the park, like, for example, changing the location in rotation, letting the park and its species recover over more than a year.

A different way I could have proposed the pupils for gathering the pictures of their species at the beginning of the project, would have been studying a map of the park and dividing it into a grid. Where each pair would have assigned a specific square inside the park where they would take pictures of their animal or plant at the beginning and then at the end, after the party, to see the differences in the habitat. This way the pupils could have had pictures of the before and after for the posters or the video, for example.

Along the days I would hear the pupils talk about the project, what they liked and what they did not, I noted the fact that they had to do activities with different classmates outside of the school environment intrigued them and made them feel more interested in the tasks. In this case, the outings consisted of investigating the surroundings of the school and their houses, where the pupils develop their social and civic competences. Taking the pupils outside of the school grounds to investigate and learn in a real-life situation motivates them to focus more on the work they have to do.

Considering the different factors proposed by Brindley, quoted by Nunan (1998) I was able to tell if my pupils felt confident in the tasks they had to fulfil, finding ways to help them gain confidence when they did not feel that way. I was also able to find motivation in the tasks by involving their personal experiences and lives into the learning experience, making them participants and active figures in everything we did.

Starting to work with a different methodology than what they are used to let me create a base for future learning experiences. The language is very important point of this learning experience, with the need of being able to divulging scientific information to non-experts.

To conclude, taking into account pupils' interests, involving them in their own process of learning and making them aware of their surroundings and how they can change the world we are living in is essential to engage them.

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6. APPENDIXES

Appendix 1
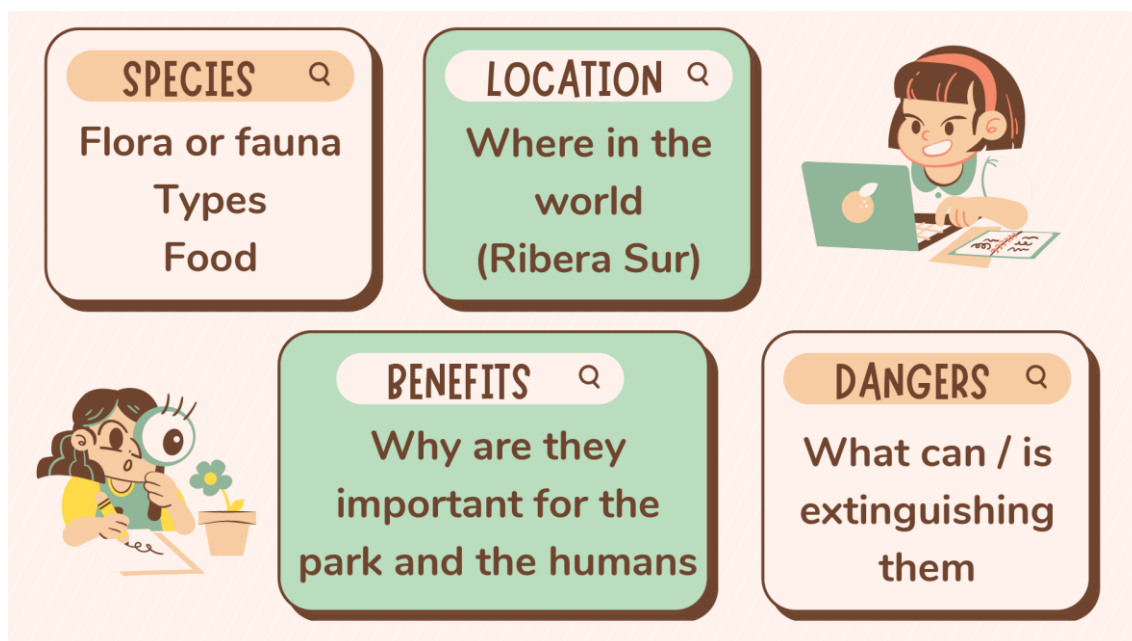
The poster I used for the pupils to know what they had to investigate to later put on their poster.

Appendix 2

HUMAN IMPACT IN NATURE.mp4

The link to the video of the final presentations of the pupils put together.