



Universidad de Valladolid

PROJECT BASED LEARNING

TRABAJO DE FIN DE GRADO

**GRADO EN EDUCACIÓN PRIMARIA
MENCIÓN LENGUA EXTRANJERA**

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PRELIMINARY ASPECTS

TITLE: Project based learning (El trabajo por proyectos)

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RESUMEN:

Lo que se pretende con este documento es acercar la metodología del trabajo por proyectos a los lectores de este Trabajo de Fin de Grado. En él se estudia de una forma detenida y detallada las principales características que este enfoque metodológico tiene y los aspectos más importantes a tener en cuenta para su aplicación en el aula, así como una puesta en práctica real. Para llegar a concretar todos estos puntos me he basado en el análisis y estudio de diferentes documentos bibliográficos y en mi propia experiencia personal durante el *Practicum II*.

PALABRAS CLAVE: Trabajo por proyectos, aprendizaje por investigación, proyecto, autoconocimiento, metodología.

ABSTRACT:

The aim of this work is to bring closer the project based learning methodology to all lectors of this final year dissertation. In this document main features of project approach are studied in detail, as well as its main aspects to take into account for its application in a classroom and a real implementation. For setting these points I have taken on board the analysis and study of different bibliographical sources and my own personal experience from my *Practicum II* period as a trainee teacher.

KEYWORDS: Project-based learning, inquiry-based learning, project, self-knowledge, methodology.

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1. INTRODUCTION

The mind is not a vessel to be filled, but a fire to be kindled- Plutarch.

It is known that to increase motivation in children for learning, numerous methodologies affirm that education must be focused on the interests of children. They must be taken into account and teaching activity must centre their point of action in students' autonomy and their real point of view.

What I am trying with this work is to study and show a non-traditional educational approach, Project-based learning methodology, and its main features and objectives. To write this document I have taken on board historical resources and different written references, but also my personal experience during *Practicum II* period.

Throughout this work I will go through different epigraphs that I will summarize to make easier this document's comprehension. I will start this document by pointing the main objectives that I have established for this work and the justification why I have chosen this topic to develop this final year dissertation, in which I make reference to different statements that will help me to support my election.

To continue, I will expose the most remarkable theoretical basis I have taken into account for the elaboration of this work based in project methodology, from its definitions, going through its characteristics and major precursors, to end with its main ways to be implemented both in first and second language; the major manners to be assessed, and the roles that teachers and students have when following this approach.

Later, I will relate another main point of this document: my personal proposal and its results for project-based learning, in which I will explain my design for project methodology, which I put into practice in a real situation during my period as a trainee teacher in United Kingdom.

Finally, I will do a final reflection of this entire project and document so that I can make clear the most outstanding conclusions I have drawn along all this period of working about this topic and the main perspectives that it involves, and to pave the way to understand and conclude this study.

2. OBJECTIVES

The objectives I have set for this work are:

- Learn more about alternatives methodologies for learning, focusing my attention on Project-based learning methodology.
- Look into Project-based learning approach and its main characteristics for being applied in my future teaching activity, both in first and second language.
- Bring Project-based learning closer, so that it can be known by a wider public.
- Share a real experience that followed project-based methodology.

3. JUSTIFICATION

One of the most outstanding points to support this work is based on the educational **legislation**, both Spanish and English. Spanish LOMCE Educational Law establishes that:

¹Project based learning, mainly important to competence based learning, is based on an action plan proposal whose main aim is to get a concrete practical result. This methodology tries to help students to organize their thinking, improving their reflection, critic and hypothesis creation and researching skills, through a process in which each pupil assumes the responsibility of their own learning, applying their knowledge and abilities in real life projects. (Page 44222)

That is why I consider that one of the main pillars we must take into account so that this approach can be developed in schools is educational legislation, since it also affirms that project methodology favours the integration and joining of the different

¹ Quote translated from the original text in LOMCE Educational Law in ORDEN EDU/519/2014 (page 44222): «El trabajo por proyectos, especialmente relevante para el aprendizaje por competencias, se basa en la propuesta de un plan de acción con el que se busca conseguir un determinado resultado práctico. Esta metodología pretende ayudar al alumnado a organizar su pensamiento favoreciendo en él la reflexión, la crítica, la elaboración de hipótesis y la tarea investigadora a través de un proceso en el que cada uno asume la responsabilidad de su aprendizaje, aplicando sus conocimientos y habilidades a proyectos reales».

subjects of the curriculum. Following this method, students use their knowledge, abilities and personal skills, meaning the major elements that made up the different key competences for Primary Education and fulfilling the assessment criteria this law sets. Besides, this law also defends that this methodology has to encourage project learning, the use of new technology, interaction and team work, problem-based learning and the construction of individual and group projects, using dialogue as the method for the resolution of conflicts. It also supports the use of oral and written expositions and the reflection about their learning process so that they can improve and develop their creativity and entrepreneurship. Moreover, it makes reference as well to the use of project methodology in foreign language subjects, reinforcing it to favour the acquisition of the four language skills.

On the other hand, and taking on board my personal experience in England along my *Practicum II* period, I can also support this work making reference to The National Curriculum of England, which, on its behalf, establishes Project based learning methodology as the one to be followed in educational contexts, since it is presented as one of the main contents for Key Stage 3, in which is said that “pupils must be taught to undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analyzing data and meeting the needs of known users”.

Apart from legislation, another remarkable point I consider that deserves to be mentioned it is the use of Project-based learning regarding to the **cognitive development** that students in this stage have (from 6 to 12 years old). According to Piaget in Martin Bravo (2009), in this age students are finishing preoperational stage; however, the main stage where they are in this school stage is Concrete Operational Stage (7-12 years old), in which Project-based learning is precisely very suitable due to in this stage thought process becomes more rational and mature. They start developing logic thought to get worthy conclusions through concrete situations they can recognize and connect even with their close environment.

Thus, with this final work, what I try is to bring closer a non-traditional methodology in Spain so that we can know more about all the benefits Project-based learning has, also taking into account real experiences, which proof development in

children that have followed this methodology is real and beneficial. In this way we will be able in the future to follow this project method in order to adapt our teaching activity and fulfill one of the main objectives of the Study Plan of the Primary Education Degree of the University of Valladolid: ²“Reflect about classroom practice to innovate and improve the teaching activity. Acquire habits and skills for the autonomy and cooperative learning, and promote it between the students”.

4. THEORETICAL BASIS

4.1. WHAT IS PROJECT BASED LEARNING?

One of the most general **definitions** says that *project-based learning* (PBL) is a sort of teaching approach which involves students in real world investigations, and all the projects related to this methodology are organized around a leading and main question which must be answered by the students by participating in series of tasks. All those tasks are aimed to let students learn concepts, apply different types of information, collaborate among students, teachers and some other members of the community; represent their knowledge in different ways and use multiple resources to build their learning, including technology.

However, there are also other definitions that can give us some clues about what PBL means. BIE (Buck Institute of Education) defines it as ‘a systematic teaching method that engages students in learning knowledge and skills through an extended inquiry process structured around complex, authentic questions and carefully designed products and tasks’. It also says that, due to the complexity of that method, this process can take different time periods and can be extended over various content areas at the same time (cross-curricular PBL).

On his behalf, in John Thomas (2000), he explains that PBL entails ‘complex tasks, based on challenging questions or problems, that involve students in design, problem-solving, decision making, or investigative activities; give students the

² Translated from the original text in the Study Plan of Primary Education Degree of the University of Valladolid: «Reflexionar sobre las prácticas de aula para innovar y mejorar la labor docente. Adquirir hábitos y destrezas para el aprendizaje autónomo y cooperativo y promoverlo entre los estudiantes».

opportunity to work relatively autonomously over extended periods of time; and culminate in realistic products or presentations’.

Something most authors agree with is the **origin** of Project-based learning is not recent; in fact, we can find some clues of this approach from centuries ago. Socrates had already talked about a similar methodology, when in 19th century John Dewey resumed this educational idea. From then, this approach was followed by different pedagogues and renowned personalities such as Lev Vygotsky, Carl Rogers, Jean Piaget, Benjamin Bloom, Seymour Papart and Jerome Bruner.

Following this idea, BIE supports that PBL has its roots in John Dewey’s philosophy and experimental education; and suggests that “research in neuroscience and psychology has extended cognitive and behavioral models of learning — which support traditional direct instruction — to show that knowledge, thinking, doing, and the contexts for learning are inextricably tied”. All this was completed in Burlbaw (2013), who affirmed that, together with Dewey, the work of Francis W. Parker pushed this approach in America’s public schools. At the beginning, it was incorporated as a method for general education from agriculture and the industrial arts and, after being applied in all subjects in elementary schools there; it was spread to all educational grade levels.

Firstly, PBL was focused on real world problems and later it started being applied in all kind of activities students were interested in. However, it lasted a short time and was considerate as insignificant. Besides, the lack of a concise definition for this method made its development stop and be unsuccessful in combining students, teachers and society’s needs. After a period in the dark, project method has been required by educators so that they can use this approach to educate 21st century students.

To clarify the main phases PBL has gone through, let’s take as reference Knoll in his article *The Project Method: its Vocational Education Origin and International Development* (1997), in which he affirms it could be divided in five different stages:

1. 1850-1865: Project-based learning was included in architecture schools in Europe, mainly in Rome and Paris. There, they started working with projects works.
2. 1865-1880: Projects are considered as a learning tool and start to be applied in engineering. It also begins to be used in America.
3. 1880-1915: PBL is used in public schools.

4. 1915-1965: Project based learning concept is redefined and it comes back to Europe.
5. 1965-today: After 30 years of decline, a new expansion arrives. It is a learning method that requires the teacher to be a creator and a guide who stimulates students to learn, since real world gets closer the student by carrying out a complete project in which knowledge and abilities must be applied in this more technological and globalized society. Teachers have realized that they have to prepare their pupils not only for thinking about new information, but for a global citizenship.

On his behalf, Maldonado Pérez (2008) proposed for Project-based learning some **objectives**. Among the most important ones we can find:

- Train people who are able to interpret the different matters and happenings around them.
- Encourage students to the research and production of knowledge that involves them in complex projects and real situations so that they can apply their learning and abilities.

Besides, what this approach let the students do is:

- Integrate subjects by reinforcing their vision of human knowledge.
- Organize activities through a common target, which is defined by the students' interests.
- Foment the students' creativity, individual responsibility, team work, critical capacity, decision taking, efficiency and facility to show their personal opinions.
- Experiment the different ways to interact that world is now demanding.
- Combine positively their basic knowledge and their skills to improve their entrepreneurship capacity and autonomy.
- Acquire experience and team work spirit.
- Develop social abilities related to team work and negotiation, planning, leading and assessment of their own intellectual capacities; including problem-solving and value judgment.
- Satisfy a social necessity, which reinforces students' values and their compromise with the environment.

4.2. TYPES OF PROJECT BASED LEARNING

When we think more deeply about PBL and the manner we could implement it at school, we realize that there are no a concrete kind of differentiation in different **types** of Project-based learning method; however, we can find two main ways to approach PBL. According to the article *Cross-curriculum planning and PBL's* (2014), we can tackle leading our unit proposal by setting a driving and leading question that must be answered through the resolution of little tasks along the unit (through a final task); or we can plan a unit in which we deal with the main topic in a cross-curricular way, in the different subjects of the school.

Referring to my real experience in *Practicum II* in United Kingdom, during my stay there I could observe that in current times one of the most common ways of dealing with project methodology is based on a combination of both modalities. Particularly, in the school where I stayed the different units we developed tried to combine both approaches with PBL. Units were focused on a concrete final task, such as the creation of a leaflet or the entry of a diary; but it was also had a cross-curricular perspective in which teachers tried to use the same or very similar topics in the different subjects of the school so that students can get a wider vision of that topic and its connection with other situation, or even with their real life.

Another important aspect that I consider we should talk about is the management of **spaces** this project methodology allows. Following with my *Practicum II* experience, when I was there I could realize PBL lets children also work in different environments that usually fit more with their learning capacities or preferences. For instance, since project method allows students to work in a more independent way, it lets them choose the way or the resources they prefer use. In the school where I was, they followed this methodology and they could choose if they preferred working in their classroom, working in the corridor using a laptop, going to the library to search some information, staying in the classroom but in the 'second part' of the classroom, where they have bigger tables to work on... Definitely, the methodology we use in class has a big influence in the use of spaces, and the use of sources and materials our students work with; what, in turn, also has an effect on the learning of the students.

Besides, and following the same reasons that use of spaces does, **grouping** is also an important factor to talk about, due to project-based learning in many occasions

let the students choose if they prefer to be grouped individually or in small groups. However, PBL is usually a methodology that promotes team work and group work.

Finally, when using this methodology, we have also to mention that **materials** and **resources**, due to the variety of activities and flexibility for creating these projects, tend to be more assorted. Now students can use the materials they consider are more suitable for their project, and the resources to find the information they need where they consider or prefer, such as books or computers.

4.3. ADVANTAGES AND DRAWBACKS

All of those aspects and aims PBL has are proved, since, from different studies and experiences, it has shown more positive aspects than negative ones. A lot of authors have talked about that. For example, Rojas (2005), cited in Maldonado Pérez (2008), mentions as main **benefits** that Project-based learning is really suitable to:

- Prepare the students for their future jobs and the real situations they will find.
- Increase their motivation. It is proved that the attendance to school was higher and students were willing to participate in class.
- Connect their school learning and their real environment. It is also confirmed that students can retain more information and improve their skills when they are working on stimulating projects. By projects, students use their highest mental abilities instead of memorize data in isolated contexts.
- Offer opportunities to collaborate in order to create their knowledge. Collaborative learning let the students to share ideas between them, express their own ideas and reach different solutions to different problems. Thus, it improves their problem-solving ability.
- Rise up their social and communicative skills. Students also develop their abilities and competences related to collaboration, projects creations, taking decisions and management of time.
- Let them connect different subjects.
- Allow them to know their own strengths and weaknesses regarding to their own learning, so that they can take advantage of it in the future.
- Increase their self-esteem. Students feel really proud of themselves when they reach something which is worthy both in the school and out of it.
- Learn how to you use technology in a practical way.

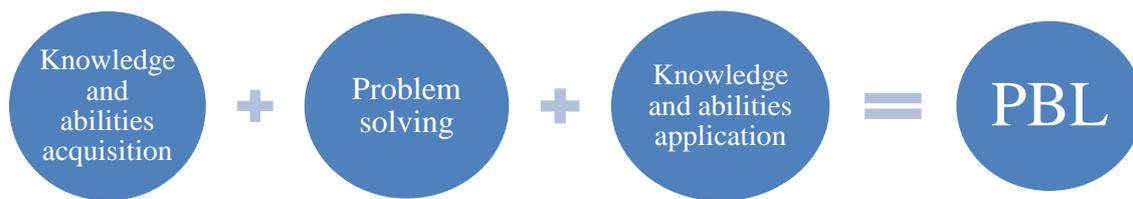


Image 1. Major pillars of Project-based learning

On the other hand, Project-based learning has showed some **weaknesses** that we must mention. To begin with, this method cannot be applied in every subject of the curriculum or in every lesson. For instance, PBL could be unsuitable in mathematics, since it is a subject which is mainly skill-based and PBL method does not allow that kind of practice of mathematical skills. However, not always this method is not appropriate for this subject, since teachers could apply PBL into the official curriculum in order to help students to know wider possibilities to apply those mathematical situations.

Another negative point of project method is that it cannot be assessed by using the standard assessment tools, but subjective rubrics for assessing. Besides, when applying PBL it is common to focus the attention on the creation of the final product instead of on the content itself, what is ineffective to help students to learn some concepts or abilities and skills. Finally, sometimes it is also a hard duty for teachers to follow this methodology while he or she attends all the students' individual needs, what requires good teaching and management.

Thus, as all methodologies that can be used for educating, Project-based learning it is only positive if it is used in a properly way and it is applied successfully. Moreover, it is proved that when PBL is well applied both students and teachers have a better attitude towards learning.

4.4. BLOOM'S TAXONOMY AND THE STEPS TO IMPLEMENT PBL

As I have already mentioned before, in current times Project-based learning, often referred to as Inquiry-based learning since this is a methodology that shares the same or very similar basis that PBL, is being implementing in schools more and more.

What all they do to apply this approach is to follow some determined steps that, in turn, are based on one of the most important statements related to PBL: Bloom's Taxonomy.

In Inquiry-based learning theory, always are followed the same main steps, which make a circle relation that always connect the last steps with the first ones, so that this process become into a circular diagram. We can find different depictions for this process of implementation; however, we will always find the same key points to be followed. The next graphic shows these steps I am referring to:



Image 2. Inquiry-based learning main steps

1. Ask questions
2. Create hypothesis
3. Investigate
4. Construct new knowledge
5. Discuss and reflect on discoveries
6. Apply newly-acquired knowledge in own life
7. Generate new questions

The relation with Bloom's taxonomy is clear, since the aims for both diagrams are the same. Both PBL and Bloom's taxonomy look for challenging questions for starting students' learning, reflection, a sustained inquiry, authenticity, give importance to the students' voice and choice, understanding and successful skills, critique and revision and a final and public product.

Bloom's Taxonomy was created in 1956 by Benjamin Bloom to encourage higher order of thinking in education by analyzing and evaluating instead of just memorizing. According to Bloom, educational activities are sustained in three main domains:

1. Cognitive: involves the development of knowledge and intellectual abilities and skills. We can differentiate six categories (from the simplest to the most complex): knowledge, comprehension, application, analysis, synthesis and evaluation.
2. Affective: takes into account emotional areas and feelings.

3. Psychomotor: physical and motor skills.

Since then, what Bloom proposed was a taxonomy in which major educational steps were *knowledge, comprehension, application, analysis, synthesis* and *evaluation*. This first proposal was revised in the middle nineties by David Krathwohl, who made some changes in what Bloom had proposed. He mainly tried to tackle it from another perspective by making some modifications, mainly:

1. The names of the six categories were changed into verbs.
2. Due to this taxonomy portrays an *active thinking*, now verbs were more exact.
3. Some subcategories were reordered.

Besides, apart from terminology changes, he also changed the emphasis of Bloom's proposal; he made it a new useful tool for curriculum, planning and assessment. Now it is aimed to a bigger public and it is applicable in all levels of school.

This essential change is clearly depicted in the next image:

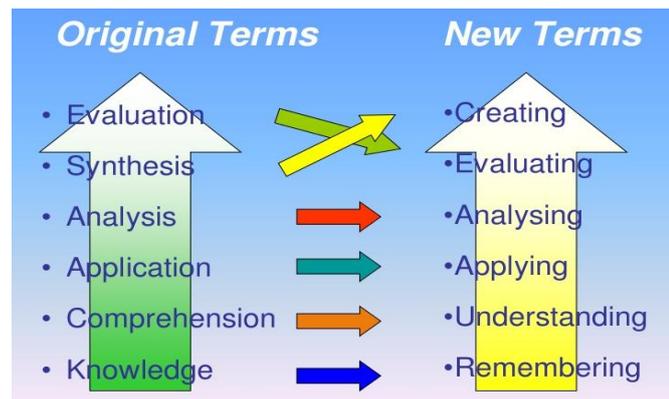


Image 3. Original and revised terms for Bloom's Taxonomy

Knowing this, we can continue by analyzing each of the levels of Bloom's Revised Taxonomy, normally portrayed in pyramidal shape.

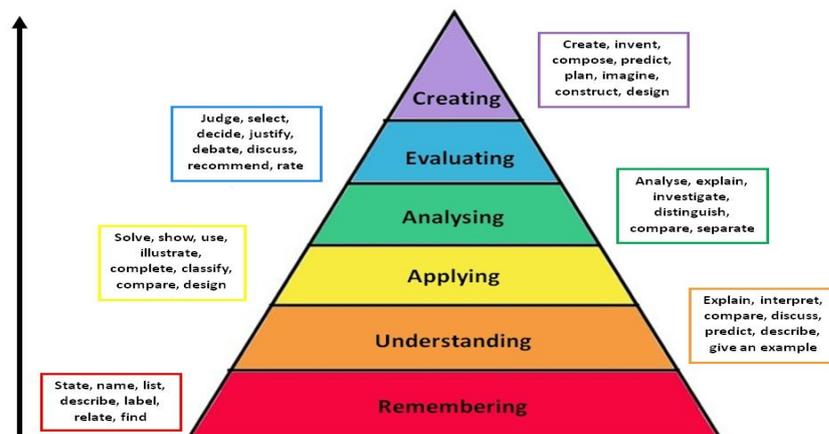


Image 4. Bloom's Taxonomy pyramid

Six different steps or levels are distinguished:

1. Remembering: students are able to recall, collect and remember what they already have learnt before. According to this taxonomy, students are able to recognize, list, retrieve, identify, name, locate, describe, find...
2. Understanding: learners are able to interpret and infer what they have learned. They can exemplify, summarize, paraphrase, classify, compare and explain information; they can explain ideas and concepts.
3. Applying: students must be able to use the information they have learnt in a different context from that one in which they learned it.
4. Analyzing: by chunking the information students learned, they try to best understand that information. They compare, organize, deconstruct, outline, refine, structure and integrate what they have learnt.
5. Evaluating: students make decisions and are able to judge and justify a decision or course of actions. They can check, hypothesize, critic, experiment and test what they have done.
6. Creating: learners are able to generate new products, ideas or ways of viewing things from what they have learnt. They can design, construct, plan, produce, invent and make new things and ideas.

Once we have gone through some basic notions about PBL in relation with Bloom's taxonomy and their shared ideas, let's go on by setting some key steps to implement PBL in real lessons.

Stix in his book proposes nine main steps are described in order to help teachers to implement project based learning in schools. Of course, they can be modified according to the necessities of the students. Those steps are:

1. Setting the stage with real life examples: the teacher, who works as a guide, uses real life examples in order to introduce the driving question of the topic of the main task to the students.
2. Taking on the role of project designers: teacher can assign different roles to the students so that they feel more motivated for their work.
3. Discussing and accumulating necessary background information: now it is the turn of students; they research the necessary information to be able to reach the answer for the driving question.

4. Negotiating the criteria for evaluation: teacher must discuss with students the assessment criteria they will follow to evaluate their work. Once these criteria are set, students must think about their work, and they will realize about the changes they must make on their work.
5. Accumulating the necessary materials: students collect all the materials they consider they will need.
6. Creating the project: students work in different designs until they decide their final project. During that, teacher works as a guide and, at the same time, he/she makes sure students have clear the task they will work on.
7. Preparing to present the project: students discuss if they need some rehearsal before showing their mates the work they have done.
8. Presenting the project: students show their work and the teacher observes them.
9. Reflecting on the process and evaluating the process: after finishing the task and its presentation students and teacher discuss what they have liked and what they would change if they had the chance.

4.5. PBL AND OTHER THEORIES

We have previously talked about Bloom's Taxonomy as main theory PBL is based on; however, and as I mentioned before, Project-based learning methodology has its precedents in constructivism theories of Vygotsky, Piaget and Bruner, among others. That is why these authors proposed some theories whose bases share their main features with PBL's ones since all of them make the students participants of the learning process and take them into account. These statements will also help us to understand what project methodologies suggest for a suitable learning process in children.

Lev Vygotsky, defended students learn through *social learning*, in which the idea of working in groups is reinforced and they base their process of learning in the interaction with the rest of people, by sharing information and experiences between them. Vygotsky maintained that children acquire and improve their knowledge skills as logical procedure when they get immersed in a real environment. All those activities, which are carried out in a social way, let the students develop their mental and social abilities so that they can get close to that society. All this theory can be related easily

with the methodology we are going through, PBL methodology, which also defends social working is one of the main basis to encourage and reinforce students' learning.

Jerome Bruner, as constructivism defender, took also the idea of learning by taking into account the environment for learning, and the experiences of learners. This author set the term of *scaffolding*, with which he meant that learning must be constructed by taking on board the previous knowledge students have and all the information they have mastered before. Bruner's theory suggests it is beneficial for children's learning following a stepped progression, in the same way as Bloom's Taxonomy does; as long as this process is structured, organized and guided in a properly way. Teacher will start working as one of the main pieces for learning, but he or she will continue by working as a guide; learning will be understood as a process in which difficult increases in the way this progression goes ahead.

On his behalf, **Piaget** also established learning as a progressive succession of steps –*assimilation* and *accommodation*- in which the predisposition for learning comes from the motivation of learners to adapt to their environment. Piaget states that learning is produced in students from their own interests and their own experiences, when assimilation and accommodation appear. When we talk about assimilation, we mean that children incorporate new experiences of their real environment to their previous experiences; and accommodation occurs when they finally modify their mental knowledge to be adapted to this environment's requirements. Thus, Piaget's development theory of learning is based on discovery, which is mainly what PBL methodology also defends, what allows us to connect both ideas.

All this previous theories defend a learning process in which students take part of the process itself, and their previous and present interests and experiences are taken into account to build their new knowledge. This will allow children experiment a *significant learning*, term that all this authors also support, and which was coined and firmly defended by **David Ausubel** and which, in the end, shares the main foundations with Project-based learning approach.

4.6. PBL AND SECOND LANGUAGE ACQUISITION

As second language specialist teacher, I should also consider Project-based learning a valuable approach to be used for a second language acquisition. Since this methodology proposes open steps and a rational procedure, it is suitable for foreign language subjects as well. However, following Rocío González Segovia's pattern, although the differences between PBL's application in first and second language are not especially significant, we must take into account different guidelines if we want to implement project-based methodology in a second language lesson.

Firstly, what the teacher must do is select the topic he or she wants to deal with along the project; it can be chosen freely by the teacher, but it would be ideal if students also participated in this election, from their interests or their previous experiences. After that, González Segovia recommends, due to dealing with a second language is usually harder than when we work with our mother tongue, talk with our colleagues in the school so that we can find some support for the rest of subjects too, or in different times of our timetable.

Once we have that, we can start planning our project unit, although in this occasion we will have to take into account that the time we will need to develop our proposal will tend to be longer than if we were working in our first language. We will also notice that researching process in this case will be also more difficult for our pupils, so we should be prepared and select some useful resources for them, such as websites or concrete books in order to pave the way to their investigation, and introduce them to our students so that they know how to use them along their work time.

Finally, this same author suggests us to keep in touch with families when we work with a second language too, since in most of occasions families keep unaware of these projects; and, in this way, they will be an extra support both for their children and the teacher.

Generally speaking, as I mentioned before, the differences in the process for implementing PBL for first and second language are not really notorious; however, there are some aspects that must be reinforced if we want to get a successful result while working this approach in a foreign language.

4.7. ASSESSMENT FOR PBL

According to Carolyn Davis, teacher of the iEARN³, assessment in PBL approach is one of the main pillars; that is why various ways and elements of assessment must be taken into account when we want to evaluate project-based learning lessons and works. This teacher affirms there are different tools and manners to assess we cannot miss if we want to get a successful evaluation for PBL method.

- Written examinations: this kind of traditional examinations can also be worthy for PBL, if we design them to ensure transmission of skills or subject knowledge.
- Practical examinations: main valuable to be sure students put into practice the skills they have learned.
- Concept maps: if written examinations are not well designed, concept maps can help since they make possible students depict their knowledge in a simple diagram and identify connections between different elements.
- Oral presentations: it is a fantastic way to help students to practice oral and communication skills, because they are trying to share with their peers what they have learnt and worked on.
- Reports: this is a very common way for assessment, but also a very useful and recommended way since it helps students to practice this form of communication and to improve their writing skill.
- Student portfolios: that is an appreciated way to register the process of learning and to evidence the achievements and growth.
- Peer assessment: this is a suitable option to measure student learning. Moreover, if we provide students with an assessment rubric, it will help to guide the peer evaluation process, what will also improve the cooperative nature of PBL method.
- Self-assessment: it will help student to identify some lack of their learning process and it will provide them with different tools to fill the gaps of knowledge that they can identify. Besides, it will reinforce and help them to realize about their strengths.

³ iEARN (International Education and Resource Network) is an educational website of resources available in about 45 different languages.

- Tutor assessment: tutors must also encourage the students to explore different ideas and methods of working so that they can find the best way to build their learning process and knowledge, which is much related to Multiple Intelligences theory (Gardner).

4.8. TEACHER AND STUDENTS' ROLES

Learning is likely to be more effective if it grows out of what interests the learner rather than what interests the teacher (Katz & Chard in Jordan, 2005).

When we talk about Project-based learning we cannot forget to mention the important role both students and teacher have in this approach. These roles have not always been the same for them, but have changed along the history of education and the different methods that have been applied. In more traditional educational methodologies, for instance, the role of the teacher was more instructive, and he/she was the person that possessed the knowledge. However, PBL method is one of those approaches in which teachers take into account students' knowledge and in which students start creating their own knowledge and using it to continue building their own learning. This same difference can be found in different educational strategies and in the way methods are used to educate. As the next image shows, it is not the same 'do projects' than apply PBL; roles change in a really considerable way.

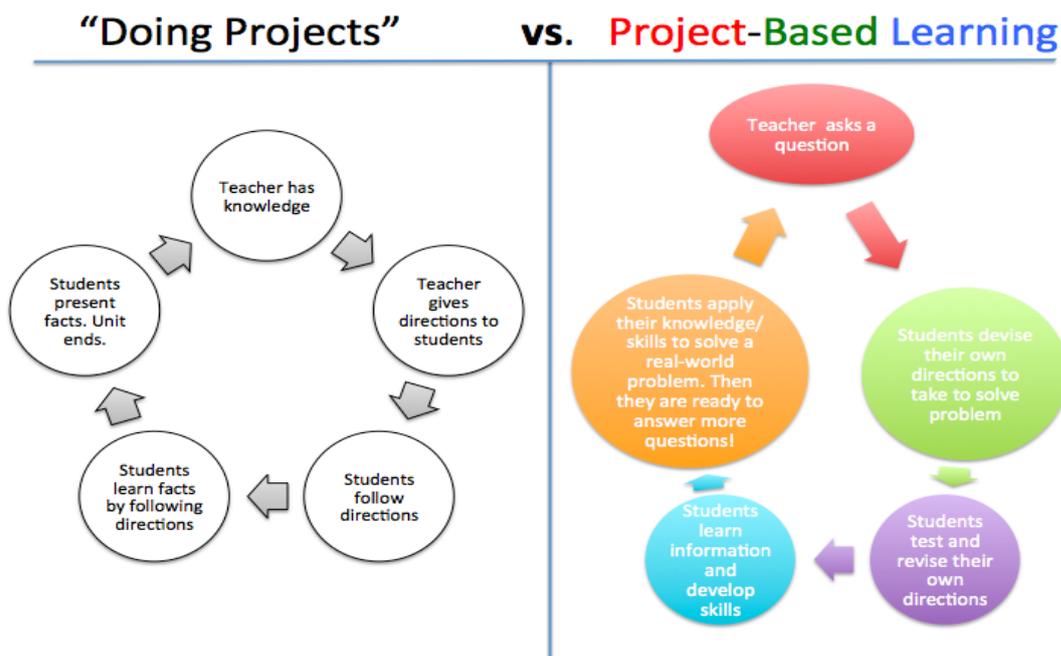


Image 5. Different roles of students and teachers when using PBL methodology

When using Project-based learning **teacher's role** is mainly based on being a guide for the students and giving feedback. The teacher must explain carefully what the task consist on and provide them exhaustive directions so that they can develop their project. Once that is done, he or she will be a facilitator and will solve possible children's doubts and motivate them. As this situation sometimes can carry to unexpected situations; although the teacher must have planned carefully the lesson, he or she must also be flexible and adapt the lessons to the different situations, becoming sometimes into a learner and peer with the students, and sharing responsibility with pupils. The instructor must regulate students' improvement with transitional aims so that he or she can ensure students understand what they are working on. When finally the work is finished, the teacher evaluates the final product and the learning it evidences.

On its behalf, **students' role** also changes. Working with PBL method students share some responsibilities with the teacher and start being an active part of the learning process. They normally work in small and collaborative groups, and they are required to find their own sources, following the guidelines the teacher gives them, carry out research and help each other to complete tasks. They are self-managers of their learning instruction. When using Project-based learning, students' role consist on asking questions, build their knowledge and find real-world solutions for the question or situation that have been proposed by thinking rationally

5. MY PROJECT

One of the important pillars of this document is its connection with another important subject of this degree, *Practicum II*. As I mentioned before, during my period as a trainee teacher I could observe Project-based learning methodology along the units that were developed during my stay in the school. Following this approach, I designed and implemented a teaching unit which structure was aimed through a final task, and in which students acquire an important role in which they will be who build their own knowledge from the statements the teacher, who will work as a guide for the pupils, gives them.

My project proposal is aimed to Year 6 students and it consists on a unit called *Healthy eating*, which is made up by eight lessons, whose aim is do a final task which

will be reached by the students through smaller tasks that they will do along the unit. As I mentioned before, the most extended way to implement PBL in our lesson follows a circle diagram mainly formed by seven major steps that I followed to plan and put into practice my proposal:

1. Ask questions: In first lesson teacher introduces the main topic to the students and presents the way they are going to work and their main aim for this unit. Children will have to create a final 10 top tip list in which they must include some tips to get a healthy diet.

The manner teacher introduces and asks questions to the students is by playing *Who wants to be a millionaire?* contest in which teacher has previously included some questions to know the students' previous knowledge and set the driving question for the students, supporting this question also with the relation of that driving requirement with the importance and meaning of food pyramids.

2. Create hypothesis: Besides, with this questions and the possible answers the teacher proposes, she also tries to set some hypothesis for the students so that they have to investigate the correct answers and find the correct one so that they can add this new finding to their final top tip list. In a parallel way, in second lesson, children start working with a handmade food pyramid so that they can start creating their own hypothesis about the correct place each kind of foods they know. In this lesson pupils are asked to work in groups and try to discuss where do they must place each of the pieces of 'food' the teacher has shared out for each of them.

3. Investigate: Once they have placed their food on the pyramid and they have tried to guess the correct frequency of intake of each food, they must ensure they have placed their pieces of food on their correct way. In next lessons children are allowed to take a laptop, an iPad or a book to look for some information that let them know more about the frequency they must eat and drink the different food they are working with. Now, they can try also to find out some new tip to be added to their final top tip list of healthy eating.

4. Construct new knowledge: Not all the children have worked with the same foods, so it would be good to share their findings with their peers. That is why in the next lesson they play *Taboo*, trying to describer different foods they have worked and learnt about, but without saying in any moment the name of the food

they have chosen. In this way, they will build their new knowledge and they will help each other to construct it. This is also the time when students ask themselves if they feel prepared to do an oral exposition so that they can show their work to the rest of mates; if they are not, they are still able to look for some help and rehears their oral presentation.

5. Discuss and reflect on discoveries: Now, and recalling the first food pyramid they made at the beginning, they must discuss and reflect about the position of each food on the pyramid and ask themselves and their classmates if they would change them or not. This lesson will be useful to get the last tips for their top tip lists and to add their new learning. That is the time when they check their food pyramid, they reconstruct it and they realize about these changes so that they can collect new tips for their final task and can show it to the rest of their peers.
6. Apply newly-acquired knowledge in own life: It is the moment when students can apply their new knowledge in their real lives; and we connect this application with next step in project-based learning method; once they can observe and analyze the correct frequency of intake of different foods and the healthy habits they must follow for a healthy diet.
7. Generate new questions: Once they know how a healthy diet must be and that they have spread their new knowledge in their real life, they can create new questions, such as *is my diet healthy?* In this case, they could start investigating and observing their real diet to try to find out if it is healthy or if they should change some of their habits.

The way this project proposal is planned to be assessed is also related to the common **assessment** manners for PBL. Although in my placement in *Practicum II* I couldn't put into practice the evaluation I had planned for the unit, I tried to assess this proposal from PBL methodology. Avoiding using traditional written examinations, I focused the assessment in a practical procedure, since students have to create their own top tip list for healthy eating habits. In addition, they work their oral skills, because when their top tip lists are finished they have to show them to the rest of their classmates. This show and tell, both the content and the oral exposition, is assessed, following some items set in a known rubric, by the pupils and the tutor. Finally, as a piece of self-assessment that the teacher also reads and takes into account, students must

fill at the end of every lesson a sheet called *Today I have learnt...* (attached in Appendix 1) in which they reflect and write down what they have learnt in those lessons.

Again, following PBL method, I cannot forget to talk about the **grouping** pupils will work in. They will mainly work in little groups and individually, above all when they are creating their final lists, or when researching and investigating for new information. Due to it would be good for them to discuss about some common decision they will have to take, for example in the *Who wants to be a millionaire?*, they will work in pairs; and for *Taboo* they will work in little groups of six so that they can play with a bigger quantity of foods along the game. When investigating they will be allowed to choose the people they want to search with, if they want to. The main point of this proposal in which the whole group work together is at the end of the unit, mainly, when we put some things in common and we assess and reflect about the unit.

Finally, regarding to the **spaces** and **resources**, in the same way as grouping, are very assorted for the development of this unit, due to children have enough freedom to choose the spaces they want to work in. For example, when they investigate and look for information, they can choose where they want to work, as well as the materials they prefer using for creating their final task, their top tip list. They can select the resources they consider that are more suitable for them and for their work, such as computers, books; they can stay in their classroom or visit the library.

6. RESULTS

After carrying out my proposal in the school, and observing the different units they had already developed, I could realize about the real consequences of the use PBL methodology in schools.

In effect, most of characteristics, consequences and benefits that the theories I have already mentioned set, were fulfilled and most of children showed a positive reaction to this approach. Following the objectives Maldonado Pérez established for PBL, and after implementing my proposal, I could observe that though this methodology the children could interpret their real happenings in a different way than before, for example when they reflected if their ordinary diet is healthy or not; or when they start thinking about the real frequency of intake for each kind of food. In the same way, to reach all those conclusions, they had to involve themselves in real researches

and investigation so that they could find out their answers through a common target. Besides, children's creativity was fomented in the way they had an individual responsibility, but also by working in groups taking decisions and they had to reach common points to create their final top tip list to be finally showed to their peers. In that manner, being the teacher just a helper and a guide for them, they could also improve their entrepreneurship capacity and autonomy, and develop social abilities, including problem-solving.

While working I could observe how they worked and if they were happy or not with the tasks they had been required to carry out. As it was a topic really close to them, because it had been short time national news in UK had said infant obesity had increased in last years, they were really aware about healthy eating topic and they were really interested in finding out more information about it and linking it with their real and personal situation when they started asking themselves if their diet was healthy or not and if their eating habits were correct or not. Therefore, following PBL methodology I offered children the opportunity to create their own knowledge while they tried to find different solutions to their different tasks. At the same time, they also could realize about their strengths and weaknesses so that they know the best ways for leaning and building their knowledge, what will increase their self-esteem.

Regarding to the assessment of this proposal, as I said before, I could not really carry out the whole evaluation I had planned; however, they could really fulfill with their self-assessment through the use of *Today I have learnt...* sheet, which was later read by me as the teacher.

To end up with the results of my proposal, the group I worked with, as PBL methodology indicates, combined group and individual work, although along the most part of this unit they preferred working in pairs and groups, mainly in the those lessons in which they were supposed to research to find some concrete answers, and in those ones in which they had to create their top tip list and show it to their classmates. Besides, as planned and expected from project methodology, children worked with a wide possibility of resources and spaces and they were allowed to choose where to work. Most of them worked using new technologies for looking for the requested information, such as iPads and laptops in the classroom, but some of them preferred work in the library rather than in the classroom.

In general, the results I obtained from my proposal corresponded with the main theoretical aspects that I had expected about PBL methodology. The children enjoyed and, from what they showed on their self-assessment, they also learned and fulfilled the main outcomes I had established for this unit. I am attaching some photos of this implementation and these results in Appendix 2.

7. CONCLUSIONS

All this considered, once I have gone through all these aspects about Project based learning, I can conclude by resuming from another different point of view the objectives I established at the beginning of this document.

To begin with, now, basing on all this theoretical and practical experiences, I can affirm Project-based learning can be a really suitable methodology to work with since it makes students aware of their own learning process and they are really who create and build their own knowledge. Students follow a concrete process in which they ask themselves *what* do they want to get at the end of the project, *how* can they get it, *why* do they want to get that, *where* do they want to work in, what will they use for getting it, *who* do they want to work with... All these questions will allow them to realize about their process of learning and the reasons why they will work about it and how will they use this new knowledge later and in their real experiences.

At this point, once I have experimented real implementations of this methodology, I believe my knowledge about this approach has grown; now I know some more aspects about it and I am determined to use and implement them in my future teaching activity, both in English and Spanish, because I have realized about all the benefits it gives the students, but also the hard work it supposes for the teacher. However, I consider this effort will be worth if at the end of the procedure I can see how my future pupils will have learnt and have been happy with the work they did along the process.

I hope also to have been able to bring this project methodology closer to the educational and not-educational scope lectors since it can be useful to innovate also in our real life. We should make children aware of their learning and make them participant of this complex progress. I think having proved the numerous advantages it has, new and experimented teachers should take this sort of methodologies into account

so that they can encourage and motivate their student towards their learning, making it significant and valuable for them.

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9. APPENDIX

9.1. APPENDIX 1: *TODAY I HAVE LEARNT... SHEET*

-Food-

NAME: _____ DATE: _____

Today I have learnt that...

| |
|-------------|
| DATE: _____ |
| |

Image 6. *Today I have learnt...* sheet

9.2. APPENDIX 2: PROCESS AND RESULTS OF MY PROJECT IMPLEMENTATION



Image 7. We start asking questions



Image 8. Children create their hypothesis



Image 9. Students investigate



Image 10. Children create and share their knowledge



Image 11. Students discuss and reflect about their discoveries. Final food pyramid



Image 12. Final display with their top tip lists

