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FACULTAD DE EDUCACIÓN

**PROJECT-BASED LEARNING AND VOCABULARY ACQUISITION IN
PRE-PRIMARY CLIL STUDENTS**

**EL APRENDIZAJE BASADO EN PROYECTOS Y LA ADQUISICIÓN DE
VOCABULARIO EN ALUMNOS DE EDUCACIÓN INFANTIL EN UN
ENFOQUE AICLE**

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ABSTRACT

Project-Based Learning (PBL) is focused on providing a student-centred learning environment through meaningful and active methods encouraged by teachers' supportive techniques. The effect of PBL strategies in the development of different areas and skills has been widely studied, and vocabulary acquisition is described as an aspect that often benefits from this method. Thus, the aim of this study is to measure the influence of PBL in the vocabulary acquisition of 45 CLIL, Pre-Primary students belonging to two different age groups (4 and 5 years of age) that were exposed to a different, two-hour, PBL lesson plan, designed within the EU-funded project 'CLIL for Young European Citizens'. An adaptation of the Picture Vocabulary Size Test (PVST), designed by Anthony and Nation, (2017) was first used to obtain information about students' general vocabulary level in English. Two more tests based on the PVST format were designed and implemented in order to measure the effects of PBL lessons on the acquisition of specific vocabulary. The analysis of the data yields better scores in the PBL tests than in the general English test and statistically significant differences between the two age groups were also found.

Keywords: Project-Based Learning, vocabulary acquisition, CLIL, Pre-Primary Education.

RESUMEN

El Aprendizaje Basado en Proyectos (ABP) se basa en proporcionar un entorno de aprendizaje centrado en el alumno a través de métodos significativos y activos, que se fomentan a través de técnicas de apoyo por parte del profesorado. El efecto de la metodología ABP en el desarrollo de diferentes áreas y habilidades ha sido ampliamente estudiado, y la adquisición de vocabulario se describe como un aspecto que suele beneficiarse de este método. Así pues, el objetivo de este estudio es medir la influencia del ABP en la adquisición de vocabulario de 45 alumnos de dos cursos de Educación Infantil (4 y 5 años) expuestos al enfoque AICLE y, específicamente, a dos programaciones de aula de dos horas basadas en el ABP y desarrolladas en el proyecto europeo "El AICLE para jóvenes ciudadanos europeos". En primer lugar, se utilizó una adaptación del *Picture Vocabulary Size Test* (PVST), diseñado por Anthony y Nation (2017), para obtener información acerca del nivel de vocabulario general de los alumnos en inglés. Además, se diseñaron dos pruebas más, basadas en el formato de la misma

herramienta, para medir los efectos de las sesiones ABP. Los principales resultados del estudio muestran mejores puntuaciones en las pruebas de ABP que en la prueba de inglés general, y se observan, además, diferencias significativas entre los grupos de edad.

Palabras clave: Aprendizaje Basado en Proyectos, adquisición de vocabulario, AICLE, Educación Infantil.

1. INTRODUCTION

Project-Based Learning (PBL) is an educational method that offers meaningful and active learning environments. Its main principles and characteristics allow students to independently access knowledge and to be part of their own learning process in which teachers act as guides and provide the support needed to facilitate its successful implementation across curricular contents and objectives. Thus, PBL is described as a student-centred experience, in which learners' interests and needs drive the process to achieve a final objective through the development of personal and learning skills.

A large number of studies support the benefits of PBL strategies in different language areas (Chu, Chow & Tse, 2011; Dochy, Segers, Van Den Bossche & Gijbels, 2003; Aitken, 2019). Hence, the aim of this study is to explore the possible influence of this method in the acquisition of vocabulary in CLIL, Pre-Primary students and to analyse the effect of PBL implementation at this stage from a receptive point of view. The Picture Vocabulary Size Test (PVST), by Anthony & Nation (2017), was the instrument used to measure children's general and specific vocabulary knowledge. It was adapted to the participants' age (4 and 5 years of age) and level (L2 learners in Pre-Primary Education). This adapted version was used to measure students' general vocabulary. Moreover, two more tests were designed by following the PVST format, with the purpose of measuring the specific vocabulary covered in two lesson plans, one per group, designed within the EU-funded project 'CLIL for Young European Citizens' and focused on citizenship and environmental education. Differences between age groups are also considered in order to offer a wider examination of Pre-Primary learners' performance.

The first section of this MA dissertation reviews some of the main theoretical foundations that inform the study. In the first place, a definition of the main aspects of PBL are provided, as well as its benefits, challenges and implications for young learners. Due to its relation to the aim of study, vocabulary learning and teaching strategies are also examined, supported by a description of the main points related to the process of vocabulary acquisition. This theoretical framework is complemented with some notions about CLIL, together with a brief description of 'CLIL for Young European Citizens' (CLIL4YEC), a European project that has a key role in the development of this piece of research.

In the second part of this dissertation, the study carried out is reported by presenting the main research questions and its structure. As mentioned above, the aim of study is to describe the possible influence of PBL in CLIL, Pre-Primary students' vocabulary size, so the description of the method is provided as well as a detailed analysis of the data obtained, the discussion of the main results and the conclusions.

2. THEORETICAL FRAMEWORK

2.1. Project-Based Learning

2.1.1. Definition of Project-Based Learning

Project-Based Learning (PBL) is a learning method based on the findings of constructivist approaches, which describe the active construct of the understanding and the use of ideas as the main tools to reach deeper understanding of content (Greeno, in Krajcik & Blumenfeld, 2006) due to the need to apply information and concepts (Blumenfeld, Soloway, Marx, Krajcik, Guzdial & Palincsar, 1991). According to these authors, in Project-Based Learning, real and meaningful problems are linked to students' interests, so it creates an environment that provides them with the opportunity to put investigation abilities into practice, thus proposing hypotheses, explanations and creating or discussing ideas. PBL practices "help students and teacher find solutions to questions about the world around them" (Krajcik & Czerniak, 2014, p.5), so long-term and contextualised activities are carried out through collaboration, i.e. not only students are involved in the process, but also teachers and even other members of the educational community: a collaborative environment is created in the classroom, and learning technologies, the Internet and online resources will support students in PBL and they will also provide communicative and authentic situations, information exchanges and resources. Technology offers multimodal capabilities that make information physically and intellectually accessible to students (Krajcik, in Krajcik & Czerniak, 2014).

Bell (2010) defines PBL as a student-driven approach, where the teacher has the role of facilitating the learning process and guiding students in their choices. Curiosity is the key concept of PBL as is the basis of students' learning and performance. According to this author, "PBL is not a supplementary activity to support learning" but "the basis of the curriculum" (p.39), as it is focused on the development of different skills, subjects and contents.

Motivation and thinking can be considered two driving forces when talking about PBL. The relationship between these concepts is part of the principles on which this learning approach has been built (Blumenfeld *et al.*, 1991), so its ideas are developed on the basis of meaningful units of instruction that integrate different fields of study. Cognitive engagement and meaningful situations make these projects singular (Larmer & Mergendoller, 2010). According to De Graaff & Kolmos (2003), authenticity is highly

related to motivation, so PBL integrates different learning processes and their complexity will be determined by students' involvement. Learners feel they own the project as they have the opportunity to share and make choices.

However, the subject-oriented nature of these projects has to be taken into account, as the learning process must cover specific objectives that will have an important role when choosing the problem faced.

As mentioned above, students are encouraged to take part in their learning process through investigation: they find solutions to a problem by "asking and refining questions, collecting and analysing data, drawing conclusions, communicating their ideas and findings to others, asking new questions and creating artifacts" (Larmer & Mergendoller, 2010, p. 371). Thus, a driving question or problem and a final answer or product to the question are two main essential components, so it is important that the initial question sets up a purpose and leads students to develop their ideas freely and extensively if we want them to construct knowledge. The driving question leads the research and helps students to apply what they know in a creative and authentic way, which allows them to connect new knowledge with previous knowledge and with the real world as they take advantage of several areas when working in one topic. They learn by doing and face society requirements (Bell, 2010). In addition, feedback will be useful in order to reflect and revise their ideas.

"PBL education is based on the students' background expectations and interests" (De Graaff & Kolmos, 2003, p. 660). This is one of the reasons why PBL can be compared with traditional teaching methods: learners in PBL are more motivated and work harder, while they are expected to achieve a deeper learning and higher levels of analytical comprehension that will allow them to transfer experiences and knowledge by inducting and deducting. It is important for teachers to facilitate this process and to focus on these abilities when planning, implementing and evaluating the project, so objectives should match and be considered in a flexible way regarding the subject, the problem and the project proposal. Therefore, it will be easier to manage or redirect the project.

The meaningful experience is, thus, personally related to the students and to the educational purpose (Larmer & Mergendoller, 2010). These authors select different essential elements to describe a meaningful project, which gather the already mentioned features of PBL: links to students' lives improve understanding, a need to know must be activated from the beginning and a good driving question will lead and clarify the project

and its objectives through meaningful suggestions that make students feel they own the challenge and invite them to find a solution. Enhancing students' voice and choice is then essential, so the project will reflect their style and decisions, although teachers can provide different levels of support to delimit students' choices and selections about the topic, the process and the product.

On the other hand, opportunities to develop 21st century skills should be strengthened through exposure to authentic skills that will allow critical thinking, collaboration, communication, creativity, innovation and self-assessment. In fact, it is by conducting a real inquiry that students will be carrying out these skills: launching their questions, hypothesizing, searching for answers and resources, generating ideas, drawing conclusions and innovating while they find and create a solution.

It is also important for students to understand that constructive criticisms and revision are part of the process if a high-quality product is to be developed. Teachers can provide direct feedback to help students with these abilities. In fact, presenting their work to a real audience will encourage high-quality outcomes. Students realize the importance of their work and it will bring authenticity to the project. Project work is then linked to problem-based learning by nature. Cooperation, project management and challenging assignments are, therefore, key aspects when defining the method.

The history of Problem-Based Learning reflects the development of the approach and, therefore, of learning-teaching practices. PBL appeared as an educational innovation method in the 1960s as university teaching perceptions and pedagogy started to change. Firstly coined by Don Woods in Canada, PBL became successful and well-known, and the introduction of its practical and collaborative principles at the medical school of McMaster University caused an important spread of the method (De Graaff & Kolmos, 2007). As PBL development increased, project pedagogies and experiential learning focused on learning by doing were also taking place in different universities from Denmark during the 70s, with the aim of changing the society, first, and learning and achieving new skills later.

Berthelsen, Illeris & Poulsen (cited in De Graaff & Kolmos, 2007), highlighted some principles of this pedagogy and referred to the exploration of a society-related problem by students, without forgetting the importance of the role of the teacher as a

motivator and guide, the appropriate selection of methods, tools and theories and the final result which should be materialized in the creation of a product.

2.1.2. Benefits and Challenges of Project-Based Learning

PBL promotes a different point of view of the subject matter while different learning situations and needs are covered and interest is raised through an adaptable methodology, real experiences and shared work (Blumenfeld *et al.*, 1991).

When comparing Project-Based instruction and traditional instruction strategies, studies highlight the effectiveness of PBL in curricular content and process skills rise (Holm, 2011). In fact, some research investigations such as Chu *et al.* (2011) show positive results in terms of student's attitudes towards the topic studied and the skills they develop as they perceive improvement in skills and knowledge, and they feel more familiarized with them. In the same vein, the study carried out by Dochy *et al.* (2003) also shows these benefits when applying PBL: students' skills are better developed as they are more able to apply knowledge.

Barrows (1996) provides a core model with a definition of the main features of PBL (which is named by the author as Problem-Based Learning): this author emphasises the student-centred environment, as learners are responsible of their learning. Although they are guided by a tutor, students should identify what they need in order to solve the problem proposed and how they have to do it. In addition, group work is essential when learning, so they develop collaboration skills. On the other hand, as learners face problems, these problems act as stimuli for learning: the problem contributes to put knowledge into practice in a relevant and authentic way, so the information is properly handled. Furthermore, problem-solving skills are developed and self-directed learning facilitates the acquisition of new information as they control the process and students have access to debates, discussions and reviews through group work.

Thus, PBL goals and strategies will help to develop three main skills, as mentioned above: problem-solving, self-directed learning and collaborative learning skills. All of them will be achieved thanks to the nature of the approach, which involves active learning that is integrated with real-world problems to enhance problem solving as the main cognitive outcome. However, this does not mean that the curriculum areas are ignored: PBL aims to develop these skills through problems delimited by curricular areas.

Aitken (2019) points out the role of the teacher as a facilitator when working with Project-Based learning, and she highlights the main features of this method: collaboration, real-world connection and hands-on process, which provides authentic situations and learning outcomes through a final product. However, some challenges can be found when using PBL according to this author: lack of time to collaborate with other teachers and to implement the method, lack of access to technology and resources, and students' maturity. Due to this situation, professional development opportunities and support are considered as key needs in order to facilitate the process and to adopt some other important implications for teachers and students, such as laying the ground for its gradual implementation, creating opportunities for innovation, involving the educational community and providing creative and motivating learning situations. Table 1 summarizes the main points covered in this section.

Table 1

Some of the main benefits and challenges of PBL.

Project-Based Learning			
Main features	Skills developed	Challenges	Suggestions
Collaboration.	Collaboration skills.	Lack of time to collaborate with other teachers and to implement the method.	Professional development (opportunities and support).
Real-world connection (authenticity).	Problem-solving skills (putting knowledge into practice).	Lack of access to technology and resources.	Laying the ground for gradual implementation.
Hands-on process.	Self-directed learning (control of the process).	Students' maturity.	Opportunities for innovation.
			Involving the educational community.
			Providing creative and motivating learning situations.

Source: own elaboration.

To sum up, the role of Project-Based Learning can be appreciated as its principles are well-founded and its contribution to innovative educational approaches is grounded and supported by several authors and studies. Children are an active part of the process, but teachers need to be aware of the possibilities PBL can bring. A well-organised project offers new points of view of education and involves stakeholders in experiences that provide more contextualized learning environments, enhance interest and motivation and give meaning to every learning situation and proposal.

2.1.3. Project-Based Learning and Young Learners

In preschool and kindergarten settings, project work can be implemented among other activities (Katz & Chard, 2000). Due to the nature of the preschool curriculum, which allows materials and opportunities for spontaneous activities, project work can complement what is learned through the curriculum. The main difference lies in how project work is focused on individual or group intentions that are usually planned in advance to be developed over a period of time, while some preschool spontaneous activities do not address any particular topic.

Some benefits of projects in the early years are pointed out by Helm & Katz (2016). First, projects can improve academic achievement from the first school years as they are exposed to some control over the work carried out in class and it is presented as an opportunity to follow their interests in depth. Secondly, projects promote social and emotional development due to the emotional involvement in learning experiences they provide. Therefore, curiosity and desire to learn are enhanced, despite students' social background and their parents' time and resources to cover these necessities at home. Moreover, a relationship between the possibility to control young learners' own learning and the development of social skills can be found in different research studies (DeVries, Reese-Learned & Morgan, cited by Helm & Katz, 2016) which demonstrate the influence of constructivist approaches on interpersonal development. Furthermore, engaging young children in their own learning is considered important due to the fact that their motivations, attitudes and behaviours are developing during these years. Besides, as this is a period of intellectual growth, implementing projects in the early years can offer long-term positive consequences in some cognitive processes. In the field of neuroscience, research also considers the role of projects in building mind and brain capacity. Different

intellectual dispositions and academic skills are rapidly developed and several competences and understanding can emerge, such as literacy competences or numerical concepts, apart from learning about scientific inquiry.

Regarding literacy, advantages in reading and writing skills are pointed out when working on projects with 3- to 5-year-old children. Motivation towards these skills increases as they are aware of the purpose of the work proposed (read signs or books to find answers, creating playful environments, sending messages, copying words about their interests...) or they want to show what they have learned. Thus, a purpose for representation appears.

Another benefit of project work is the natural way in which problem solving is developed, so preschool children are aware of the importance and the function of the concepts they are learning and involved in. They find a reason to represent and use these concepts, so mathematical problems and scientific thinking are successfully addressed: they represent quantities, develop categories, classify, observe results, compare, discuss strategies, construct models or draw charts. On the other hand, parents' involvement and their interest in children's work increases when projects are implemented in preschool or kindergarten years and it improves communication about school experiences between parents and children. The role of the teacher in documenting the process is also beneficial for this involvement.

In order to provide a deeper understanding of the benefits of PBL with young learners at different levels and contexts, different studies have explored this issue and they will be analysed in the following lines. For example, Beneke (2000) aimed to explore the benefits and difficulties of the Project approach in part-time early childhood education programs by analysing the experiences of teachers from three different programs after being trained in project work. Although teachers in these levels were initially concerned with implementing the approach due to the classroom structure, a positive response was observed later.

Thus, although some initial problems were found at the beginning when facing the approach, specially related to time (they are in part-time programs), teachers found it useful in order to improve teaching-learning practices, as it "lends direction to their lesson planning" (p. 19) and have some benefits such as parents involvement, assessment facilities (more samples are collected), children with diverse abilities are challenged and

allows a more practical curricular treatment. Furthermore, they highlight the variety of topics and how different interests can be addressed with different groups about the same topic in a shared space. Multi-age grouping was a feature of the development of project work in these schools, which is described as an advantage in order to maintain interest in the topic due to the presence of more developmentally advanced students in the groups. On the other hand, support and flexibility in lesson plan were essential in the implementation of the approach, and they valued the creation of products that allowed authentic assessment purposes, which was useful due to the large number of students enrolled in their programs.

Another study related to teachers' experiences when working with projects was the one developed by Beneke & Ostrosky (2009), focused on Prekindergarten teachers' views of the efficacy of the Project Approach. Thus, they aimed to address some questions related to how this approach can be beneficial to work with a group of diverse preschool learners, to what extent teachers consider it effective and what factors can facilitate its implementation. The study is then based on the Illinois State Board of Education (ISBE), which "encourages its state-sponsored teachers in prekindergarten programs (called 'Preschool for All classrooms') to incorporate the Project Approach" (p. 1), supported by several professional development institutes about it. 'Preschool for All' programs include children under 6 years of age with special needs to provide a more continuous access to these services, so teachers in early childhood classrooms look for methods to provide the right learning experiences. Seven Illinois certified early childhood teachers ('Preschool for All teachers') from childcare centres participated in this study by attending an institute on the Project Approach, and they were interviewed individually before and after being trained in the institute. Although some teachers had experience with projects, some others have no experience with the approach. According to their findings, teachers find working through projects helpful for different reasons, especially related to its impact on diverse learners, outcomes, motivation, materials and planning.

Thus, they define the project approach as an opportunity to include children with special needs. Their ability to adapt classroom activities in a meaningful way is improved, so it increases students' participation. In fact, students' active participation in planning the activities increases motivation. On the other hand, they highlight the effectiveness of these meaningful activities in children' social behaviour, as well as in their interest, motivation and the attention span of diverse students. Moreover, skills and disposition in

different social and academic areas are developed and it also influences self-esteem and vocabulary acquisition. In addition, the study illustrates the benefits of providing real objects and authentic materials in the classroom, which increases students' interest in the activities and facilitates connections between what is being learned and the real world. It can be observed how this approach has important implications for learners, but teachers also benefit from it as it offers opportunities for professional development.

Other studies such as the one developed by Aral, Kandir, Ayhan & Yaşar (2010) have also shown the positive effect of PBL on the conceptual development of preschool children. It was carried out in the spring semester of 2007-2008 with two random classes of 14 six-year-old students, divided into an experimental group, which followed a PBL approach for 12 weeks (one day per week) to complement the developmental areas; and a control group, with the regular curriculum. Both groups followed the regular curriculum when PBL was not being used. They were selected from a primary school in Ankara, where they attended the half-day program. They had no previous experience with PBL.

The Bracken Basic Concept Scale-Revised (BBCS-R) was used to collect data about their conceptual development. This scale assesses children between 2 years and 6 months and 7 years and 11 months, and measures the comprehension of 308 educational concepts, organised in 11 categories: colours, letters, numbers, sizes, comparisons and shapes (six concepts usually taught by parents and teachers), direction or position, self-social awareness, texture or material, quantity, and time or sequence. In order to develop the study, a previously adapted version for 6-year-old children was used. Both groups were given pre-tests and post-tests. The results show how conceptual knowledge was similar in both groups before the experiment. When comparing pre- and post-tests, significant differences were found in the experimental group, with better results in the post-test scores. These results suggest an impact of PBL in conceptual development. However, when analysing the mean scores of both groups at the end of the experiment, they were very close, although an improvement can be seen in both groups as conceptual development changes over time. Improvements in the experimental group are explained by the authors as a consequence of PBL education, while statistical similarities can be related to the duration of the project and its implementation.

This study focused its attention to PBL curricula as the authors described it as the best for this educational stage since it allows discoveries, observation, classification, comparison, prediction and comments, and helps them to develop and use concepts to

define, explain and organize experiences, objects and events. Although young learners acquire some concepts naturally, some others have to be taught, so PBL is considered important in the preschool period as it involves active participation and discovery, as well as it supports cognitive and social skills.

Related to the same educational level, the 'Reggio Emilia' approach should be also mentioned, because it also promotes the implementation of PBL in preschool levels. The 'Reggio Emilia' is a PBL/child-centred approach which has its roots in northern Italy and it is focused on encouraging children's natural curiosity and interest in learning: they experience, explore and investigate (Bell, 2010). The approach was found in an Italian town with the same name and its preschool program has its origins in those schools built by parents at the end of the Second World War (Gandini, 1991). Nowadays, 20 schools for children between three- and six-years age and 12 educational centres for children under three can be found in the town, and the project philosophy is based on collaboration between teachers, parents and educational advisors, as well as on creating a comfortable and personal classroom environment where children's work has an important role, as well as their families' culture and the community. Moreover, adult-child relationships and interactions are built on the basis of mutual interest on content and work itself, and not only on conduct and level performance (Katz, 1998). Teachers and students are equally involved in every step of the project, so children benefit from being engaged, discussing, making decisions and solving problems. Students' ideas and work are taken seriously and children themselves notice it, so work is improved. Facts and skills are not transmitted from adult to child as a static list (Hewett, 2001).

With the help of scaffolding techniques and guided by teachers, children access new ideas and put learning into practice in the social environment (Bell, 2010). They discover ideas together with their teachers, document their learning and present it through projects. An early contact with this method can improve their skills and their understanding on how PBL works, as they learn through collaboration and thinking skills are employed. Those skills necessary for the twenty-first century are early refined.

The 'Reggio Emilia' approach is focused on developing students' early love for learning (Bell, 2010), and visual expression is considered essential in the curriculum to display their work (Gandini, 1991). They are not only exploring materials and making designs but reflecting their personal experiences as an important part of learning. Daily

events and experiences are the starting point of long projects focused on exploration and reflection, so they talk about their experiences, compare their work and link past and recent experiences. Children are “involved in extended in-depth investigations” (Katz, 1998, p. 27) and introduced to documentation practices, which contributes to a more extensive and deep learning, and allows parents to be involved in their children’s experiences (products, comments, questions...). Teachers can also take advantage of it to check each child’s progress and review teaching practices: they take the role of researcher through the data obtained by analysing photographs of children performance, drawings, videos and transcribed audio recording of conversations (Hewett, 2001), documents that also allows students to revise and expand ideas, as well as to inspire new ones.

Regarding investigations and according to Katz (1998), although pre-schoolers cannot access written representations, they can record and represent their ideas, observations or predictions through other media and graphic resources, especially drawings, which are used to explore, construct, reconstruct understanding as well as to communicate these constructions competently. Children’s drawings act as a basis for planning next steps, providing a different point of view of their graphic representation. Moreover, this realistic representation does not interfere in children’s desire and competence to create imaginative and abstract ones.

Furthermore, according to this author, ‘Reggio Emilia’ supports the role of the process of defamiliarizing daily experiences and objects as a meaningful, interesting and instructive method. When a topic is familiar to the children, they can assume responsibilities when planning and developing a project focused on real phenomena. On the other hand, when the topic is not related to their direct experience, they will be dependent on the teacher when accessing information, ideas and thinking. Although a topic is not related to their immediate experience, children in ‘Reggio Emilia’ schools are encouraged to explore and develop new ideas even if they are unpredictable and not initiated by the teacher but by students’ reactions to some event. Thus, there are no formal prespecified lessons and more appropriate understandings can be enhanced. In fact, small group work is encouraged, so there is neither formal instruction for a whole class at the same time, nor are the same products required for all groups. The informal nature of the curriculum improves cooperative work in small and mix-aged groups. As Hewett (2001) highlights, “the goal is not to pass information along or replicate thinking, but rather to advance thinking” (p. 98).

As can be observed, the success of PBL and its advantages in learning and cognitive processes are clearly documented by different experiences. Pre-Primary Education is an essential period for children's development and their attitudes towards exploring their environment can be enhanced from the earliest years. Despite their level, very young learners show sufficient capacity to deal with any educational proposal when it is well directed and teachers are able to meet their educational and personal needs. Thus, the results of these projects in different areas, such as vocabulary, are worth measuring as their implementation can be exploited and their benefits can be evidenced.

2.2. Vocabulary Acquisition and Vocabulary Learning

According to Pavičić Takač (2008), vocabulary learning has an important role in formal L2 instruction. Influenced by linguistic and psycholinguistic research, vocabulary teaching practices have changed over time. While naturalistic approaches have given importance to implicit, incidental learning and guessing meaning from context, difficulties and errors may appear due to incorrect guessing. A balance between implicit and explicit teaching seems to be, then, of great importance when trying to increase the efficiency of the learning-teaching process.

Developing an extensive vocabulary has positive effects regarding communication (Thornbury, 2002). However, the role of vocabulary in language learning and teaching has not always received such recognition. From direct and audiolinguistic teaching methods where the emphasis was on learning grammatical structures, to communicative approaches where meaning reached a predominant position and changed the view on vocabulary and its role in language use, vocabulary has appeared as an issue in most language courses. However, the development of lexical syllabi and the recognition of lexical chunks seems to be a turning point in terms of language acquisition and fluency achievement.

2.2.1. Word Knowledge and Vocabulary Acquisition

In order to provide a starting point regarding vocabulary learning and acquisition, a clarification needs to be made about what knowing a word involves as it is the smallest linguistic unit with meaning. According to Thornbury (2002), knowing a word involves

developing knowledge about its form and its meaning. Apart from the general idea of these concepts, these aspects are also associated with collocations and connotations (register and cultural growth). Another important dimension is the distinction between receptive and productive knowledge of these words, which imply understanding and expression, respectively. Generally speaking, L2 learners tend to show more advanced abilities in receptive knowledge than in the productive one, and in the process of knowing a word, receptive skills are usually developed first.

Thus, word knowledge involves a variety of aspects that are not always familiar to the speaker. The mental lexicon contains information about all the words in our mind as regards meaning and form in an organised and interconnected way. However, other aspects such as memory and personal experiences with words have an important role in knowledge, so not only semantic, syntactic, phonological, orthographic or morphological connections are important, but also cognitive, cultural and autobiographical aspects play a role. Furthermore, the construction of the mental lexicon is the process that allows language acquisition and, hence, vocabulary acquisition by labelling, categorizing and building networks between words. Therefore, the construction of this mental lexicon is also essential when acquiring a second language. Learners have already faced these processes when learning their L1, so new conceptual systems and networks have to be built to develop a second mental lexicon. However, the process may be simplified as these associations are supported by L1 knowledge.

When analysing what a learner needs in order to know a word, attention should be focused on two types of knowledge: receptive and productive, as mentioned above. As is well known, receptive skills are related to listening and reading actions, while writing and speaking are classified into the productive ones (Nation, 1990). Laufer & Goldstein (2004) explore this distinction from the point of view of vocabulary and refer to receptive as the ability to perceive the form and the meaning of a word, while productive knowledge is also focused on form and meaning but from spoken and written words. In fact, four degrees of knowledge, also called strength of knowledge, can be identified as receptive and productive vocabulary are distinguished: passive recognition, active recognition, passive recall and active recall. Active knowledge is related to the ability to retrieve the form, while passive knowledge is related to meaning. According to this, active knowledge

is a more advanced degree, whereas recall is considered more difficult than recognition. Thus, retrieving meaning is possible if a person is able to identify the word form.

Thus, knowing a word involves different elements according to those skills taking part: receptive or productive (Nation, 1990). Regarding receptive knowledge, the spoken and written form have to be taken into account to be able to recognise it, but also some other aspects related to its position, its functions in the context and its meaning. It does not only include knowledge about the word itself, but also about what other words and associations are related to it. On the other hand, the productive knowledge complements the receptive one, so it involves similar knowledge: pronunciation, spelling, writing and functions such as grammatical patterns, appropriateness, collocations or associations, abilities that can also be found in receptive language.

According to Milton (2009) words vary depending on the different elements they present: combination of sounds and letters, similarities to the L1, forms, their meanings and how or when they are used and, of course, frequency. All these elements will influence how a word is learned and therefore, the learning difficulty. Regarding frequency, some words are used more often than others in every language, so it determines how often a learner finds a word and, consequently, how difficult learning this word is: how likely a word is to be encountered and learned. Frequency will also determine when a word will be learned and gained according to the process of language learning. There is a strong relationship between word frequency and word learning.

An aspect that has attracted a great deal of attention in vocabulary studies is how to measure learners' vocabulary size. This is a quite a complex issue, in particular in relation with young learners, since good and suitable tests are difficult to find due to the challenge of designing, validating and administering them (Mills & Milton, 2021). As Alexiou, Roghani & Milton (2019) observe, tests are commonly based on words that are not relevant and frequent for children, so testing words that are close to the contents they are familiarized with is recommended. Assessment should not be always focused on decontextualized and isolated words, so children should have the opportunity to demonstrate learning through different tasks and adapted techniques, which can also help them review knowledge. All these ideas have been taken into account when adapting and designing the tests employed in the study carried out in this MA dissertation, as will be seen later. The students' cognitive and linguistic level and knowledge were considered in

the adaptation and creation of the tests, so familiar and contextualized links between words, pictures and meanings were provided.

Different tests have been created in order to measure productive and receptive vocabulary size. As Nation & Anthony (2016) point out, these tests usually reflect the complexity of measuring these language aspects as some limitations can be identified, especially related to the type or number of words that can accurately reveal test-takers' knowledge. The Vocabulary Size Test, created by Nation & Beglar in 2007 (cited in Nation & Anthony, 2016), is an example of a test that measures receptive vocabulary size of word families through a multiple-choice format. It allows the test to be taken with minimal or partial knowledge of the items, although the item sample rate has to be taken into account as guessing can affect size calculation, as well as other aspects such as the presence of cognates. The Picture Vocabulary Size Test (PVST), a version created by Anthony & Nation (2017) to measure pre-literate children's vocabulary, will be used in this study in order to provide a more appropriate tool considering the age of our sample. The main features of the PVST and its implementation will be explained in detail in the methodology section.

Vocabulary has an impact in children's language development, so suitable assessment methods and instruments are required in order to observe and judge the process (Mills & Milton, 2021). However, there is a lack of appropriate tools for measuring young speakers and pre-literate children. The Peabody Picture Vocabulary Test or PPVT (Dunn & Dunn, cited in Mills & Milton, 2021) is one of the most common tests designed to measure children's receptive vocabulary. Despite being based on a large sample, the standardization of PPVT leads to generalizations that do not allow testing with different demographic groups and that are not linked to children's development. Thus, an estimated vocabulary size is not provided and the learning of particular words cannot be measured.

On the other hand, the Picture Vocabulary Size Test seems "the most suitable for younger children, with a principled and evidenced-based design", according to Mills & Milton (2021, p. 161), although it can present difficulties when being implemented with very young learners as children under six years old may have problems to keep focused on it and select the option that most attract them (Nation & Anthony, 2016). Therefore, Anthony & Nation (2017) suggest a careful consideration of poor results on the PVST

as they may be related to any aspect that can affect performance, such as the administration of the test or bias through the pictures or the presentation, as well as individual aspects: feelings towards being tested, learner's first language or time spent learning English. This last aspect is closely related to the characteristic of the sample used in this MA dissertation.

Furthermore, Mills & Milton (2021) present in their study the validation of the Pic-Lex, another picture-based receptive vocabulary test. Despite being implemented with English speaking students, the study also indicates differences between the performance of different age groups, so higher scores are observed in older children when comparing Pre-Primary groups. Regarding Kavanoz & Varol's study (2019), the author highlights the increasing development of vocabulary size along the school years, which may have influence in all these aspects.

It should be also taken into account that learning outcomes can vary according to individual differences such as aptitude, for example, which can determine the type and the nature of the vocabulary learned. In addition, age can influence learning. Cognitive development plays here an important role, so differences have been found between children and adults, as the latter possess higher levels of literateness and skills (e.g. word recognition, form or meaning). On the other hand, variations can be explained through the way children and adults process, learn and save words: adults have a wider access to language thanks to the development of reading skills, while young learners rely on oral language. Thus, not only cognitive development but also language level will influence learning, so children may not have the necessary skills and enough experiences to store new foreign words in an orthographic way, but they can reach good levels of phonology. These aspects can be taken into account when addressing the main issue explored in this MA dissertation: what opportunities to access new words and vocabulary can be offered to our Pre-Primary students according to their development and the previous knowledge they have about language, not only about the L2, but also about the L1 and how these opportunities can be promoted.

In order to reach successful vocabulary learning, words have to be integrated in long-term memory (Thornbury, 2002), so different strategies can be taken into account to enhance this process, such as providing frequent repetitions and retrievals that involve its use, distributed practise, opportunities for individualized practice and learning, and

manipulating and using the words (encouraging cognitive and affective depth, personal organising and decisions or creation of mental images), which can influence motivation when learning. Teachers should take all the aspects pointed out here into account if they want to provide students with appropriate conditions to develop their mental lexicon, so teaching strategies should be geared towards facilitating associations, exposure, use, and contextualized and active learning situations, experiences that can be offered and enhanced by PBL strategies.

2.2.2. Vocabulary Learning and Teaching

Back to vocabulary learning itself, Nation (1990) highlights the importance of approaching vocabulary for different reasons: there is a considerable amount of research that provides teachers with information about how to deal with vocabulary and what vocabulary should be considered to provide students with useful skills. In addition, it is important for teachers to know about what principles and theory justify vocabulary teaching if they are to make certain decisions when teaching. Moreover, vocabulary is considered the most important element in language learning as receptive and productive difficulties when dealing with language may depend on vocabulary acquisition. Alexiou *et al.* (2019) also underline the role and the importance of vocabulary teaching as a main and successful element in foreign language learning. Even from early years, vocabulary has an impact in the development of language (Mills & Milton, 2021) and communicative skills, as Alexiou *et al.* (2019) suggest from the analysis of different studies that emphasise these benefits: “vocabulary knowledge is a major factor, if not the major factor, in a learner’s ability to master communicative skills in a foreign language so it should be no surprise if vocabulary learning has become a priority for both learners and teachers” (p. 154). These ideas have been equally supported by other authors, such as Kavanoz & Varol (2019), whose study states the importance of vocabulary knowledge in the development of communicative abilities and skills, as it is connected to L2 proficiency and vocabulary size. In fact, receptive vocabulary skills increase as students advance throughout their school years. Some studies such as the one developed by Uchikosi (cited in Kavanoz & Varol, 2019) highlight this aspect even in bilingual kindergarten settings, so it confirms the relevance of exposure and language level awareness on the part of teachers (Kavanoz & Varol, 2019).

On the other hand, in the process of acquiring vocabulary, a distinction between direct and indirect vocabulary learning can be made. While in direct approaches the attention is focused on vocabulary itself, indirect learning focuses attention on other features and in the message, which allows learners to have access to a considerable amount of unknown words (Nation, 1990). However, direct and indirect learning can coexist, although time for indirect learning should be longer as it provides more contextualized environments and greater language use opportunities. Meaningful contexts will help understanding.

When organizing vocabulary learning, some aspects should be considered as Nation (1990) explains. First, the vocabulary students need to know, i.e. deciding what type of words they have to deal with so different amount and type of learning will be expected. The kind of learning required (receptive learning involving recognition of the word and recalling meaning, or productive learning, which is focused on speaking and writing) is another important aspect that needs to be taken into consideration. Choosing the most appropriate learning strategy will depend on learning aims, but also previous knowledge as a result of earlier lessons decisions and mother tongue abilities should be considered. In fact, using the language for other purposes has a positive effect in vocabulary learning. The use of language is key in its acquisition, so different strategies can be employed by teachers in order to provide experiences with language, such as scaffolding materials and creating access to different contexts where words are used or encouraging guessing from context to deal with unknown words. This will help to create a distinction between increasing vocabulary and establishing vocabulary, whose definitions are near to those related to decontextualised and contextualised learning: how vocabulary is involved in language use.

Furthermore, previous experiences with words will also influence learning. Materials that have been previously used draw learners' attention as they have been working with them before and are familiarised with them, so learning becomes meaningful and contextualised. Experiences with new words will be reinforced if their use is constant and students are able to bring attention to other features apart from meaning.

As we can see, vocabulary teaching can appear as a challenge for teachers at any level. However, another challenge arises when it comes to assessment, especially with

very young learners whose level, interests and learning strategies have to be considered if successful outcomes are expected (Alexiou *et al.*, 2019). According to Kavanoz & Varol (2019), measuring L2 vocabulary size provides information about the use of language skills while helping teachers to observe, interpret and take measures for improvement. Nation & Anthony (2016), who define vocabulary size as the number of words a person knows, also emphasize the important role in language use and language accuracy. According to these authors, vocabulary knowledge reflects world knowledge and vocabulary size is connected to language proficiency when talking about non-native learners. Thus, measuring vocabulary size becomes a useful tool for teachers to analyse students' proficiency level and to provide appropriate materials and teaching strategies. Milton & Garbi (2000) point out the importance of taking cognitive and maturity aspects into account when addressing methodological issues with young learners, such as their attention span or their language level in the foreign language (linked to their ability to use the knowledge they have about the language). These aspects can affect assessment and judgment, especially if assessment formats do not suit their age-related capacities (Donaldson, cited in Alexiou *et al.*, 2019). In fact, sequencing vocabulary learning from early years provides enough time for learning, but young children's word knowledge cannot be assessed from the point of view of what this full knowledge involves. Word recognition and one-to-one links with meaning will be enough at this level (Alexiou *et al.*, 2019).

As can be observed, the role of vocabulary teaching in language learning is considered to be of great importance. However, according to Oxford & Crookall (1990), in most language classes, teachers do not view teaching vocabulary as a necessary language feature to be enhanced: students should learn it on their own without explicit instruction and, when this instruction occurs, it is mainly focused on a list of words to memorize without practice and assistance. These authors define "knowing an L2 word" as the ability to use a word in any communicative skill and not only being able to recognise it and match it with the L1 meaning. They provide a classification of different vocabulary teaching techniques that represent how this type of instruction has been faced by making a distinction between decontextualizing, semi-contextualizing, fully contextualizing and adaptable techniques, which anticipates a general view of the existing assumptions.

In decontextualizing techniques, the word is removed from any communicative context that can help the student learn how it is part of the language (word lists, dictionaries, decontextualized use of flashcards). In semi-contextualizing techniques (word grouping, associations, visual and aural imagery or physical response), although some context is provided, it is far from the meaningful links the fully contextualizing ones offer by involving natural communication and practicing the four language skills through challenging activities and adaptations to students' interests, needs and learning styles (reading and listening practices with a variety of materials, as well as speaking and writing practice that provide meaningful and communicative exposure, vocabulary expansion and feedback).

However, some aspects should be taken into account when providing with speaking and writing practice as productive and receptive vocabulary usually present differences: productive vocabulary (spoken and written) tends to be smaller than receptive (reading and listening) (Oxford & Crookall, 1990; Milton, 2009), which makes proficiency levels easier to reach in the latter. In this way, productive practice could enhance vocabulary learning due to the opportunities it can offer, as previously explained. However, production only occurs when learners' existing schemata include the vocabulary they need and they have access to it, so previous techniques have to be carried out to help them memorize and establish links between old and new information (Oxford & Crookall, 1990). The role of the learners' L1 is considered relevant when approaching L2 lexical processing from a pedagogical point of view, as L1 words are activated in this process, which allows meaning links between both languages. This is an advantage for beginners to access the conceptual representation of the L2 word (Dóczy & Kormos, 2016).

Taking all these aspects into account, Nation (2013) notes four essential strands in order to provide a well-organised and balanced language course:

First, learning from comprehensible meaning-focused input highlights the importance of listening and reading activities for students to have access to new language items. These activities have to be focused on the information and it will be successful only if students are familiar with most of the words presented.

Secondly, language-focused learning is based on the idea that vocabulary has to experience direct teaching and learning, so word learning processes can be magnified if determined word features are directly studied.

Thirdly, meaning-focused output points out the important role of speaking and writing activities focused on the information they convey. These productive activities can improve vocabulary development as students pay attention to the words differently from how they do it when they read or listen and, if they already know the required vocabulary, their knowledge is reinforced. As in the case with meaning-focused input, learners need to have sufficient vocabulary to be able to access information as they are focused on meaning, so it can be missed if it mainly involves unknown words.

The last strand refers to fluency development, which emphasizes the development of fluency in already known language items. Practice is important to train fluency and comprehension, so the normal use of language items can be developed in the other three strands. Therefore, a well-designed language course should pay attention to each strand and devote the same amount of time to each of them.

Independent communication abilities will be successfully developed if learners are exposed to proper levels of vocabulary (Milton, 2009). Organisational aspects seem to be then of great importance if vocabulary is to be introduced (regular exposure intervals, thematic variation...) as well as spoken and written forms should be presented in order to emphasize both phonological and orthographic structures. Nevertheless, although it is suggested that explicit teaching can favour vocabulary learning, whether words are more or less frequent, implicit acquisition can occur when informal tasks are presented by offering very effective results, even if time and effort have to be born in mind. When working with preschool learners, memory and recall are enhanced by any visual stimuli (Alexiou *et al.*, 2019) and they benefit from playful and implicit activities such as songs, rhymes, chants, games or puppet shows (Prošić-Santovac & Navratil, cited in Alexiou *et al.*, 2019) as well as from stories, which help them to develop not only cognitive, linguistic and emotional aspects (Ellis & Brewster, cited in Alexiou *et al.*, 2019), but also inferencing skills, discovery learning and oral fluency.

On the other hand, a distinction can be made between incidental and intentional vocabulary learning. While intentional learning is considered a conscious process,

incidental learning can be defined as unintentional (Ahmad, 2012). Although both concepts are different, they are part of a continuum, ranging from highly incidental learning to highly intentional learning, so some intentional and incidental operations always take place when teaching and learning (Barcroft, 2015). Regarding vocabulary learning, this incidental process encourages students' ability to infer meaning from context when they face new words (Ahmad, 2012). Thus, meaning is understood, as well as different associations between words and contexts, and grammatical and lexical aspects. Guessing has, therefore, an important role in vocabulary learning.

To sum up, the importance of vocabulary in language acquisition needs to be supported by teaching and learning strategies that enable students to access proper and meaningful knowledge about the language. Furthermore, these strategies will also allow the development of suitable assessment practices that will permit knowledge to be better displayed and demonstrated, thus providing opportunities to value and improve classroom procedures.

2.3. Content and Language Integrated Learning

2.3.1 Definition

“Content and Language Integrated Learning (CLIL) is a dual-focused educational approach in which an additional language is used for the learning and teaching of both content and language”. This is the definition of CLIL provided by Coyle, Hood & Marsh (2010, p. 1) that best summarises the essence of this approach: integration. Content and language goals support each other, which allows students to understand and use the content, but also to use the language and to improve its learning (Mehisto, Marsh & Frigols, 2008). In fact, learning skills have also an important role when defining CLIL integration as they support the other two elements. According to the Mehisto *et al.* (2008), language, content and learning skills are, therefore, the three main goals in CLIL, which help to create appropriate conditions for the development of the four CLIL principles (or the 4C's) in both the first and the additional language: content, communication, culture and cognition (Coyle *et al.*, 2010).

Due to its features, CLIL can be also defined as a flexible approach (Coyle *et al.*, 2010; Mehisto *et al.*, 2008) as it involves several models, methodologies and approaches

that can be applied, an aspect that is commonly described through the concept of “umbrella term”.

CLIL appears as an appropriate approach to face linguistic demands due to globalization (Coyle *et al.*, 2010). In the search of better language and communication outcomes and competences, CLIL provides innovation in educational practices. On the one hand, active participation and, therefore, knowledge and skills, are enhanced and better developed as a result of the authentic learning environment offered by CLIL, together with opportunities for exposure to the new language. On the other hand, motivation will influence learning as a natural use of the language is reinforced. This situation leads not only to better attitudes of the learners, but also to the development of better teaching practices and new opportunities for teachers to regenerate their profession according to new linguistic and cognitive requirements.

The concept of umbrella term is applied to CLIL from the point of view of how this approach comprises European bilingual models which focus their efforts not only on the development of a second language, but also on foreign, minority and heritage languages (Lorenzo & Moore, 2010). CLIL involves meaningful and authentic experiences with language as it is meaning-oriented and centred on communicative and usage aims. Moreover, its integrative view clarifies the importance of enhancing bilingualism with a focus on both, the first and the second language, at the same time content and curricular aspects are encompassed with language.

2.3.2 CLIL and Very Young Learners

Focusing now our attention to the way languages are addressed in Spain, and more specifically in Pre-Primary Education, one of the main objectives of this educational level in our country is to get familiar with a foreign language and facilitate a first approach to its learning, especially in the last year of the stage, as it is stated by the Spanish Educational Law (2020). Regarding CLIL, despite some misconceptions about its implementation with young learners, derived from the fact that older learners have cognitive, academic and linguistic advantages (Anderson, McDougald & Cuesta, 2015), pre-school levels also have opportunities in this field. CLIL has a place in the Spanish Pre-Primary Education curriculum, but its provision is also offered in other European countries, such as Belgium, Latvia, Poland, Finland, the United Kingdom, Romania or

Italy, as was stated by the Eurydice European Unit (2006). However, CLIL implementation is not homogeneous among countries, and its availability at this level varies depending on the amount of time, programs, sections or period devoted to it. Nevertheless, it is still a marginal field.

According to the age of these students, CLIL in pre-school settings is usually developed through meaningful learning and playful approaches which involve play-based activities and games while introducing linguistic elements (Coyle *et al.*, 2010). In fact, as it is pointed out by these authors, standard language learning and CLIL practices are usually mixed due to the nature of pre-school curriculum and methods, which are focused on authentic learning.

Activities at this level bring attention to children's performance, but teachers act as models for oral communication. Anderson *et al.* (2015) provide some recommendations about CLIL teaching strategies with young learners according to their age and developmental stage. Regarding preschool levels, the normal development of children has to be taken into account. Especially with children under two years old, the stimulation of their senses becomes essential through the manipulation of objects, as well as the use of repetition and imitation. These techniques have to be encouraged throughout the stage, although older children at preschool levels can be reinforced in order to build confidence with language through questions or the introduction of drawings and stories (Santrock, cited in Anderson *et al.*, 2015).

Marsh & Langé (2000) emphasize the role CLIL plays when familiarising young learners with a new language. The acquisition of languages depends on the opportunities people have to learn this language, so CLIL provides natural language situations according to the natural process that occurs when young children acquire a language. In Marsh & Langé (2000) words: "what we are doing is providing the opportunity to learn to think in the language, not just learn about the language itself as the major learning focus" (p.8).

2.3.3 CLIL and Project-Based Learning

Being aware of the principles and benefits of both CLIL and PBL is crucial as their combination magnifies their advantages in language acquisition and in reinforcing scaffolding (Cubero, 2019). Both approaches share some main features and aims such as the importance given to context, culture and communication to face social and educational demands through authentic language learning and the use of language with a purpose. Casan-Pitarch (2015) states that project work can complete CLIL principles and objectives as cooperative work has a main role in the former, so language and content are integrated through the combination of interaction and learning while motivating, involving students and presenting real contexts and challenges. These shared concepts and ideas between CLIL and PBL allow the promotion of learning environments that provide not only a meaningful treatment of content, but also the integration of language teaching and learning practices that create communicative contexts in any subject area or topic.

The main CLIL principle is to use language when learning content, and project work helps to emphasize it through students' interaction and participation in content development. Hence, the role of the teacher is pointed out again in order to facilitate and support the process, so project work will be successfully implemented if CLIL principles (content, communication, cognition and culture) are considered and well-organised. The practical and integrative nature of projects increases language practice, language skills and autonomous learning in any subject in a flexible way. Motivation and positive attitudes grow, as well as communicative, personal and cognitive development help to satisfy linguistic and educational aims (Sierra, 2011).

The variety of approaches CLIL involves is considered, as noted, of great significance when supplying experiences with languages. The main issues addressed in this MA dissertation (i.e. CLIL connections to Pre-Primary Education methodology and PBL) show how content and language can be integrated in combination with strategies that can support each other and reinforce CLIL's role in familiarizing students with language use. As contextualised and meaningful learning has to be emphasized, CLIL appears to be a suitable approach for any learning environment.

A practical example of the combination between CLIL and PBL is illustrated in the project CLIL for Young European Citizens (CLIL4YEC), which will be presented in

greater detail in the following section. CLIL4YEC aims to develop PBL lesson plans around cross-curricular topics in different educational levels. The present study is focused on the assessment of young learners' vocabulary development after the implementation of some of these lesson plans in Pre-Primary Education.

2.4. CLIL For Young European Citizens

CLIL For Young European Citizens (CLIL4YEC, project No. 2019-1-IT02-KA201-063222¹) is an Erasmus+ project which aims to promote cross-curricular topics such as European, Intercultural and Global citizenship, Environment Preservation and Basic Financial Education as three main topics to foster EU growth, within a CLIL approach (Content and Language Integrated Learning) in Primary Education. Different Primary schools from Italy, Romania, Portugal and Spain participate in the implementation of CLIL4YEC, in collaboration with the University of Extremadura (Spain), the Instituto Politécnico de Castelo Branco (Portugal) and the University of Pitesti (Romania), and coordinated by Giunti Psychometrics (Italy).

Thus, this project promotes European integration through those cross-curricular and intercultural educational principles while key competences and basic skills are developed through relevant topics: the enhancement of digital skills and collaboration between students, schools, teachers and families. The project aims to provide stakeholders with open resources and innovative practices:

- A State of the Art Report about how to use CLIL to develop cross-curricular topics.
- A census of Open Educational Resources (OER) to develop cross-curricular topics and activities through CLIL in Primary schools.
- A CLIL OER repository with the aim of sharing and rating resources.
- A guide addressed to teachers in order to provide instructions on how to apply CLIL and cross-curricular topics through innovative activities.
- A guide addressed to teachers to enhance families' participation in the development of cross-curricular topics.
- Online resources or e-Courses to promote teachers and families' participation in the development of cross-curricular topics through CLIL.

¹ For more information, please visit <https://clil4yec.eu>

- 18 lesson plans to provide CLIL teaching materials for the development of cross-curricular topics.

Thus, families and community's involvement play an important role here, as well as virtual exchanges and online collaboration as an opportunity to better develop the three cross-curricular topics addressed in an international environment.

The 18 lesson plans, provided in the CLIL4YEC guide addressed to teachers, aim to facilitate the implementation of innovative activities and the development of the mentioned topics. Project-Based Learning is the educational methodology used in these lesson plans as CLIL4YEC looks for the connection of content and language use with the real world. In combination with the CLIL approach, the contextualisation of content and language and the importance of learning by doing allow students to be actively engaged in real-life situations.

CLIL4YEC is aimed at 5- to 12- year- old students and, although diversity of languages of instruction is supported, the project is mainly focused on English as the language of instruction. Stimulating the connection between different subjects of the curriculum and facilitating links between school learning and the real world are two main aims of the project, which highlights language use and the benefits of PBL to reach these objectives. Therefore, CLIL4YEC seeks the development of different skills enhanced by PBL and which are considered of importance for students' learning strategies: flexibility, organisation, self-control, time management and metacognition, as well as some relevant elements such as active construction of learning, situated learning, social interaction, cognitive development in relation to the use of technology as a learning tool, and motivation.

Regarding parents' involvement, which has been mentioned above as an important part in the development of the project, it is essential for teachers to be aware of their role, so participation can be encouraged and ensured if they are properly informed. In the same line, establishing partnerships and links with the community will enrich learning and language experiences.

On the other hand, and as was previously mentioned, CLIL4YEC lesson plans are focused on developing three main cross-curricular topics (citizenship, environmental and financial education), although different subtopics are addressed in different ways

according to the level, as well as their collaborative methods. The subtopics are the following: “kindness and bullying”, “together in diversity”, “environmental disasters”, “energy”, “saving and spending money” and “barter and commerce”. Table 2 illustrates the distribution of the subtopics according to each topic and age range.

Table 2

Distribution of PBL lesson plans.

	Citizenship Education		Environmental Education		Financial Education	
	Subtopic 1 'Kindness and bullying'	Subtopic 2 'Together in diversity'	Subtopic 1 'Environmental disasters'	Subtopic 2 'Energy'	Subtopic 1 Saving and spending money	Subtopic 2 Barter and commerce
Younger group (5-8) (self / family/ community)	1.Kindness	4.Myself and the others	7.Threats to animals and plants	10.Green energy	13.Needs and wishes	16.Create a market
Intermediate group (8-10) (school / national/ e-twinning)	2.Bullying	5.Together in diversity	8.Pollution and environmental disasters	11.Transportation	14.Income and Savings	17.Story of money
Older group (10-12) (global / transnational / virtual exchanges in a more global way)	3.Cyber-Bullying	6.Human rights around the world	9.The 3 Rs: Recycling, reducing, reusing	12.Fair trade and responsible consumption	15.Bank / Banking	18.Taxes

Source: CLIL for Young European Citizens. Guide addressed to teachers.

About their implementation, the previously mentioned aspects are taken into account in order to put theory into practice, so a clear sequence can be observed when creating a complete lesson. The different points of the proposed planning can be summarized as follows:

- The introduction includes the driving question and a description of the students, the level, the topic and its justification.
- Contextualization, including the cross-curricular area and the topic involved, the age of the students, the materials and resources used, the implementation

of virtual exchanges, the key competences developed and the duration of the lesson.

- Aims of the lesson are driven by the CLIL's 4Cs (content, language and communication, culture and cognition).
- Sequence of steps, with a description of each step, the procedure and the resources and materials involved in their implementation. The steps have to be developed in two hours, distributed among three weeks in short periods of time (20-40 minutes).
- Assessment, including rubrics for the teacher and the students, as well as other tools and the criteria.

Thus, CLIL4YEC supports the suitability of PBL in CLIL and the development of the approach through this method as the concept "learning by doing" is encouraged and the role of language can be successfully integrated through exposure to comprehensible input, attention to meaning and communication, incidental and implicit learning, student-student and student-teacher interaction, guidance and scaffolding techniques to support language learning and the implementation of the project itself.

With the purpose of defining and measure PBL effectiveness, the present study will be based on the implementation of two CLIL4YEC lesson plans ("Myself and the others" and "Threats to animals and plants"), designed to be developed with the youngest group and implemented in two Pre-Primary Education classrooms.

3.RESEARCH STUDY

The following study will describe the influence of Project-Based Learning on vocabulary learning in CLIL, Pre-Primary Education students. Two tests were administrated to two Pre-Primary groups in order to obtain data about their general English vocabulary knowledge and the specific vocabulary learned through PBL lessons. Results were used to analyse the effects of this method and to describe differences between age groups.

3.1. Research Questions

Two main research questions were addressed in the study:

RQ1: Does a teaching instruction based on PBL and CLIL have a positive effect on the learning of subject-specific vocabulary in Pre-Primary students?

RQ2: Is there a difference between the vocabulary knowledge in two Pre-Primary age groups (4 and 5 years of age) in terms of:

RQ2a: General vocabulary?

RQ2b: Subject-specific vocabulary?

In order to answer these research questions, I conducted a study in which participants from two age groups (4-year-olds and 5-year-olds) took two different vocabulary tests adapted from the PVST (Anthony & Nation, 2017). The first was an adaptation of this test designed to measure the participants' general vocabulary knowledge (RQ1 and RQ2a) and the second was created based on the PVST format with the aim of measuring the subject-specific vocabulary taught through PBL lessons (RQ2b).

3.2. Methodology

3.2.1. Context

This research study was carried out in a state, CLIL school in Badajoz (Spain), with two Pre-Primary groups, involved in the CLIL for Young European Citizens project (CLIL4YEC), an Erasmus+ program coordinated by Giunti Psychometrics (Italy) and in which Primary schools from Italy, Romania, Portugal and Spain participated together

with the University of Extremadura (Spain), the Instituto Politécnico de Castelo Branco (Portugal) and the University of Pitesti.

With respect to the school, its linguistic policy promotes the acquisition of foreign languages through communicative and natural situations in an academic context. The bilingual project of the school is based on the CLIL approach to integrate content and language, as well as to promote cultural awareness.

The school has two strands for each level (and three strands for some Primary levels). There are 463 students and 39 teachers, including specialists in different fields. Social and Natural Science, Physical Education and Arts are taught through English mostly by non-native teachers in Primary Education. A language assistant also supports the use of English. Primary students are exposed to English for ten hours a week.

In Pre-Primary Education, students are exposed to English for a minimum of five hours per week. Apart from CLIL practices, they receive two hours of English as a foreign language per week. At this level, an early introduction to the language is enhanced through routines, instructions, greetings and basic structures.

French and Portuguese are also taught as foreign languages, and the latter is introduced from Pre-Primary levels.

3.2.2. Participants

A total of 45 students enrolled in the second (4 to 5 years old) and the third grade (5 to 6 years old) of Pre-Primary Education participated in this study. Depending on the grade they were attending, they have been classified as lower (4-year-olds) and upper group (5-year-olds), respectively. 22 students belonged to the first group and 23 to the second one. The oldest child was 6 years and 4 months old and the youngest was 4 years and 5 months old. The average age of the sample was 5;5 years old, being the average age of the lower group 4;11 years old, and the one of the upper group 5;11. As this study was developed at the end of the school year, students of the lower group were closer to 5 years old, while those in the upper group were closer to 6 years old. Regarding gender, 20 girls and 25 boys participated in the study. The number of boys was higher (6 more boys, 14 vs. 8) than the number of girls in the lower group whereas it was more balanced in the

case of the upper group where there was only one more girl (11 vs. 12). The distribution of sex and age across the groups is displayed in Table 3.

Table 3

Sex and age of the participants.

Group	Male	Female	Age range (years; months)	Average age (years; months)
Lower group	14	8	4;5-5;4	4;11
Upper group	11	12	5;5-6;4	5;11

3.2.3. Instruments

As has been mentioned in section 2.2.1, measuring the vocabulary size of very young learners of English is a complex issue (Mills & Milton 2021). There is a lack of suitable tests for very young learners, so the PVST (Anthony & Nation, 2017) was chosen as an appropriate tool to work with our sample, due to the flexibility it allows and its ease of application, specially through the use of pictures. Moreover, this test has been recently created, which also was an important factor in its choice.

Three different instruments were used in this study. The Picture Vocabulary Size Test (PVST), by Anthony & Nation (2017) was selected as the measuring tool to be used in the study. As has been explained above, it is a receptive vocabulary size test intended for young pre-literate native speakers up to eight years old and young non-native speakers of English. The test is based on the most frequent 6,000 word families in English and it includes two 96-item test sets that measure whether a suitable meaning is found from a partly contextualized word form. Meanings are represented by pictures, so the test-taker should find the correct one from the four pictures given. As the PVST is focused on receptive vocabulary, it should be considered that learners may recognise the word form despite not being able to use it and to demonstrate productive or receptive skills. The

PVST was chosen for the study reported in this MA dissertation due to its suitability in terms of age and level of English required, and because of the flexibility it allows, as an individualized implementation is possible, especially regarding response time. As Nation & Anthony (2016) state, the PVST is designed for pre-literate speakers up to eight years old, although its implementation demonstrated a ceiling effect when testing children older than eight and difficulties with those under six years old. Therefore, adaptations in terms of format were required when administering the PVST during this study, due to participants' age, level of English and capacities (attention span was considered), so it was decided to use only 10 words. The 10 words used in the adapted version of the PVST (see appendix A) were selected according to students' level. In order to make this selection, the complete list of words of the two original test-sets (192 words) were presented to the two teachers who work in English with the participants and they were asked to choose the words they consider their learners have been more exposed to. The teachers chose 23 and 17 words, respectively. The final list was created based on their selection but maintaining the original pictures and audios.

Regarding the procedure to implement the test, test-takers listen to a word, followed by a short non-defining sentence that provides some context with little meaning orientation about the word. The original format of the test consists in a program that can be downloaded and installed in any operating system, so it is presented in an interactive way: learners press the "listen" icon and select the matching picture, automatically advancing through the test. When interpreting the results, one correct answer corresponds to a vocabulary size of 62.5 words, so students' scores have to be multiplied by this number to get their estimated vocabulary size. Thus, a student with a score of 96 has an approximate receptive vocabulary size of 6,000 word families. In our study, the pictures were presented to the students in paper format while listening to the corresponding word and sentence in a computer, in which pictures could be also observed. As participants were exposed to 10 items, their final scores were multiplied by 600 to obtain the proportional result according to the complete list of 96 items.

On the other hand, two specific vocabulary tests (based on the vocabulary taught during the PBL lessons) were designed by following the same pattern as the original PVST, named PBL4 for the lower group and PBL5 for the upper group (see appendices B and C). Thus, 10 words randomly selected from the lesson plan's vocabulary were accompanied by four pictures and the audios, according to the topic worked on in each

group: “Myself and the others” in the lower group and “Threats to animals and plants” in the upper one. The pictures chosen were downloaded from Pixabay and *INTEF (Instituto Nacional de Tecnologías Educativas y de Formación del Profesorado)*, two free image banks. Besides, each audio included in the test was recorded from Google Translator (British English accent).

Given that the tests were either developed by myself or adapted from a validated version, I checked the internal coherence of each of the items before analysing the data. The Cronbach’s alpha values show an internal coherence of 0.664 for the PVST, 0.726 for the PBL4 and 0.627 for PBL5. Table 4 illustrates the statistics obtained for the three tests.

Table 4

Reliability statistics. PVST, PBL4 and PBL5.

Test	Cronbach’s alpha	Number of elements
PVST	.664	10
PBL4	.726	10
PBL5	.627	10

Note. PBL4 and PBL5 correspond to the specific tests accomplished by the lower and the upper group, respectively.

The three tests were previously piloted with a slightly older student (7 years of age) and readapted according to the results observed in her interpretations of the photographs.

3.2.4. Method

The school teachers were previously informed about the anonymity of the study. Learners were exposed to two PBL lesson plans, designed and implemented within the CLIL4YEC project, which are designed to last for two hours, along two or three weeks. Each group received instruction about a topic: “Myself and the others” in the second grade and “Threats to animals and plants” in the third grade, focused on the transversal areas of citizenship and environmental education, respectively. The lessons took place in April and May 2021.

Two 10-word tests were administered to each group in order to compare the results and describe PBL’s influence on their receptive vocabulary knowledge: a General English test, based on the words included in the PVST, and a specific vocabulary test (PBL4 and PBL5), based on the vocabulary taught through PBL sessions. The administration of the PVST was carried out during the sessions, while PBL4 and PBL5 were administrated to the lower and the upper group respectively after the end of the PBL lessons. The tests were developed individually and each student was informed of the procedure and provided with an example to ensure understanding.

3.2.5. Data Analysis

In order to analyse the data, the scores of the three tests were collected and measured by following an adaptation of the original PVST formula and entered in the Statistical Package for the Social Sciences (SPSS). When collecting the results of each test, a number was assigned to each correct (1) and incorrect answer (0) to get the final score. In Anthony & Nation (2017) version of the PVST with 96 items, one correct answer represents a vocabulary size of 62.5 word families of the list, so 96 correct answers correspond to a vocabulary size of 6,000 word families. As participants in this study were exposed to 10 items, a proportional vocabulary size was calculated to get estimated results according to those obtained when exposed to 96 items. Therefore, students’ final results were multiplied by 600 to obtain proportional scores. Example \rightarrow score 3/10 \rightarrow $3 \times 600 \rightarrow 1800$ vocabulary size. Thus, 10 correct answers would correspond to an estimated vocabulary size of 6000 word families, as well as in the original version of the test. However, although this tool allows us to measure the effect of PBL in vocabulary learning, it is necessary to emphasize the estimated value of these scores, as young children do not obviously have such a wide vocabulary size in a foreign language.

With the intention of applying inferential statistics, the distribution of the sample was examined. According to the results, the sample does not follow a Gaussian/normal distribution in the PVST and the PBL test “Threats to animals and plants” (PBL5) although it did in the PBL test “Myself and the others” (PBL4). Therefore, for the sake of consistency, non-parametric tests were used for all tests employed in this study. Concretely, the Mann-Whitney test was used to compare the lower and the upper group’s scores in the PVST, whereas the Wilcoxon test was used to determine differences between both tests within the same group (the PVST and the specific vocabulary tests based on PBL lessons) and to analyse differences between PBL test scores between age groups.

4. RESULTS

The results will be analysed according to the research questions.

In relation to the first research question (does a teaching instruction based on PBL and CLIL have a positive effect on the learning of subject-specific vocabulary in Pre-Primary students?), the results show a mean score of 2,826.67 ($SD = 1,363.55$, $min.=1,200$, $max.=6,000$) over 6,000 in the PVST. The mean score for PBL tests is 3466.67 ($SD = 1627.60$, $min.=600$, $max.=6,000$). When analysing the scores of each group, the PVST results of the lower group show a mean score of 2,018.18 ($SD = 971.81$, $min.=1,200$, $max.=5,400$). The upper group shows a mean score of 3600 ($SD = 1240.23$, $min.=1,800$, $max.=6,000$) in the same test. Regarding the PBL tests, the lower group shows a mean score of 2481.82 ($SD = 1461.45$, $min.=600$, $max.=6,000$). On the other hand, the mean score of the upper group is 4408.69 ($SD = 1166.93$, $min.=1,200$, $max.=6,000$). This information is shown in table 5.

Table 5

Descriptive statistics. PVST and PBL.

		N	Minimum	Maximum	Mean	Standard deviation
PVST	Overall	45	1200	6000	2826.67	1363.55
	Lower group	22	1200	5400	2018.18	971.81
	Upper group	23	1800	6000	3600	1240.23
PBL	Overall	45	600	6000	3466.67	1627.60
	Lower group	22	600	6000	2481.82	1461.45
	Upper group	23	1200	6000	4408.69	1166.93

Figures 1 and 2 illustrate the scores (the number of correct answers) got by each student in each test (PVST and PBL test). As can be observed, more than half of the students in the lower group have higher scores in the PBL test than in the PVST. Most of the students in the upper group also show a better performance in the PBL test.

Figure 1

Lower group's (4-year-olds) scores in the PVST and PBL test.

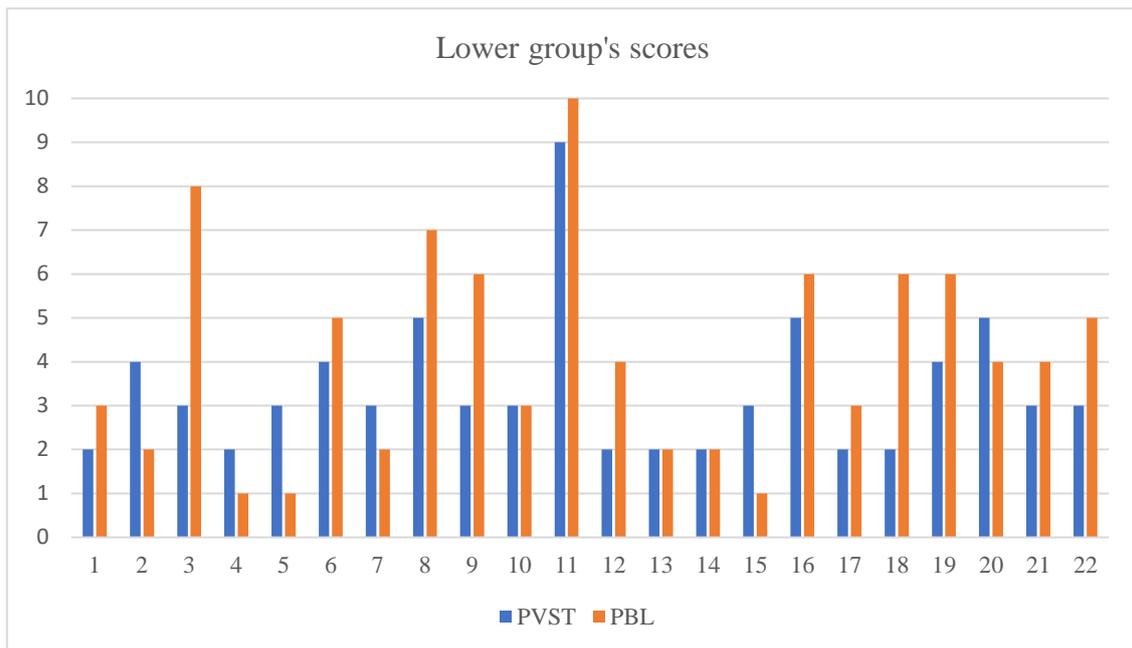
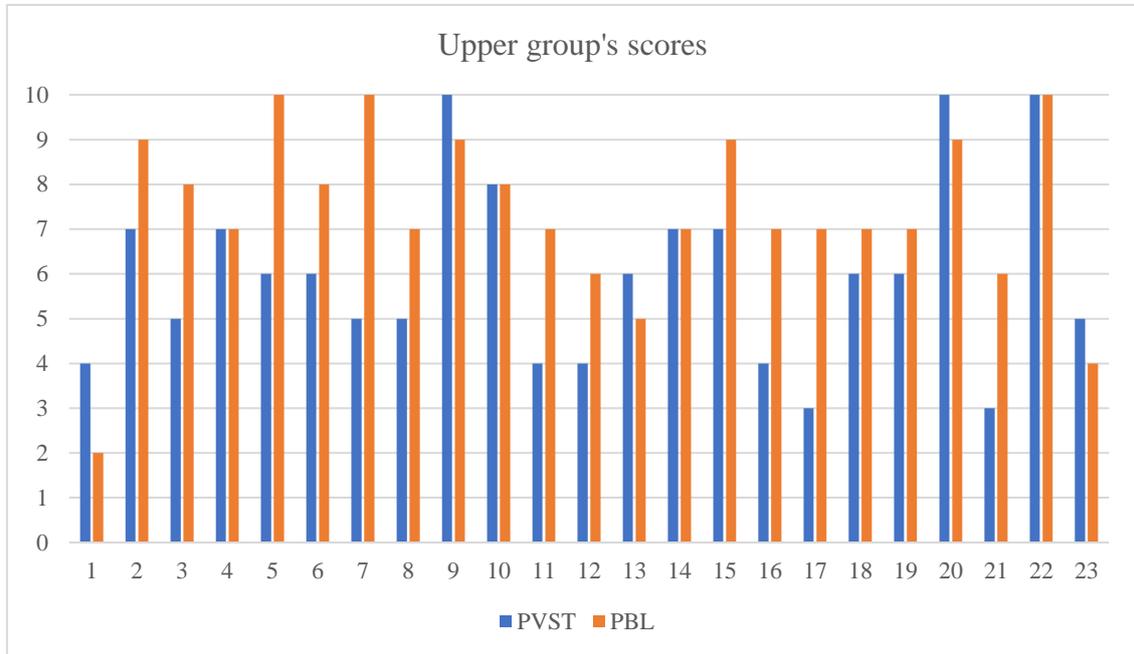


Figure 2

Upper group's (5-year-olds) scores in the PVST and PBL test.



A non-significant difference was observed regarding comparisons between the scores of the PVST and the PBL tests of the lower group ($z = -1.680$; $p = 0.093$), collected through the Wilcoxon test. In contrast, the upper group reveals a statistically significant difference between tests ($z = -2.901$; $p = 0.004$) in favour of the PBL test.

Moving on to the second research question and the first sub-research question (is there a difference between the vocabulary knowledge in each Pre-Primary age group in terms of general vocabulary (EFL)?), figures 3 and 4 represent the scores obtained by each student in the PVST. The knowledge of general terms is larger in the case of the upper group students as they show higher scores, with some participants reaching the top score in this test.

Figure 3

Lower group's (4-year-olds) scores in the PVST.

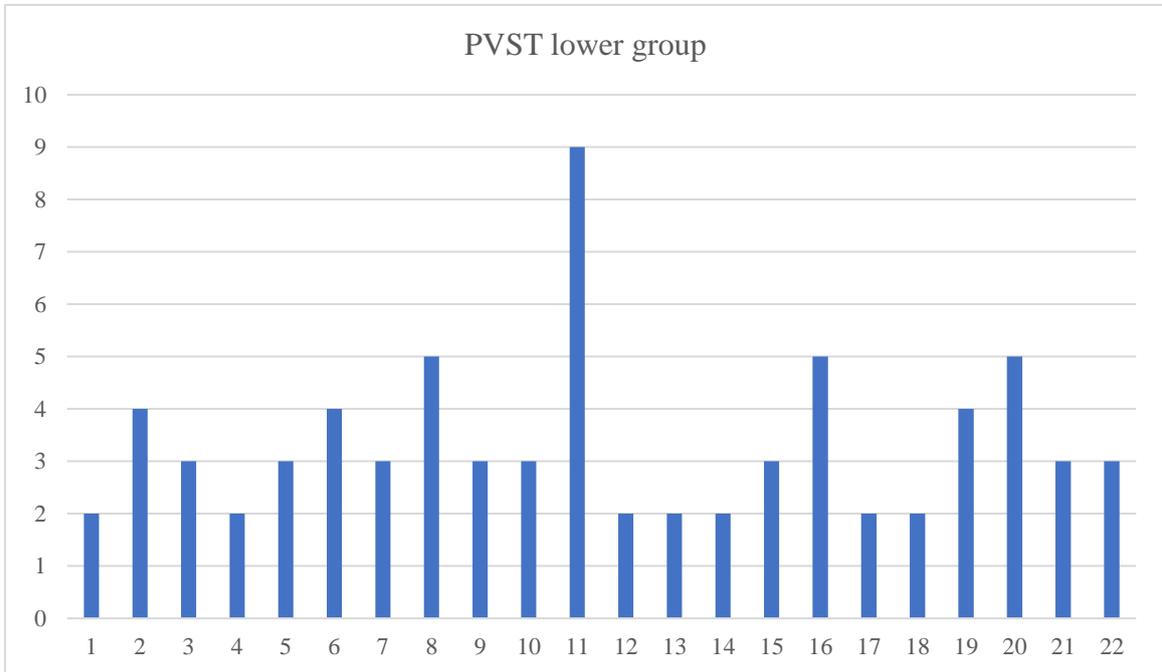
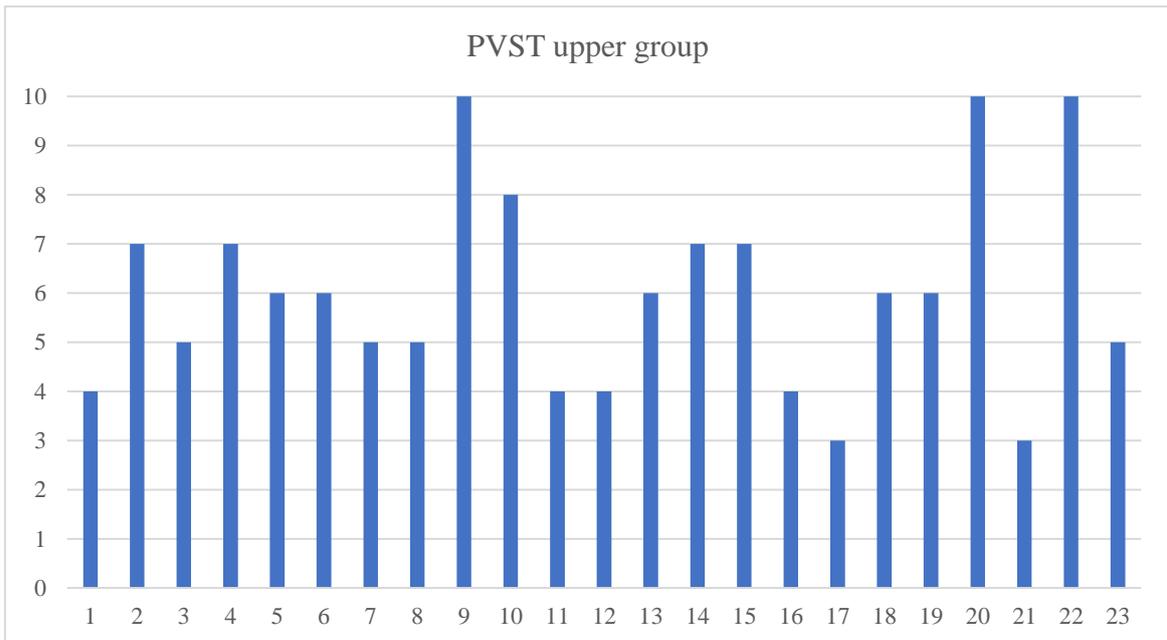


Figure 4

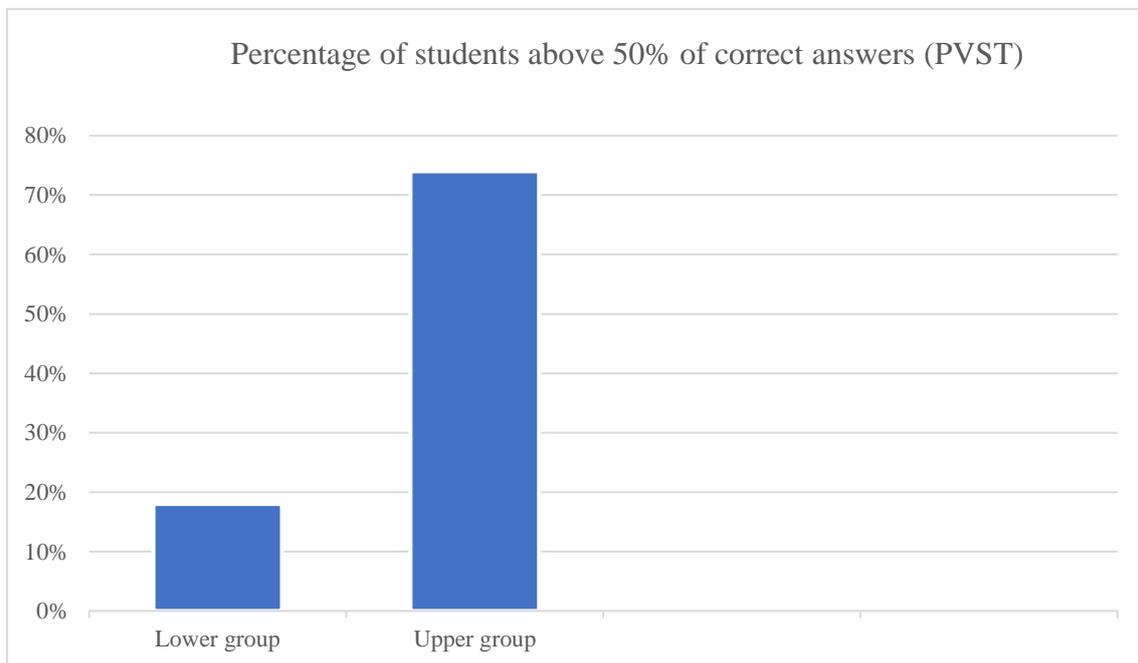
Upper group's (5-year-olds) scores in the PVST.



Regarding the results of the lower group, 18% of the students show scores above 50% of correct answers in the PVST, while 74% of students in the upper group show more than half of the correct answers in the same test (figure 5).

Figure 5

Percentage of students above 50% of correct answers in the PVST.



The difference between age groups regarding PVST scores was analysed statistically. The results showed that this difference was statistically significant ($z=-4.344$, $p < 0.001$) in favour of the students in the upper group.

With respect to the second sub-research question (is there a difference between the vocabulary knowledge in two Pre-Primary age groups in terms of subject-specific vocabulary?), again the students in the upper group obtained higher results when testing PBL vocabulary. This difference is statistically significant ($z= -3.519$, $p < 0.001$). Figures 6 and 7 illustrate the score of each student in this test.

Figure 6

Lower group's (4-year-olds) scores in the PBL test.

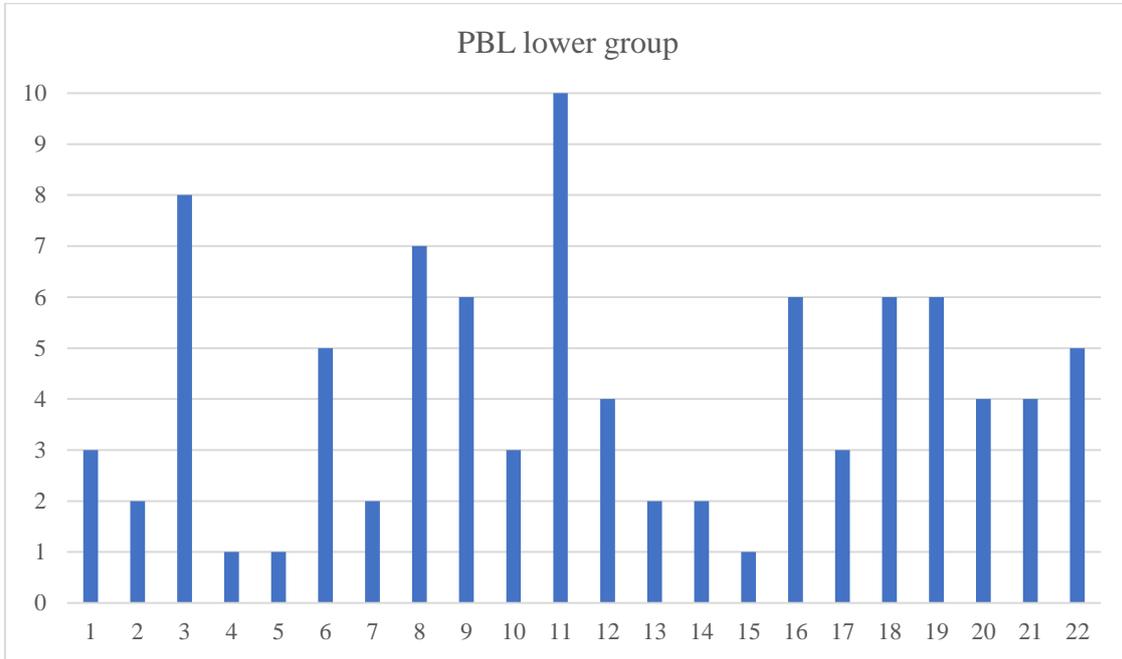
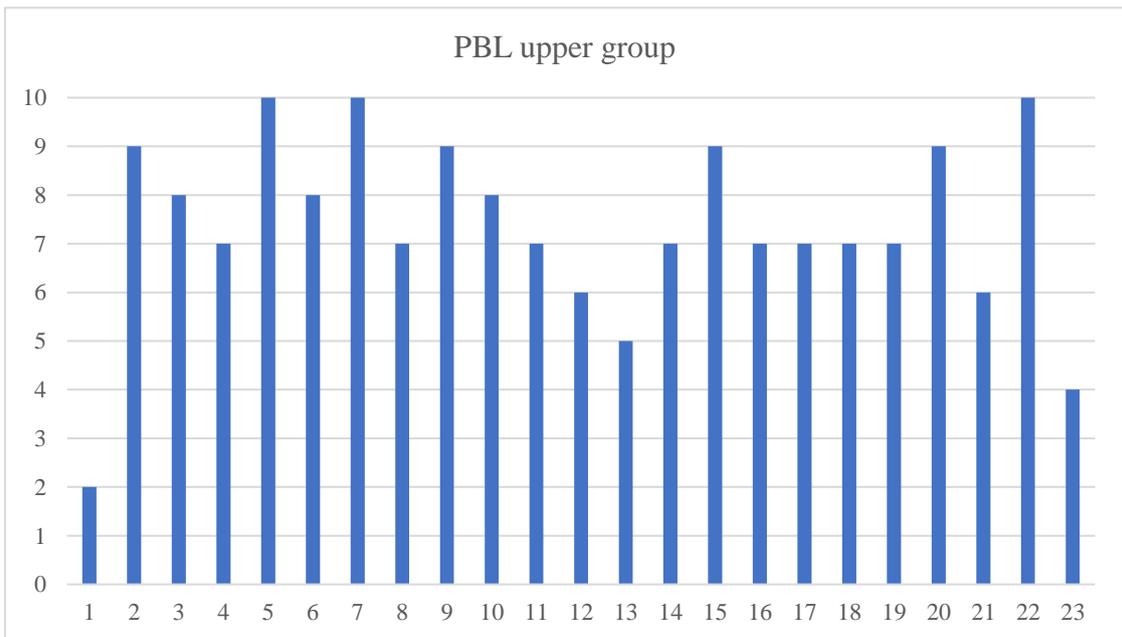


Figure 7

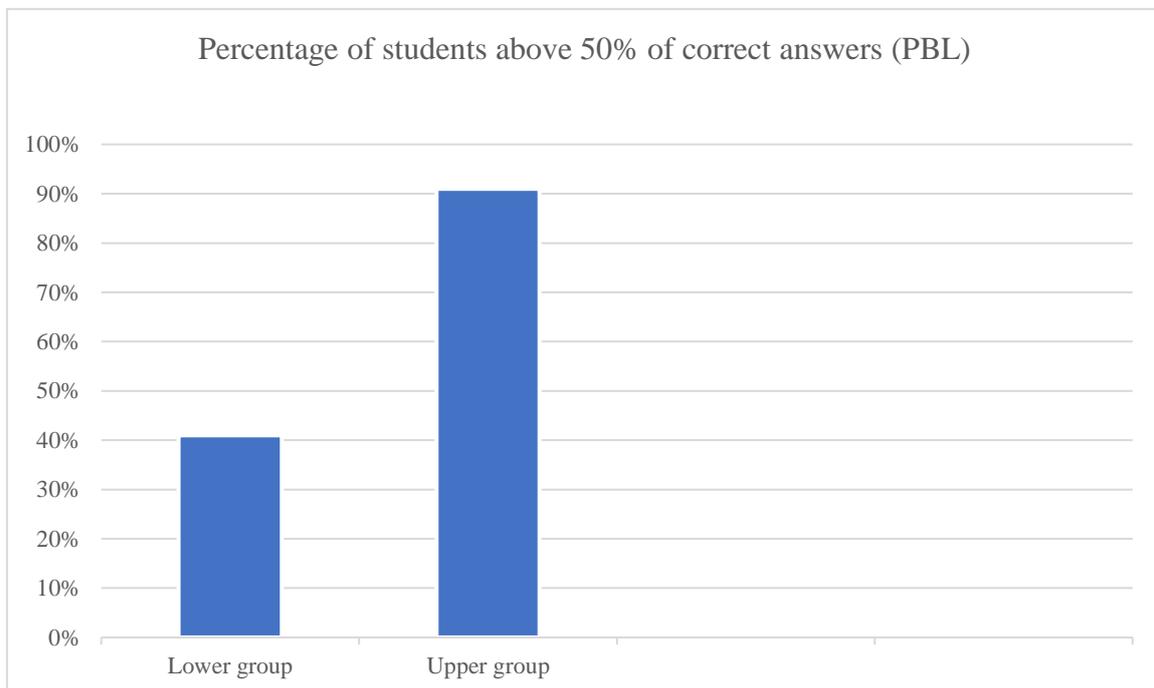
Upper group's (5-year-olds) scores in the PBL test.



Therefore, 41% of students in the lower group show more than 50% of correct answers in the PBL test, while 91% of students in the upper group show these scores (figure 8).

Figure 8

Percentage of students above 50% of correct answers in the PBL test.



5. DISCUSSION

The analysis of data in the previous section shows the main results of the research study according to the research questions posed. With respect to the influence of a teaching instruction based on PBL and CLIL on the learning of subject-specific vocabulary, positive results can be observed for both Pre-Primary groups regarding the specific vocabulary taught through PBL within a CLIL approach. The vast majority of students achieved higher scores in the PBL test than in the PVST test administered, which may be explained in terms of a positive influence of the implementation of PBL on receptive vocabulary learning and vocabulary size development. When analysing more specific results, it has been displayed how the percentage of students who reach scores above the 50% of correct answers is also higher regarding PBL tests. Different studies have supported this positive impact of PBL on Pre-Primary learners' vocabulary learning, such as the already mentioned Beneke & Ostrosky's study (2009) with 3- and 4-year-old children, and the research developed by Aral *et al.* (2010), carried out with 6 years old students and focused on the development of conceptual knowledge at this level. Although addressed to EFL settings, the study carried out by Kimsesiz, Dolgunsöz & Konca (2017) can be equally pointed out as their results present the influence of PBL on vocabulary learning when comparing two preschool groups with an age range of 5-6 years old involved in traditional and PBL learning environments. These three examples can be compared with our sample of students between 4 and 6 years of age, as the effects of PBL can be observed when implementing the approach in this range age, but also with younger children (under 4 years old).

On the other hand, age differences have been analysed regarding the general vocabulary measured through the PVST and the subject-specific vocabulary measured through PBL4 and PBL5 tests. The results of the upper group are higher for both tests, PVST and PBL test, when comparing scores with the tests performed by the younger participants. Furthermore, the analysis of the percentage of students with scores above 50% of correct answers in each test, also presents age differences and show a higher number of students in the upper group achieving these results for both tests. It demonstrates a better performance by this group.

Different reasons could explain this dissimilarity, which may be related not only to cognitive development and maturity, but also to other variables such as exposure time

and some aspects associated with the implementation of the project in this particular classroom. As has been discussed in previous sections, the evidence by Nation & Anthony (2016) about the implementation of the PVST with children under six years old can be taken into account as students may select the picture that attracts them the most, an aspect particularly observed in those learners in the lower group when carrying out this investigation. The differences between groups can be explained not only by this difficulty very young children show to keep focused on the test, but also by the time of exposure to English due to their young age (Anthony & Nation, 2017). Moreover, it is important to consider the already highlighted increase of vocabulary size along the school years (Kavanoz & Varol, 2019). As pointed out by Mills & Milton (2021), older children tend to show higher scores in these types of tests, supporting the idea that developmental features influence vocabulary acquisition, as well as very young students' performance or success with the tests.

It is also important to bear in mind that the complete test with 96 items was not implemented, but an adaptation of 10 items according to the characteristics of the sample. The results obtained can be analysed as an approximation to children's vocabulary. The data are considered an estimate of the vocabulary through the weighting of the scores. Moreover, despite its adaptation, this test not only involves word recognition, but also complex cognitive processes when interpreting the pictures. Some examples of this situation can be provided as two bilingual children were part of the sample: although high scores were found in their tests, some difficulties were observed when identifying some pictures, maybe due to their cognitive maturity and the development of some particular knowledge areas.

6. CONCLUSION

The present study aimed to analyse the benefits of Project-Based Learning within a CLIL approach as an innovative method to face language learning in educational settings, and its particular influence in Pre-Primary CLIL students' receptive vocabulary acquisition. The theoretical review has allowed me to cover the main principles of PBL and CLIL, their possibilities in preschool contexts, as well as those key concepts related to vocabulary acquisition, learning and teaching strategies. From this revision, it can be concluded that more research on these aspects is clearly needed on Pre-Primary Education levels as a great deal of personal and cognitive development takes place at this age, and vocabulary plays a key role in the acquisition of the L1 and any additional language that children may be developing.

Therefore, the results of this MA dissertation provide information about the possibilities and contributions of the implementation of PBL with young learners while also analysing suitable vocabulary evaluation instruments.

The lack of available resources and tools to assess young children's linguistic areas could be also defined as a barrier to further research in such essential fields. Regarding the Picture Vocabulary Size Test, this study has also shown that this instrument is still difficult for children under six years of age, not only due to word recognition and the influence of other factors such as attention span, but also because of the cognitive processes involved. But it certainly has advantages. The format of the PVST, with the use of pictures, definitely facilitates its implementation with young learners, as they are a useful and common resource when working with and assessing pre-literate children (Mills & Milton, 2021; Alexiou *et al.*, 2019). An "I don't know" option is available to be activated in the original version of the test, although it was not included in the adaptation and the creation of the specific vocabulary tests employed in my study. It could be added in future research as it can be useful to eliminate the possibility of guessing, as indicated by Kavanoz & Varol (2019) and Anthony & Nation (2017), which can be convenient when working with older groups and increasing test length. Thus, multiple choice tests can lead to guesswork (Mills & Milton, 2021), but they allow the use of larger samples of words and help simplify the task (Read, in Mills & Milton, 2021), an aspect that becomes important when assessing young learners.

Generally speaking, students have shown better vocabulary results after PBL lessons despite having had more exposure to general English. Thus, to sum up, some positive conclusions can be drawn about the effect of the application of PBL in CLIL Pre-Primary contexts regarding vocabulary acquisition and the possibility to assess vocabulary at this level. The implications of the method at this educational stage can be strengthened and more robust generalisations could be developed. The study carried out is not a longitudinal study. Working with a control and an experimental group could support these findings, as well as administering pre and post-tests to demonstrate differences between the knowledge of specific vocabulary before and after receiving PBL lessons. Moreover, a larger sample could help the development of stronger generalisations and conclusions about the influence of the method, as well as about age differences. All these aspects can be considered concerning further research, although the study developed through this MA dissertation, in my view, provides some relevant findings that could contribute to the analysis of an understudied population (very young learners) within underexplored areas of study (vocabulary acquisition in a CLIL setting with the implementation of a PBL methodology).

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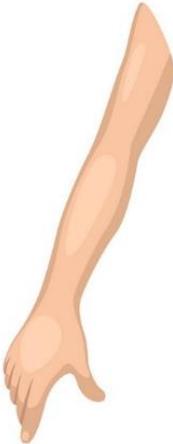
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APPENDIX A. PVST ADAPTATION

1. House



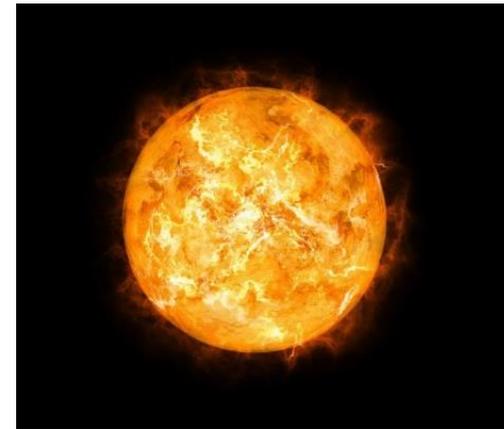
2. Animal



3. Thirteen



4. Table



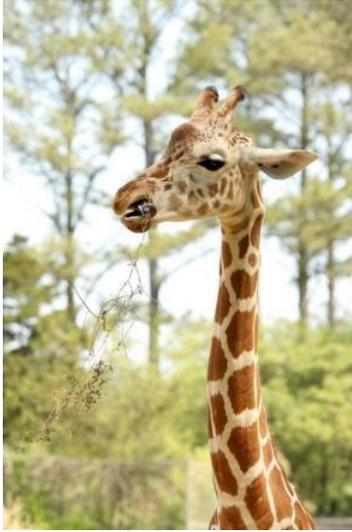
5. Grass



6. Cafeteria



7. Short



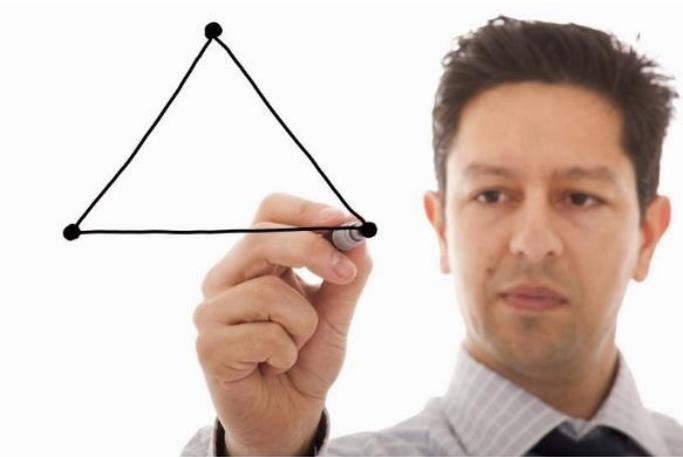
8. Quiet



9. Telephone



10. Triangle



APPENDIX B. PBL4

0. Example (hands)



1. Eye



2. Curly



3. Stomach



4. Blonde



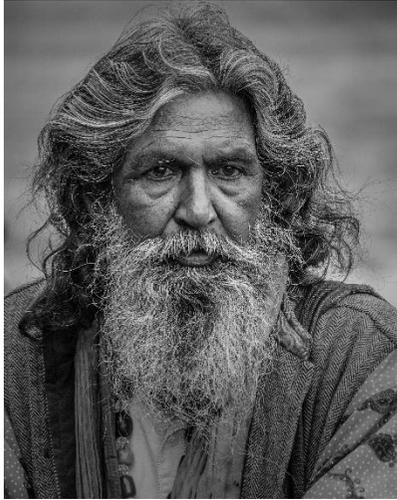
5. Strong



6. Touch



7. Short



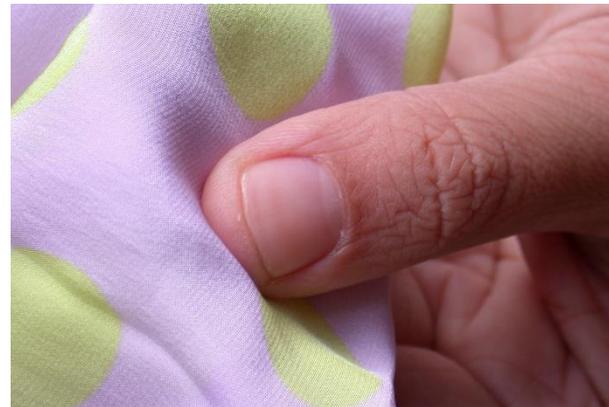
8. Chin



9. Tall

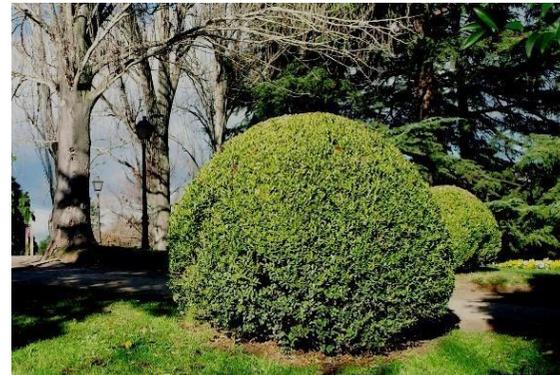


10. Ear



APPENDIX C. PBL5

0. Example (bird)





1. Spider



2. Tree



3. Caterpillar



4. Fruit



5. Flower



6. Pollution



7. Wildfire



8. Plant



9. Spray



10. Help



