

# Hands-on CLIL: A project-based orientated approach to Geography in lower secondary school

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## **Abstract**

Adopting a bilingual / CLIL programme based on project-based learning (PBL) is a meaningful aid for students, as activities and interaction encourage spontaneous exchanges of meaning (Willis & Willis, 2007). The starting point for planning tasks for 7<sup>th</sup> grade Geography was aimed towards content and designed to involve communication linked to real-world activities. This was accomplished through linguistic support and interactional scaffolding to help students understand, communicate and interact (Urmeneta, 2019). The added bonus in this learning environment was that tasks and projects were ideal for pair and group work, requiring students to work collaboratively, meaning the teacher was able to monitor and also help struggling students. PBL in the CLIL classroom was successful on several levels; students were exposed to authentic language which went well beyond what was covered in their language lessons. They were using language for a real purpose – to finalise a task or reach an agreement. Greater engagement and hands-on tasks led to deeper learning of subject topics and language as well as to stronger motivation, as there was personal involvement in learning.

## **Keywords**

CLIL; project-based learning (PBL); active learning; motivation; creativity; hands-on; personal involvement.

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## Resumo

A adoção de um programa bilingue/CLIL assente numa aprendizagem baseada em projetos (PBL) é uma ajuda significativa para os alunos, uma vez que as atividades e a interação encorajam as trocas espontâneas de sentidos (Willis & Willis, 2007). As sequências de tarefas planeadas para Geografia do 7.º ano basearam-se em conteúdos concebidos para promover a comunicação ligada a atividades do mundo real. A comunicação foi apoiada linguisticamente e por meio de *scaffolding* interativo para ajudar os alunos a compreender, comunicar e interagir (Urmeneta, 2019). Como benefício adicional, os projetos desenvolvidos revelaram-se contextos ideais para o trabalho em pares e em grupo, exigindo que os alunos trabalhassem em colaboração, o que possibilitou ao professor acompanhar e ajudar os alunos com maior necessidade de apoio adicional. O PBL na sala de aula CLIL resultou em sucesso a vários níveis: os alunos foram expostos a uma linguagem autêntica que ia muito além do que era abordado nas suas aulas de Inglês. Os alunos utilizaram a língua para um objetivo real – finalizar uma tarefa ou chegar a um acordo. Registou-se um maior envolvimento dos alunos e as tarefas práticas contribuíram para uma aprendizagem mais profunda e uma motivação mais forte, uma vez que a aprendizagem foi facilitada através do envolvimento pessoal.

## Palavras-chave

CLIL; aprendizagem baseada em projetos; aprendizagem autêntica; motivação; criatividade; tarefas práticas; envolvimento pessoal.

## 1. Introduction

Content and Language Integrated Learning (CLIL) is an innovative or alternative teaching approach which uses a foreign language as a tool to teach subjects, or part of subjects, such as Science, Geography and History to students. The aim is not only for the student to learn the content but also to develop the chosen foreign language, and it is the subject content which dictates the language demands. Language and content are thus interwoven and connected even if at times there might be more focus on the language and, at others, on the subject content (Coyle, Hood, & Marsh, 2010).

CLIL may be implemented at any level from primary to tertiary education with more or less emphasis on receptive and productive skills depending on the learners' language knowledge. Often referred to as bilingual education, it is aimed at developing and improving students' proficiency in the language through increased exposure in addition to other competences such as cognitive development and intercultural understanding.

Implementing CLIL, however, does not come without its own set of challenges for teachers, whether they teach a content subject or language. This may include not grasping the correct concept of CLIL (i.e., merely providing word lists) or knowing how best to implement the approach, the shortage of ready-made materials, and the lack of material appropriate for each context.

The aim of this chapter is two-fold: to relate the experience of implementing a CLIL approach in the subject of Geography through project-based learning (PBL); and to demonstrate that PBL may be used as an orienteering guideline leading to the use of multiple teaching possibilities applicable to any subject area and level of instruction. PBL as a student-centred teaching approach may serve as the backbone for implementing CLIL for teachers who feel intimidated by the idea of teaching subject content by means of a language that is neither the students' L1 nor their own. PBL fosters student involvement, learning by doing as well as peer learning, all of which generate greater engagement and deeper learning.

Through a series of tasks which make up a unit and/or project, subject content is provided, preferably through multiple modalities. Learners have different learning styles (Dale, Van de Es, & Tanner, 2010) and therefore different input modes should be exploited, which is in line with the CLIL approach. All verbal and non-verbal resources at hand should be used to ensure all students understand the target content (Urmeneta, 2019). This multimodal approach (combining different modes e.g., using interactive videos, texts, images) suggests that different senses are engaged while learning – visual, auditory, kinaesthetic – catering to different learning styles, and this leads to better understanding for more students.

Learning and using a language involves different interdependent processes as suggested by Halliday's model of learning (1993, as cited in Urmeneta, 2019, p. 9): learning language, learning through language and learning about language. This is in line with the language triptych tool put forth by Coyle, Hood & Marsh (2010), a conceptual tool which helps teachers identify three different but interrelated types of language needed to implement CLIL effectively: language of learning (language needed to understand the content); language for learning (functional language to carry out the task(s)); and language through learning (language which may arise from individual learner needs and which is difficult to predict and plan for). It should be addressed at the time it occurs for the benefit of the whole class. The language triptych is based on the notion that there is a relationship between content objectives and language learning. Implementing the tool in lesson planning leads to constant scaffolding in each task or stage of the project, providing students with abundant language tuned to their level (Urmeneta, 2019), and as stated by Kelly (2009, as cited in Ball, 2016, p. 28) "guiding input and supporting output". This richness of language, according to language acquisition theories (e.g., Lightbown & Spada, 2006), may resemble the conditions present when learning an L1.

Variety and interaction added to instruction, as well as learning by using the language, may foster motivation and help to increase the noticing of language and awareness of subject concepts. This may be considered part of the scaffolding process teachers provide to students to support or aid their understanding. The use of multimodal resources, such as videos, also facilitates the incorporation of authentic material and authentic language. According to Krashen's (1991, as cited in Mehisto, 2012, p. 22) input hypothesis "language learning is dependent on the quality (including range) of language input". The PBL approach to learning entails group work to complete tasks and takes into account the 4 Cs of the CLIL approach: content, communication, cognition, community as well as competences, as put forth by Ball (2016), which include the abilities and skills to be able to work on concepts observable in students' performances.

This chapter is divided into six sections. The context is provided in section 2 followed by the pedagogical framework and an overview of what project-based learning entails in section 3. Section 4 provides details of how PBL was implemented as a unit in Geography. Section 5 includes discussion and conclusions. Finally, section 6 provides a set of recommendations.

## 2. Context

The challenge of implementing a bilingual or content and language integrated programme in the subject of Geography was proposed for the 7th grade at a private school in Viana do Castelo over the course of an academic year. The two groups consisted of 26 and 28 students. Each of the groups had one additional 75-minute lesson each week to their regular lessons.

The objective of the programme was two-fold: to reinforce the topics covered in the subject classes as well as expose students to additional hours of English. By engaging learners in critical analysis and problem-solving activities, they were impelled to cooperate and communicate with each other in the L2, promoting fluency and confidence. Unfortunately, the content teacher did not work with the CLIL/language teacher, only providing guidance in terms of the content material for the term. It was the students' introductory year to Geography and the term encompassed:

- the definition of geography;
- maps and their purpose;
- scales;
- key or legend;
- the compass rose and intermediate directions;

- latitude and longitude;
- time zones.

With regards to linguistic competence, neither of the groups was homogenous, each displaying various levels of language skills. Several students were able to convey simple messages and opinions while others struggled with English due to the lack of vocabulary and therefore were unmotivated and not at all enthusiastic with the prospect of having additional lessons in English.

## 3. Pedagogical Framework

Instruction in many language classrooms and even CLIL classrooms may frequently be based on the initiation-response-feedback pattern (IRF) led by teachers (Ball, Kelly & Clegg, 2015). The teacher initiates with a question, the student answers and then feedback is provided by the teacher. This pattern of interaction does not reflect authentic communication and perhaps favours quantity over quality. If the objective is to promote fluency through student engagement, teaching approaches have to consider activities in which students interact in pairs or groups. Working and speaking in an L2 in pairs and/or groups lowers or removes the risk factor, particularly for lower performing students, as they feel less exposed and, as Ball *et al.* (2015) indicate, they are more inclined to help each other. Illich (1971, as cited in Ball *et al.*, 2015, p. 41) points out that "most learning is not the result of instruction. It is rather the result of unhampered participation in a meaningful setting."

### 3.1. Project-based learning

PBL is a teaching approach which may be traced back to practical methods involving 'learning by doing' (Dewey & Dewey, 1915, as cited in Gibbes & Carson, 2013, p. 2). Students are given a challenging question or problem to pique their natural curiosity and encouraged to find the answer or solve the problem. Learners are involved in problem-solving, decision-making and investigating activities, promoting independent thinking and nurturing twenty-first century skills which may be integrated in their future lives. Twenty-first century skills include critical thinking, creativity, collaboration and communication which are classified as learning skills, as well as life skills (e.g., social skills, flexibility) and literacy skills (e.g., technology). PBL is not the "dessert" project often done at the end of a unit as a treat or to consolidate or review content, but rather it is the unit through which learners will address and acquire content.

This methodology essentially includes two components: the question or problem, which provides the basis to organise and drive a sequence of activities; and the end product which will be the result of the activities which addresses the driving question(s) (Blumenfeld *et al.*, 1991). Examples of an end product may include:

- a leaflet;
- a map;
- a storybook;
- a guide;
- an exhibition;
- experiments;
- diagrams;
- a brochure;
- a video;
- a podcast;
- an exhibit, to name but a few.

Choice is a key element in PBL, as students may, in addition to choosing the product, select the process and even the content in certain situations. This ability to choose empowers learners with a voice as the approach not only respects their preferences but also their individual learning styles (Bell, 2010). As students work in groups, they learn how to collaborate and communicate through multiple methods. The process of creating an end product creates a learning story and the different sections of the project are not isolated to one subject alone but may be multidisciplinary (Hutchinson, 1991; Kaldi, Filippatou & Govaris, 2011).

Using project-based learning within a CLIL approach entails the following:

- a. content to be covered is the starting point for planning;
- b. critical thinking and creativity are used in the learning process;
- c. interaction/collaboration is central to learning. This is true both for learners and teachers;
- d. information/content is broken into smaller chunks than might be the case with L1 material. Using the analogy of a video game, information/content/language is provided as the learning story unfolds;
- e. authentic learning takes place. 'Authentic' may be described as creating a bridge between the content and students' world and/or real-life activities/situations;
- f. different modalities are used to present content and language;

- g. enhanced learning is achieved by engaging learners in real language use. Students are not restricted to one particular language form due to the mere fact that they are learning that form; in other words, it is not practice-oriented but rather, students are free to choose and use any form to convey meaning for a particular outcome;
- h. meaning is primary. Learners make their own meaning and are not merely repeating what they are told. They search their repertoire to decide how best to communicate an idea or follow an instruction;
- i. students' schematic knowledge is taken into account. What do they already know about a specific topic?

## 4. In Practice

The following section illustrates how PBL was implemented, outlining the procedural choices and how content can be transferred to hands-on activities, how scaffolding was provided and different modalities were employed.

### 4.1. Example of project-based learning - a unit as a project

The objective for the term was to find a manner in which the content of the curriculum for the first term of 7<sup>th</sup> year Geography could be applied with a hands-on approach. As the content for the term was centred around maps, when planning, it was important to consider that in this age of technology, students had limited or no hands-on experience handling maps. They could, however, be acquainted with digital maps accessible on smartphones and GPS systems. Nonetheless, do students actually use them? To trigger students' schematic knowledge as well as their curiosity and to introduce them to modern day uses of maps, they viewed a video on geocaching and were given supporting worksheets to help with vocabulary. From a classroom discussion, the driving question for the project was chosen: '*Why do we use maps?*' and '*What information can we find on a map?*' This would link to the end product/project idea.

Teachers may think that PBL is difficult to implement in an L2 due to language restrictions (for lower levels) and the associated difficulty in working towards finding the answer and/or solving the set problem in the L2. Even though PBL is an inquiry-based approach, some direct instructions will have to be integrated.

Content and language are not both presented at the beginning of the project but have deliberate framing and timing to allow students to integrate their new learning with the background knowledge they have developed throughout the project. This makes new information more memorable. Similar to any CLIL material, language is adapted in the medium of instruction to aid comprehension and production. This direct delivery of new content is also a good way to encourage students to ask more questions.

All of the worksheets used during the project addressed both content vocabulary (of learning) as well as functional language including chunks and expressions (for learning), needed for subsequent activities as demonstrated in table 1.

**TABLE 1.** Language covered during the Project – language of and language for.

Language of	Language for
<ul style="list-style-type: none"> <li>• physical world</li> <li>• north/south/east/west</li> <li>• northeast/northwest etc.</li> <li>• km/m/cm/mm</li> <li>• ratio</li> <li>• linear scale</li> <li>• fraction</li> <li>• longitude – latitude</li> <li>• Equator-meridians</li> <li>• position</li> <li>• poles westward/eastward</li> <li>• east to west</li> </ul>	<ul style="list-style-type: none"> <li>• prepositional phrases</li> <li>• prepositions of movement</li> <li>• giving directions</li> <li>• sequencers</li> <li>• numbers / large numbers</li> <li>• comparatives/superlatives</li> <li>• talking about distances</li> <li>• how far</li> </ul>

Many of the activities/worksheets used throughout the project promoted higher-order thinking skills (HOTS) and were completed in pairs or as group work. These included matching, creating, comparing, sequencing, and justifying activities. The aim of the tasks was not only to provide scaffolding of language, by underlining or highlighting key content vocabulary and language structures (in bold), but also provided students with opportunities to practise and recycle both form and meaning. Additionally, information was broken down into smaller chunks than might be the case for instruction in the L1 to facilitate comprehension and retention. This often entailed a greater number of activities, or steps in a task

so as to make the acquisition of new knowledge more manageable for learners. These steps could be more visuals, information organisers, and mind maps, what Mehisto (2012) refers to as navigation support until the final task or final part of a project. This was ideal for students who were either struggling with the content subject or the language.

After defining the driving questions, the next stage of the project involved students working in groups to create treasure maps and practising language to write directions to find a hidden treasure. Prior to the task, students worked on an example to understand what the activity entailed. During the hands-on activity, several questions surged related to land forms. For example, '*What's included in a map?*' (Susana 7B)<sup>2</sup>, even though this content had already been covered in their L1 Geography lesson.

Were the activities always carried out in English? No, not all. Lower performing students reverted to their L1. However, they completed all the activities with the aid of their classmates (peer learning), were on task, and understood the content. Scaffolding was provided to aid their writing, as can be seen in Appendix A, as the task was slightly challenging for a few. Sentence frames and graphic organisers were used to help students with sentence building and speaking. Without this scaffolding, students may not have produced such structured and extensive work when providing directions/instructions. An example may be seen in Appendix B. Not only did the activity allow students to develop their language skills, some to a greater extent than others, but it also expanded various competences such as questioning (directed at their group and the teacher), exploring, creative expression, listening, team work, communication, sharing ideas and justifying.

As feedback is an integral part of PBL (Blumenfeld *et al.*, 1991), at the end of each phase of the project, students were asked to provide their feedback in a form entitled '*My Activity Record*', as shown in Appendix C. Activity title and date were filled in and students wrote comments to the following questions/statements. '*What did I learn?*', '*The thing I did best*', '*The thing I found most difficult*'. They also reported if they had enjoyed that activity and assessed themselves out of 10.

Several students filled their feedback forms in the L1 while others did so in the L2. The results from both groups for this particular task are summarised in table 2. It is interesting to note that some of the comments relate to content and language (vocabulary, writing instruction), while others to the competences (working in groups, being creative, sharing ideas). In relation to what they did best, again, some comments related to content and language but several mentioned they had learned how to draw (cross-curricular) and mentioned '*helping my friends do the work*' (João – 7B) (peer teaching). As to what they had found most difficult, language was expected to be the most challenging for some. Nonetheless, drawing, working

<sup>2</sup> Pseudonyms have been used in order to protect students' anonymity.

with others and associating L2 vocabulary to L1 were included in the responses. It was interesting to note though, that in the end, they had all worked well '*no fim eles empenharam-se bem*', (Marta 7A), demonstrating that there was collaboration and equal participation.

**TABLE 2.** Summary of replies to one of the feedback forms.

<i>What did I learn?</i>	<ul style="list-style-type: none"> <li>• vocabulary in English</li> <li>• working in groups</li> <li>• writing instructions</li> <li>• being creative</li> <li>• developing language</li> <li>• sharing ideas</li> </ul>
<i>The thing I did best</i>	<ul style="list-style-type: none"> <li>• fun activities related to the subject</li> <li>• prepositions</li> <li>• maps</li> <li>• giving directions</li> <li>• helping my friends do the work</li> <li>• learning to draw</li> <li>• two students added additional notes '<i>gostei e quero mais</i>' / '<i>gostei por ser uma atividade diferente</i>'</li> </ul>
<i>The thing I found most difficult</i>	<ul style="list-style-type: none"> <li>• painting / drawing</li> <li>• writing instructions</li> <li>• prepositions</li> <li>• working with others (this student then added '<i>no fim eles empenharam-se bem</i>)</li> <li>• associating words in English to Portuguese</li> </ul>

Vocabulary and grammatical structures for the subsequent phases of the project were always broken down to more manageable chunks. Technology, certain tools and worksheets provided scaffolding to aid the comprehension of the subject topics. This included:

- a compass (found in smartphones) coupled with an orienteering activity to provide real-life practice;

- Google Earth to understand the concept of scale (Minho region, Viana do Castelo, area surrounding the school and ending with the school's playground);
- manipulating a ruler to calculate distances;
- interactive videos;
- educational games (longitude/latitude battleship) to help them understand that any specific geographical point could be located by reference to its longitude and latitude and that these invisible lines were also the basis of measuring time, distance and direction.

Following the completion of all the stages of the project, which coincided with the topics and subtopics in the curriculum for Geography for the first term, students were questioned about their initial treasure maps, which had been made at the start of the year. There was clear consensus that these were either incomplete and/or contained inaccuracies. This was followed up with a class discussion on these aspects. Students understood the content and were able to justify their reasons.

Original maps were returned to each group, and students proceeded to complete and/or amend them. A large map was placed at the front of the classroom for students to locate their islands on the world map. They were able to understand why they could not include more than one longitude and latitude line. Groups presented their treasure maps for peer review. Each group commented on the positive aspects of each map and instructions, and confirmed that all the needed information had been included.

To end the content unit and the project, a class activity was carried out in which students had to choose a city anywhere in the world. No two students could choose the same location. Knowing that it was 12.15 p.m. in Greenwich, each student had to calculate what time it was in their city of choice. They also had to decide what they were doing at the given time. Students made a human map in class according to their time zones, in which those in the Northern Hemisphere stood up and those in the Southern Hemisphere sat down. They had to position themselves according to their city and country and tell everyone where they were, what time it was and what they were doing, an activity which promoted kinaesthetic learning.

The underlying purpose of the different activities in the project was to actively involve students in real-world activities. This was done to foster higher engagement and deeper content and language learning. The different stages helped students to work on different competences:

- creating and making representations on a map – understanding the implications of using more than one longitude and latitude line in their map; one centimetre representing 1 metre;
- sharing ideas / teamwork – necessary to make the maps and decide on what would be presented and how; looking for clues in orienteering activity;
- drawing conclusions – proportions and understanding that 1 centimetre could represent 10 kilometres. Being able to calculate distances on a map using a ruler; understanding why their initial maps were incomplete or incorrect;
- justifying – explaining their choices;
- observing and noticing – evident in the many questions that emerged during the project.

## 5. Discussion and Conclusions

This experience strongly suggests that PBL is an ideal approach to be employed in CLIL contexts as PBL addresses the four principles of Content and Language Integrated Learning: content, communication, cognition and culture. Both use multimodal content and are student-centred with the teacher acting as a facilitator, providing supervision and guiding each step of the process and approach (Bell, 2010). This allows the teacher to aid those students who may experience language problems and/or lack understanding with content. Student-centred activities also allow the teacher to provide more personal help to individual students or groups when they are struggling or have doubts. As the teacher was able to circulate, there was more teacher-student interaction and students felt more at ease to voice their doubts. This happened in both groups.

As a consequence of the personalised help/teaching, this motivated students to try their best and engage in the activity. Often, all that was needed was a question from the teacher to guide a student in the right direction. *How? What would happen if...?, Where do you place the 0 on the ruler?* As the project progressed, there was a closer involvement with students. They were more likely to speak up when they had a question and they took more risks. They also developed closer relationships among their peers. This led to student motivation and more self-confidence to complete future tasks (Dale & Tanner, 2012) as there was less resistance to complete activities as the project progressed. The student-student interaction not only radically changed the learning atmosphere, promoting equal participation

as everyone was working (*'no fim eles empenharam-se bem'*- Marta 7A), but it also improved the quality of the learning (*'I learned a lot of things about Geography'*, Susana 7B / *'I learned how develop my creativity and developed my language'*, Ana 7A). In a certain manner, this may also aid in minimising the hindrance of teaching a language to such large groups.

The use of visuals and multimodal resources helped to trigger interest and curiosity (Mehisto, 2012; Dale & Tanner, 2010). The introduction to the project with the aid of a video on geocaching encouraged several students to go out with their families and try geocaching, an experience which they then recounted to their classmates. This brought the real world into the classroom and demonstrated that many students are motivated by visual content.

Videos may be a mode of choice for many CLIL teachers as the visual content facilitates comprehension. Quality videos found on the internet are mainly directed at native speakers. Consequently, care should be taken to choose the most appropriate for the age and language proficiency of the students. Nonetheless, numerous strategies may be employed to overcome these constraints:

- pre-teach vocabulary from the video (which could be the language of the lesson) as a warm-up activity;
- turn off the sound during the first viewing;
- do multiple viewings;
- break up the video into separate sections with customised activities for each section.

The outcome of the project was deeper learning – better understanding of the topic as well as increased motivation to learn (*'Gosto e quero mais'* Tomas 7A / *'saber mais inglês'* Rafael 7A / *'aprendi a formas de orientação'* Catarina 7B) (Bell, 2010; Blumenfeld *et al.*, 1991; Dale & Tanner, 2012). There were several examples of students obtaining better results in the English/CLIL assessment than in the L1 assessment even though they were being assessed on both content and language. This may be justified as key language is made more salient in the CLIL lesson than in L1 teaching (Ball, 2016). An example of an assessment test is provided in Appendix D. End products were different and personal for each group (not constrained or dictated by the teacher), thus this element of choice also contributed to deeper learning as students pursued their interests (Bell, 2010). Additionally, this provided students with a voice. As the projects were shared and revised, this allowed for feedback from the teacher and reflection on learning from students, which encouraged them to extend their emergent knowledge (Blumenfeld *et al.*, 1991). Comments in the feedback forms demonstrated that students were motivated by the individual tasks or stages of the project (*'gostei e quero mais'* – Tomas 7A

‘I learned how develop my creativity and developed my language’ Ana 7A / ‘It was a different activity’ – Bianca 7B). Asking students how they felt, and if they had enjoyed the activities also fostered meta-affective awareness (Mehisto, 2012).

Assessment results confirmed that both language skills, content and various competences had been practised and acquired to varying degrees. Students were better able to understand many of the topics covered in the subject of Geography and there were instances of interdisciplinarity, such as working out scales and representation (Maths) and scale and proportions (Art/Design). Depending on the design of the project, these can integrate vocational and academic content spanning multiple disciplines (Gibbes & Carson, 2013). Different tasks helped to develop 21<sup>st</sup> century competences including:

- critical thinking, done through observation, analysis, reflection (coordinates and why their maps could only have one set of coordinates), decision making in their groups;
- communication, using language for an authentic purpose, learning by using;
- collaboration (through group work);
- soft skills, including teamwork, interpersonal skills (being patient with peers, responsibility), time management;
- creativity (how they created their final maps and other tasks);
- cultural awareness (community engagement in their school and surroundings);
- initiative (going beyond what was required)

in addition to other competences, such as learning to ask questions, justifying, drawing conclusions from observations developed through the different activities.

It was possible to assess content and language through multiple formats (see Dale & Tanner, 2012) including digital formats such as through Plickers, games (longitude, latitude battleship) and the final product (Had all the content been used and included correctly?) It would be interesting to verify if other teachers implementing the CLIL approach coupled with PBL also obtain /notice better results in content assessment and retention.

## 6. Recommendations

From this experience, I would recommend the use of PBL to implement a CLIL programme at any age or language level, as students are able to acquire and

practise both content and language in addition to multiple skills (creative expression, maths, learning skills, social skills, use of technology). These are skills which will be useful for the future of these students and which are essential in a world that is constantly changing, highly interconnected and multicultural.

Teachers may feel more intimidated in implementing a CLIL approach in Social Sciences due to the framing and structuring of lessons. Natural Sciences lend themselves to experiments and investigation of the natural world and thus provide teachers with guidelines on how to plan lessons and choose relevant vocabulary and structures. The use of PBL in CLIL may help the teacher (whether content or language) to find that structure through the driving question(s) and/or problem. PBL is a powerful tool which is resource-intense as teachers are able to use a mixture of technology, videos, texts, images, visiting locations (multimodality) helping students to connect learning and information to the real world, helping them to construct a mental model of the world through discovery, participation, and experiential activities.

PBL also allows the teachers to provide scaffolding of both language and content, one of the main principles of CLIL. One could think that it is repackaging information in a more user-friendly manner. This was not only accomplished by presenting content through different sources other than a textbook (multimodality) but also other techniques used in the classroom, such as breaking down knowledge into chunks to meet student where they are in relation to their knowledge; modelling; using analogies to help them understand concepts in simpler terms (i.e., scale); employing concepts to understand them (i.e., orienteering activity to understand how and why we use a compass, intermediate directions).

Teachers may think PBL is easier to implement with higher language proficiency levels. Nonetheless, by breaking down the content and language into small chunks and providing scaffolding throughout the different steps or stages, interweaving language with content, teachers are able to devise tasks and/or projects which cater to students' levels and needs. Language may not be the aim in itself but the vehicle to help learners talk about the subject (Bell, 2010). As a result of the lower language performance and age, students' choices may be limited to just the process and/or end product. However, learning is still personalised and choice is still being offered.

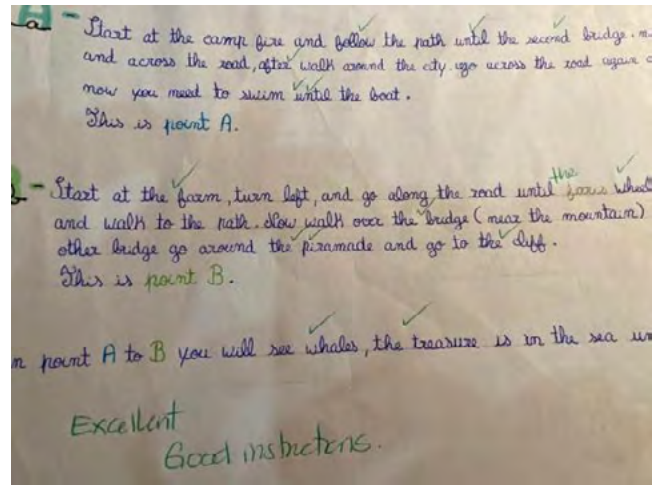
As some aspects some aspects of designing a project may be time-consuming, collaboration between language and content teachers is beneficial (Dale & Tanner, 2012). In fact, this was one of the shortfalls of this experience. The lack of involvement between the language and content teacher, and possibly other subjects such as Physical Education, Art or even Maths, meant that opportunities for further acquisition of concepts, skills, understanding and even competences may have been lost. PBL is ideal for DACs (*autonomia curricular*) in the Portuguese education system as it lends itself to multidisciplinary and transdisciplinary learning.





## Appendix B

Example of directions/instruction written by students



## Appendix C

Example of a feedback form

MY ACTIVITY RECORD

Activity title: treasure map Date: 28/10/2016

What did I learn? Eu aprendi a como construir um mapa, a dar instruções pra um mapa e como de tudo o trabalho em grupo.

The thing I did best As instruções for onde eu me de melhor.

The thing I found most difficult Eu acho que a coisa mais difícil foi a partir ler seu mesmo mapa.

Did you like the treasure map activity? Yes / No  Yes  No

How would you grade yourself out of 10?

## Appendix D


Example of assessment test

A. Read and circle the correct answer

- There's a snow on top of the mountain / hill.
- A wooden bridge connects the island / forest to the mainland.
- We can grow potatoes on the hill / mountain.
- There was a fire in the forest about three years ago.
- Let's go swimming in the pool / cave.
- Why don't we go up the waterfall to / from?
- Some dandelions have tried to go down the gorge / cavity in the bank.

B. Every location on earth has two points called longitude and latitude that mark its location.  
The 0° latitude line is called equator and the 0° longitude line is called prime meridian.

C. Look at the map - Give the approximate location of the following cities.




	Latitude	Longitude
1. Canberra	35° S	148° E
2. Melbourne	38° S	145° E
3. Darwin	12° S	130° E
4. Perth	31° S	115° E
5. Brisbane	28° S	153° E

D. Look at the scale on the map.  
How many km (in reality) does 1 cm on the map represent? 500 km  
How many km (in reality) does 1.9 cm on the map represent? 950 km


E. On the map of Australia  
a) Draw a red dot on 20°S, 120°E  
b) Draw a black star on 37°S, 143°E  
c) Draw a triangle on 30°S, 120°E  
d) Draw a square on 25°S, 140°E

F. Complete the information for the compass rose. Don't forget to include the intermediate directions.



G. Complete the gaps with a word from the box.

around - about - out of - under  
and - to - with - at



Emma heard a noise. She jumped <sup>1</sup> out of bed and ran <sup>2</sup> to the window. She couldn't see anything. She climbed <sup>3</sup> up the window <sup>4</sup> to the tree and <sup>5</sup> climbed the wall. She heard a strange noise. She ran <sup>6</sup> under the bridge <sup>7</sup> to the pond and <sup>8</sup> to the hill. Suddenly she heard someone laughing loudly. She <sup>9</sup> climbed the hill <sup>10</sup> under the pond <sup>11</sup> under the bridge <sup>12</sup> to the tree and back <sup>13</sup> to her bedroom.