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Combining CLIL and PBL to facilitate the learning of occupational hazards in the first year of a Higher Vocational Education and Training Bilingual Programme in Business Administration and Finance

Presentado por: María del Carmen Sánchez Palacios
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Director/a: Dra. Ángela Almela Sánchez-Lafuente

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Abstract

These days, a key aim of the Vocational Education System is to qualify people to work and contribute effectively to the country's economic development. In this context, English language acquisition has achieved a great importance in the majority of the European countries. In relation to Vocational Education and Training (VET), communication in the English language is being promoted in Bilingual Programmes due to the fact that it has become a basic tool in our current society. One popular approach used in bilingual educational contexts is Content and Language Integrated Learning (CLIL). In addition, in a VET Bilingual Programme, key competences connected to the real world are developed in the classroom. In this sense, Problem-Based Learning (PBL) appears to be an effective methodology for the teaching and learning of VET Bilingual Programmes.

In this work it is taken into account that the CLIL approach and the PBL methodology can work together to improve the learning of occupational hazards. Thus, the principal aim of this Master's Dissertation is to design and present an intervention proposal based on the combination of CLIL and PBL in the first year of Higher Vocational Education, to facilitate the learning of occupational hazards through the English language. The proposal, which has been developed from a practical point of view, consists of two main parts. It starts with 3 sessions of CLIL, followed by 6 sessions of PBL, providing students with an active methodology where they are expected to participate dynamically and collaboratively through different activities.

To support the proposal, the Vocational Education and Training Programmes in the Spanish Education System, the PBL methodology and the CLIL literature have been reviewed. The main characteristics of these elements have been addressed: the CLIL principles, core features, the 4Cs framework, the phases of PBL and how to design problems, as well as the connections between VET, CLIL and PBL.
Finally, it is considered the possibility of adapting the proposal to other educational contexts, such as Compulsory and Post-Compulsory Secondary Education.

Key words:

Content and Language Integrated Learning (CLIL), Vocational Education and Training (VET), Problem-Based Learning (PBL), occupational hazards.

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1. Introduction

Over the years, education and training have come to play a crucial role in creating the European society. One of the principal aims of the Vocational Education System is to qualify people to work and be able to contribute effectively to the country's economic development. In relation to Vocational Education and Training (VET), communication in a foreign language (English) is being promoted in Bilingual Programmes due to the fact that it has become a basic tool in our current society.
Nowadays, one popular approach used in bilingual educational contexts is Content and Language Integrated Learning (CLIL). Some important researchers in the field, Coyle, Hood and Marsh (2010) define the term as an educational approach in which an additional language, normally a foreign language, is used for the teaching and learning of both content and language. CLIL programmes are being implemented in Spanish schools frequently with the support from educational authorities (Lasagabaster and Ruiz de Zarobe, 2010).

In addition, key competences in Vocational Education and Training are included within the training process (Servicio Público de Empleo Estatal, 2016). These competences should be developed through meaningful practice in the classroom, being as connected to the real world as possible. In this sense, Problem-Based Learning (PBL) is an effective methodology for the teaching and learning of Vocational Education and Training. PBL is a generic approach that can be applied to all Vocational Programmes. It provides challenging learning materials and space for learning through engaging activities (Sada, Mohd, Adnan and Audu, 2015).

In this Master's Dissertation, after a literature review, the design of an intervention proposal is presented based on the combination of the CLIL approach and PBL methodology in the first year of a Higher Vocational Educational and Training (VET) Bilingual Programme. The topic selected is occupational hazards which belongs to the bilingual module (Spanish-English) Professional Training and Guidance. The principal aim is to facilitate the learning of occupational hazards in the English language through the proposal designed in this paper.

1.1. Justification of the problem

Nowadays our society requires proper knowledge of other languages apart from the mother tongue. It cannot be denied that English is the foreign language that

predominates in non-English speaking countries in Europe. Educational Systems and schools should respond to this demand, giving great importance to the teaching and learning of the English language. The Lisbon European Council in March 2000 recognised that the development of high quality Vocational Education and Training is a crucial and integral aspect in terms of promoting social inclusion, mobility, cohesion, employability and competitiveness (European Commission, 2002). The learning of foreign languages plays a key role.

From 1990 onwards, Content and Language Integrated Learning (CLIL), where a subject is taught through the means of a second language, is being increasingly prioritised within the European Union as a major education initiative (Eurydice, 2006). CLIL promotes linguistic competence and serves to stimulate cognitive flexibility (Coyle et al., 2010). CLIL is open to wide interpretation. There are no set formula and methods for CLIL, so that the elements of any formal curriculum at Primary, Secondary or Tertiary levels can be re-conceptualised, providing new learning opportunities for individuals who work and learn in this context (Lasagabaster and Ruiz de Zarobe, 2010).

On the other hand, Problem-Based Learning (PBL) is defined as a learner-centred methodology that empowers learners to conduct research, apply knowledge and skills to find an adequate solution to a problem defined by the teacher. It prepares learners for real-world experience (Savery, 2006). Moreover, companies want graduates who can be productive at the workplace, so there is a clear need for Problem-Based Learning in Vocational Education and Training (Sada et al., 2015).

The origin of this Master's Dissertation lies in the Teaching Practice period in a High School in Cantabria, particulary from the Higher Vocational Education and Training Bilingual Programme in Business Administration and Finance. After having observed the teaching and learning of the unit occupational hazards as part of the module Professional Training and Guidance, it was noticed that several improvements could be made, taking into account CLIL and PBL.

The objective is to facilitate the content and language learning of occupational hazards through the English language, when students are non-English speakers.

1.2. Brief analysis of the state-of-the art

The development of the European Education and Training Programmes has been a decisive factor for improving cooperation in Europe. The Bologna declaration on Higher Education in June 1999 marked the principles of a new European

cooperation in this area. The European Commission (2002) established that strategies for lifelong learning and mobility are essential to promote active citizenship, social inclusion and personal development, ensuring that the European labour market is open to all the citizens. This is a major challenge to the Vocational Educational and Training systems in Europe.
The concept of Content and Language Integrated Learning (CLIL) emerged in the 1990s and it has been considered that of 'teaching and learning through a foreign language' (Marsh, 2002, p.54). Since then, its usage has rapidly accelerated (Pérez-Cañado, 2012).

In the literature review section, firstly the Vocational Education and Training programmes in the Spanish Education System are reviewed (ReferNet Spain, 2014). Then, the section continues with the core features of CLIL, the 4Cs framework, Bloom's revised taxonomy and the language triptych, according to Coyle et al. (2010) and Marsh (2002). Furthermore, the assessment in CLIL is described (Mehisto et al., 2008; Coyle et al., 2010) in order to design the intervention proposal.
In addition, the Problem-Based Learning is analysed, considering its main characteristics, phases, how to design a meaningful problem and the assessment in PBL (Barrows, 1986; Font, 2004; Hmelo-Silver, 2004; Instituto Tecnológico y de Estudios Superiores de Monterrey, 2004; Sada et al., 2015; Savery, 2006).

1.3. Objectives

The principal aim of this Master's Dissertation is to design and present an intervention proposal based on the combination of CLIL and PBL in the first year of Higher Vocational Education, to facilitate the learning of occupational hazards through the English language.

The specific aims are:

1. To analyse CLIL and PBL in a Higher Vocational Education and Training Bilingual Programme in Business Administration and Finance.
2. To integrate Vocational Education and Training, CLIL and PBL in the design of the intervention proposal.
3. To evaluate the intervention proposal.

2. Literature review

The literature review covers four main sections. Firstly, the Vocational Education and Training Programmes in the Spanish Education System are introduced. In the second section, the CLIL approach is reviewed, considering the 4Cs framework, the CLIL core features and CLIL in Vocational Education and Training. In the third section, PBL is described taking into account its characteristics, phases, how to design a meaningful problem to facilitate the learning using PBL and the presence of PBL in Vocational Education and Training. In the next section, the assessment combining CLIL and PBL is explained and finally, in the last section, the connections between VET, CLIL and PBL are established.

2.1. Vocational Education and Training Programmes in the Spanish Education System

Education in Spain begins at pre-school and continues through to Primary Education, which is the first stage of Compulsory Education (from 6 to 12 years old). Secondary Education is the last stage of Compulsory Education until the age of 16. When students complete it, they obtain the lower Compulsory Secondary Education certificate. This is a requirement to access Upper Secondary Education (Baccalaureate) and the Vocational option (Intermediate VET Diploma programmes). Baccalaureate gives access to Higher VET Diploma programmes. Moreover, Higher VET Diploma programmes can give access to University studies.

In accordance with LOMCE (Organic Law 8/2013, December 9th, for the Improvement of Educational Quality), the basic VET programmes were withdrawn in September 2014, covering 21 different diploma programmes. The target group for this training level is students aged 15 years, having completed their third year of Compulsory Secondary Education. Those students awarded with a Basic VET Diploma can access Intermediate VET programmes.

According to the Spanish Framework, all VET Programmes within the education system, at basic, intermediate or higher levels have 2,000 teaching hours split into two academic years according to the different professional branches (ReferNet Spain, 2014b). Work-based learning (WBL) is essential in any VET Programme. The National Catalogue of Professional Qualifications compiles 667 profiles that are grouped in 26 professional branches. Every VET programme has a compulsory on-the-job training module. This represents at least 20% of the total amount of training

hours of a VET Diploma and in the dual modality could be increased (ReferNet Spain, 2014a).

The recent dual VET is regulated by the educational reform law, LOMCE, which adds a new article to the Organic Law of Education 2/2006. Dual VET is considered as the group of actions and training initiatives, which in co-responsibility with enterprises, are aimed at the professional qualification of individuals, paving the way for further harmonization between educational establishments and companies.

Two main tools of the dual system are apprenticeships and training contracts, although its implementation has been slow (ReferNet Spain, 2014a).

The European Commission (2016) has recently established the Work Programme for Erasmus+ for 2017. One of the main objectives of the Erasmus+ Programme is to increase quality mobility within VET and to have the possibility of working in European companies as trainees. Each sending VET organisation is responsible for the quality, contents and recognition of the mobility periods. In addition, it involves developing international approaches throughout the sending organisation, for instance, promoting the learning of foreign languages.

According to the 'Boletín Oficial del Estado' (2012), the curriculum of Higher Technician in Business Administration and Finance incorporates the English language in an integrated way, as part of the Bilingual Education, in at least two professional modules of which they compose the whole Higher Vocational Education and Training programme. The timetable designed for the module taught in English, in this case Professional Training and Guidance, is 3 hours per week.

2.2. Content and Language Integrated Learning (CLIL)

This section starts with a brief introduction to the CLIL approach. Then, a conceptual tool developed by Coyle et al. (2010), the 4Cs framework, is explained. After that, an explanation of the CLIL core features that should be taken into account during the implementation and delivery of a CLIL lesson is provided. Finally, the CLIL approach is described in Vocational Education and Training contexts.

2.2.1. Introduction

Two thousand years ago, the Roman Empire expanded and absorbed Greek territory, language and culture. Roman families were living in Greek-speaking

communities, so they educated their children in Greek to be sure that they would have access to professional and social opportunities (Coyle et al., 2010).
In more recent centuries, particularly in 1965, some English-speaking families lived in the French-speaking Canadian province of Quebec. The English parents were worried that their children would be at a disadvantage if they did not acquire a good command of French. The parents encouraged the local government to establish a language-immersion programme for their children, teaching subjects completely in French (Mehisto, Marsh and Frigols, 2008). Since then, the use of immersion teaching programmes began to spread throughout the rest of the world until the present day. In addition, we cannot deny the rising importance of a global language such as the English one. The English language predominates in non-English speaking countries in Europe.

The term CLIL (Content and Language Integrated Language), AICLE in Spanish (Aprendizaje Integrado de Contenidos y Lenguas Extranjeras), EMILE in French (Enseignement de Matières par Integration d'une Langue Etrangère), and CLILiG in German (Integriertes Sprach- und Fachlernen auf Deutsch)— was adopted by the European Network of Administrators, Researchers and Practitioners (EUROCLIC) in 1994. CLIL encompasses any activity in which a second language is used for the learning of a non-linguistic subject where language and content have a joint role.
This approach is changing educational parameters insofar as it is involving the whole educational community. It gives the students the chance to use the language in an authentic and meaningful context (Marsh, 2002).
CLIL has many faces. It covers more than one single approach, for instance, bilingual and multilingual education, double immersion, partial immersion, total immersion, local projects, international projects and enriched language programmes, among others. What is new about CLIL is that it is flexible enough to apply the knowledge learnt from various approaches. Furthermore, CLIL can be implemented in Primary, Secondary, Vocational Education and Training and Higher Education; from a short-term to a long-term programme (Mehisto et al., 2008).
As far as its context is concerned, CLIL differs from regions within a country, but also along schools in any village or town. This situation is linked to the lack of an official guidelines regarding its implementation. Spanish official curricula do not include proper curriculum planning related to bilingual / multilingual programmes or CLIL. According to Marsh et al. (2005), the learning context increases not only the student's exposure to the additional language, but also develops the student's cognitive abilities. Existing research has proved that CLIL can help students improve

their performance in both content and language, because they develop multiple learning strategies due to curriculum integration, and they use language for action as a vehicle.

Although CLIL has developed differently in the European Education Systems, there are some similarities. In general, in schools where a CLIL approach is conducted, the content subjects taught in a foreign language are Humanities and Social Sciences. The most frequently used languages are English, French and German (Marsh et al. (2005).

2.2.2. The 4Cs framework

In 1999, as the researcher Coyle (2007) established, she developed the 4Cs framework influenced by the work of Mohan from a holistic perspective so as to support the development of CLIL pedagogies. This framework integrates four contextualised blocks where content and language become integrated within a context, considering communication and intercultural understanding.

Figure 1 shows the 4Cs framework, where we can observe that the figure highlights the role of culture in the center, together with content, communication and cognition.

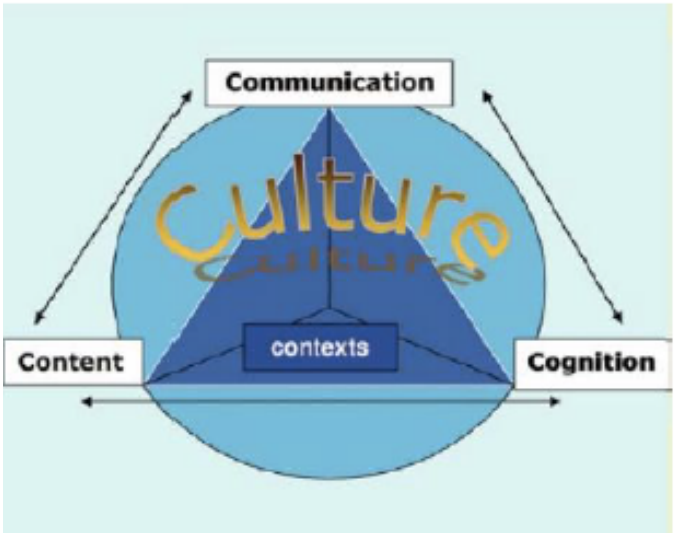

Figure 1. The 4Cs framework. Adapted from Coyle (2005, p.8)

The 4Cs framework offers a theoretical foundation for planning a CLIL unit built on the following principles (Coyle, 2007; Coyle et al., 2010).

1. Content:

This term is used to describe the subject or module that is taught in the foreign language, but it is more flexible than that. In a CLIL context, content could be a discipline from a traditional curriculum, for instance, Music, Science, Art, or History. Additionally, content in CLIL could also be a problem, a project based on topical issues or even cross-curricular and interdisciplinary learning. Nevertheless, content is not only about acquiring knowledge and skills, but also, learners developing their own understanding.

Content refers to any material that a teacher uses to teach the key vocabulary, facts, and concepts. This typically comes from the textbook, articles, videos, listening activities, projects, pupil research (online, library, questionnaires etc.), and projects among others. All of this should be decided and carefully chosen before planning the unit. For teachers, it might be useful to think of content considering the knowledge, skills and understanding that wish their learners to access, rather than exclusively knowledge acquisition.

2. Communication:

Communicative approaches are based on theories of language learning where they require the focus on meaning and form.

CLIL demands a reconceptualisation of the role of language towards an approach which combines 'learning to use language and using language to learn' (Coyle, 2007: 552). The principles for communicative language learning have been highlighted as:

- Language is a communicative tool.
- Diversity is part of the language development.
- The competences of the students are relative in terms of genre, style and correctness.
- The culture plays an instrumental role.
- The language has several varieties.
- The objective is using and learning the language in authentic interactive settings.

Language needs to be learnt being accessible and transparent and it is related to the learning context. In this framework, communication involves the CLIL teacher and the students in using and developing the language: language *of* learning, language *for* learning and language *through* learning.

We can see the Language Triptych, which enhances grammatical progression from three interrelated perspectives.

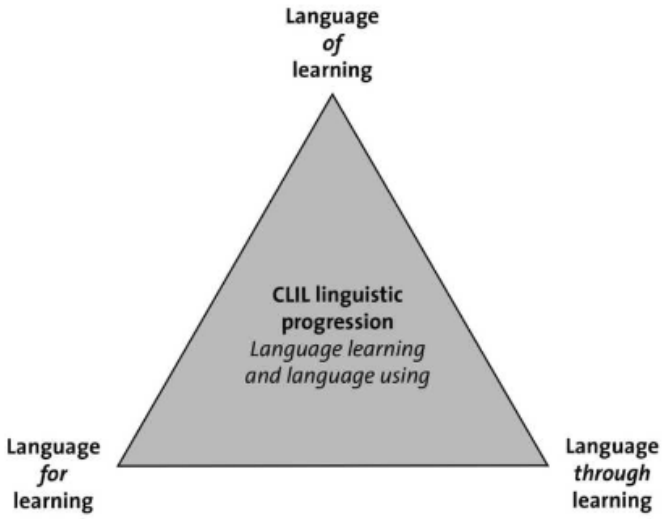

Figure 2. The Language Triptych**.** Adapted from Coyle (2005, p.36)

With regard to language *of* learning, it refers to the language that learners need to access in order to understand new knowledge and skills when dealing with the content. For example, if we are designing the unit occupational hazards, the content language can include:

- Specific terminology and vocabulary: gloves, harnesses, hats, masks, platforms and so on.
- Using appropriate verb tenses to write a piece of writing (reports, essays…).
- Working on grammar constructions to express cause-effect relationships, making use of the passive voice and impersonal structures.

Moreover, the content itself can also support language learning, for instance, through authentic text.

In the case of language *for* learning, it is the language that students need in order to operate effectively in a CLIL context. Is the language related to interpersonal communication. Students need strategies and skills to use a foreign language, such as those required for pair work, cooperative group work, asking questions, debating, thinking, memorizing and so on. Being able to describe, evaluate and draw conclusions is essential for doing tasks. For example, if we want that the students solve a challenging problem collaborately, they need to know the language to support each other and to be supported. In a CLIL environment, teachers have to include opportunities to use the language for:

- Inferring ideas.

- Building arguments, agreements and disagreements.
- Making predictions.
- Working effectively in groups.

As far as language *through* learning is concerned, this language learning takes place in a deeper way when students build, organise and formulate their own understanding. This is the language that emerges from specific learning contexts, which is necessary to suport students' thinking processes. Language through learning means to capture language during the learning process, being spontaneous or planned. This language can be used in different situations that may require new language skills, such as:
- Recycling discussions skills that might emerge, for example, during problem-based learning.
- Using dictionaries so as to make a glossary.
- Widening language for meaningul communication, expressing opinions, presenting evidences or explaining processes.
- Presenting a project orally using digital tools.
- Making feedback effective after internalization.

Coyle et al. (2010) see the Language Triptych as a tool whose applications could be summarised as follows:
- Provide the means to analyse language needs across different CLIL contexts.
- Differentiate between types of linguistic demands.
- Use the language for knowledge construction.

Another relevant element in this theoretical framework is the distinction between BICS (Basic Interpersonal and Communication skills) and CALP (Cognitive Academic Language Proficiency). This dichotomy was coined by Cummins in 1984 and it refers to the linguistic competences that should be developed for successful teaching and learning in bilingual contexts. Teachers have to differentiate between language use in academic context and language use in conversational contexts.
The main implications underlying this distinction are in the first place that language is used differently in academic environments than in everyday situations, and secondly, learners do not acquired academic competence naturally (Cummins, 1984).

3. Cognition

Cognition is linked to critical thinking processes. In CLIL content learning is related to the different cognitive levels and strategies. CLIL curriculum planning and design

can be based on task-based, project-based or problem-based work oriented to develop creativity as the last stage of the process.

Bloom's revised Taxonomy is an approach for promoting critical thinking in any learning process. There must be a cognitive progression beginning with lower order thinking skills (L.O.T.S.) to finish with higher order thinking skills (H.O.T.S.). The six categories are the following: (Krathwohl, 2002)

- Remember: it involves recall or recognise relevant knowledge, facts or contepts (recognising, recalling).
- Understand: constructing meaning from instructional messages (interpreting, exemplifying, classifying, summarising, inferring, comparing, explaining).
- Apply: using ideas and concepts to solve problems (executing, implementing).
- Analyse: breaking something down into components, seeing relationships and overall structure (differentiating, organising, attributing).
- Evaluate: making judgments based on criteria and standards (checking, critiquing).
- Create: rearranging diverse elements to form a new pattern or structure (generating, planning, producing).

It is worth noting that cognition and content are normally together when planning objectives and assessment criteria. Thus, it can be logical to structure content from simple to more complex, following a cognitive progression from L.O.T.S. to H.O.T.S. at the end of a theme or topic.

4. Culture

This block is related to the question of the "self" and "other" awareness, identity, citizenship and progression towards intercultural understanding. There is a complex relationship between language and culture. In this sense, intercultural awareness is a basic aspect of CLIL. The social interactivity is transferred to learning settings where a foreign language is used, then language, the cultural component, cognitive engagement and thinking are all connected to the context of CLIL. Language, thinking and culture are constructed through interaction. Cultural awareness focuses on knowledge about different cultures; it is not associated with few lessons about folk songs or costumes (Coyle et al., 2010).

There are two key elements of the cultural component, which are community, when the learning becomes collaborative through the creation of learning communities, and connection, where the digital tools are considered to expand the collaboration.
As Coyle et al. (2010) suggests, there are some implications for integration in this framework that need to be taken into account. The first one focuses on the necessity for CLIL teachers to identify the means by which integrating language and content will be achieved. The second implication concerns the relationship between students' language levels and their cognitive levels. Whatever the capability of learners, proper learning demands cognitive engagement at the appropriate level.
The last implication for integration is to adopt an inquiry-based approach to classroom teaching and learning.
In essence, this framework suggests that effective CLIL takes place when there is a progression in knowledge, skills and understanding of the content matter, considering a cognitive process, an interactive communication, the development of adequate language knowledge and intercultural awareness (Coyle, 2007).
After having described the 4Cs framework, in the next section, the CLIL fundamental characteristics are introduced.

2.2.3. CLIL core features

When getting ready for CLIL, Mehisto et al. (2008) considered the necessity to establish the core features of the CLIL approach which are multimple focus, safe and enriching learning environment, authenticity, active learning, scaffolding and co-operation. The following is a more detailed description of these characteristics:
- **Multiple focus**. CLIL supports the language learning in content classes and the content learning in language classes. The way of doing it, is the integration of several subjects which means organising the learning through cross-curricular themes, projects and problems.
- CLIL allows the creation of a **safe and enriching learning environment.** In this contexts, teachers use routine activities and discourse, presenting the language and content in the classroom. In this context, teachers guide the access to authentic materials and environments to increase pupils' language awareness.
- **Authenticity**. It is important in a CLIL context to make connections between learning and the students' lives, as well as with other speakers of the vehicular language.
- **Active learning** is promoted when students have a central role in the lessons, as they are responsible for their learning. Learners communicate more than the

teacher, who acts as a facilitator. Students help to establish content, language and learning skills outcomes. Finally they evaluate the progress and results.

- **Co-operation** between CLIL and non-CLIL teachers is significant when planning courses, lessons or themes. In addition, parents, the local community, authorities play an important role in their learning.

- **Scaffolding** refers to the temporary support that teachers provide learners to complete a task because otherwise they could not do by themselves. In this case teachers act as mentors who build the learning on students' existing knowledge, skills, attitudes, interests and experience. Scaffolding has a temporary nature. It is important that teachers know when the students have reached the proper level of knowledge to work independently. In that moment, the support can be removed. Besides, the use of scaffolding is not restricted to teacher-student interaction, peer scaffolding is also useful as temporary support in the CLIL classroom.

Scaffolding is necessary in CLIL because more strategies are needed to support the understanding of both language and content. One of the biggest challenges of learning a content area through an additional language is how to make sure pupils have sufficient language resources to understand the complexity of the concepts.

Furthermore, there are distinctive aspects to setting learning outcomes for CLIL (Mehisto et al., 2008):

- Language is not the primary subject being taught. In this case, language learning in content classes receives systematic attention to facilitate understanding.
- Language objectives are difficult to sequence, as they are driven by content. Providing pupils with vocabulary and discourse patterns helps the CLIL teacher exceed the demands of the curriculum.
- Making links with the community, so that the content can be applied in meaningful activities. Meaning making is a social process and it is more relevant if a problem is linked to the world outside the school.
- Maintaining a focus on learning skills. CLIL is multiple focused and it is better maintained if teachers keep a spotlight on learning skills.

2.2.4. Implementing CLIL in Vocational Education and Training

Marsh et al. (2005) suggest that the demands of modern society are directly linked to the classroom. We can see in the development of globalization and new technologies that education is responding to the knowledge and skills demanded. In

the Spanish Education System, schools have already developed integration of subjects. It has been claimed that CLIL is one form of integrated learning.
In Spain, CLIL programmes have been implemented in mainstream schools. However, the degree and characteristics of its implementation vary from one Region to another. The different models can be divided into two main contexts (Lasagabaster and Ruiz de Zarobe, 2010):

1. Monolingual Communities. In this Communities Spanish is the official language, where education is mainly in Spanish and besides in one or even two foreign languages, when CLIL is implemented.
2. Bilingual Communities. In this situation, Spanish is the official language together with another co-official regional language, for example Basque, Catalan, Galician and Valencian, both of which are compulsory at Primary and Secondary school. In agreement with these Communities, education is conducted in both co-official languages, and in one or two foreign languages, when CLIL is developed in the classroom.
In bilingual Communities, CLIL has evolved as the most important approach to incorporate foreign languages in a system where two languages are already in use. Moving from regional or local to foreign languages has proved to be a natural way to establish the use of more that one language. CLIL is seen as the best option to foster multilingualism, which is one of the recent objectives of the European policies (Lasagabaster and Ruiz de Zarobe, 2010).
In this context, there are three different scenarios in Spain (Frigols, 2008):
- Scenario 1: Promoting bilingualism in a monolingual community.
- Scenario 2: Fostering multilingualism in an already bilingual community.
- Scenario 3: Improving competences in English through the 'Bilingual and Bicultural Project', also called 'MEC/British Council Programme'.

The Andalusian model belongs to the scenario 1. This Autonomous Community has put in place numerous measures to improve the quality of vocational training. In this sense, new titles adapted to the permanent changes of the current society have been created.

Andalusia, a Community pioneer in the implementation of these type of Bilingual Programmes, started to include Vocational Education and Training Bilingual Programmes in 2006 with twenty-eight vocational branches offering CLIL modules.

According to the 'Junta de Andalucía' (2015), seventy-three VET Bilingual Programmes were offered in the academic year 2015/2016.

The most common reasons for implementing CLIL programmes at this level are giving added value to the learning of content; preparing for future studies or working life and improving English language competence.

Regarding scenario 2, in the last years, CLIL pilot projects have been carried out by Autonomous Communities in Spain, where VET is involved. For instance, in Valencia, a pioneering project in Vocational Education and Training has started at Cheste Vocational Collegue obtaining satisfactory results. In this modular project, students can learn aeronautics, biochemistry, law, cookery, management/administration and IT through English and French (Marsh et al., 2005).

As far as scenario 3 is concerned, according to the 'Comunidad de Madrid' (2016), five Higher Vocational Education and Training Bilingual Programmes were implemented in that academic year in five different High Schools:

- Management's assistance.
- Business Administration and finances.
- Travel Office and events management.
- Tourist assistance and information.
- Multiplatforms' development.

In Tertiary Education, it is mainly vocational schools which have opted for teaching content through a foreign language. The subjects taught in these schools vary greatly, from Information Technology to Economics and Business, Mechanics or Agriculture. However, any subject can be taught in a second language when it comes to Secondary or Tertiary Education (Marsh et al., 2005).

Coyle et al. (2010) support the use of CLIL in Vocational Education and Training. The authors establish that vocational curricula are particularly interesting because of globalization and the changing nature of our working life.

Traditionally, the vocational and professional education sectors have not included language teaching. CLIL can offer a new opportunity to introduce languages into the curriculum. In vocational sectors, the use of more than one language adds extra value to the education process (Coyle et al., 2010).

English has a dominant position as a CLIL language in many countries. With regard to Vocational Education and Training, there is a necessity of designing with carefully integrated principles, where knowledge and skills building require accuracy.

In upper vocational streams, students are in some cases mature adults. Their reason for choosing a VET programme is based on a personal decision to follow a specific career path. Many of these CLIL programmes include a practicum where language, vocational content skills and learning skills, are applied and developed. Furthermore, learning in a foreign language can facilitate comprehension because students have to work harder. This forces them to be more precise in their communication. All of these factors help to create a favourable environment for the implementation of CLIL (Mehisto et al., 2009).

According to Mehisto et al. (2009), some learners involved in a VET programme, may not be fully confident in their potential or their capacity to succeed, feeling discourage when they have to face a difficult challenge. One of the key roles of vocational teachers during the first weeks of a CLIL course is to install self-confidence in the students, as well as to provide ongoing feedback and support. Also, clear evaluation criteria and marking schemes are really important for vocational students.

Implementing CLIL in the classroom

As mentioned above, CLIL can be applied to any subject or educational level, including Vocational Education and Training. Following the recommendations of Marsh et al. (2011), when designing CLIL classroom curricula, it is necessary to consider:

- Objectives of content learning.
- Course syllabus.
- Planned learning outcomes (content, language, learning skills and cognition).
- Intercultural aspects.
- Critical and creative thinking.
- Building background and provide experience.
- Learning styles and skills.
- CLIL core features.
- CLIL driving principles: Content, cognition, communication and culture.
- Learner's autonomy: self- assessment and intrinsic motivation.
- Vehicular language threshold levels.
- Learning materials and environments that support peer co-operation and authenticity.
- Common European Framework of Reference for Languages.

All of these recommendations and principles would be considered in order to create the intervention proposal. In the next section, the methodology Problem-Based Learning is analysed so as to provide theoretical background to the proposal as well.

2.3. Problem-Based Learning (PBL)

The Problem-based learning (PBL) method emerged at McMaster University in Hamilton (Canada) in the late 1960s, being its pioneer Howard Barrows. The population suffered health problems due to bad environmental conditions, especially respiratory. The lack of knowledge of health professionals to respond to society in the face of such problems led the authorities to reflect on the way in which their professionals had to acquire the knowledge, skills and abilities to adequately perform their work (Font, 2004).
In Europe, specifically in the Netherlands, the University of Maastricht in the mid-1970s was the pioneer in introducing the methodology mentioned in its curriculum.

Problem-Based Learning is based on the constructivist theory. According to this position, in the design, elaboration and application of the PBL, the context and presentation of the problem to achieve meaningful learning is of great importance. J. Bruner, a great constructivist of the twentieth century, is considered the systematizer of learning by discovery and construction. For him, it is fundamental to bring human learning beyond mere information, towards the goals of learning to learn and to solve problems (Bruner, 1973 cited in Restrepo, 2005).
Nowadays, PBL continues to be widely used in the University field, not only in medical schools, and increasingly applies to Primary and Secondary Education, as well as in Baccalaureate and Vocational Education and Training (Font, 2004).

2.3.1. Definition and characteristics

Barrows (1986) described Problem-Based Learning as a learning method based on the principle of using problems as a starting point for the acquisition and integration of new knowledge. The PBL can be used as an overall strategy throughout the curriculum of a professional career or be implemented as a work strategy for a specific course. Besides, it can be carried out even as an applied didactic technique for the revision of certain objectives in an academic year (Instituto Tecnológico y de Estudios Superiores de Monterrey, 2004).

According to Hmelo-Silver (2004), PBL is designed with several important goals to help students:

1. Construct a flexible knowledge basis.

That knowledge should be fluently applied in a variety of problem situations. Common sense suggests that in order to promote flexible knowledge in the classroom, teachers must incorporate learning in contexts that require the use of that skills and abilities.

2. Develop problem-solving skills.

The development of effective problem-solving skills includes the ability to apply metacognitive and reasoning strategies appropriately.

3. Develop lifelong learning skills.

Several subskills are involved in this process. Firstly, students must have a metacognitive awareness of what they do and do not understand. Secondly, learners should identify if they need to learn more about the task required to achieve the goals. Thirdly, they must plan and select proper learning strategies. Lastly, pupils must monitor and evaluate if their goals have been attained.

4. Become effective collaborators.

This goal means knowing how to perform well as part of a team. This involves resolve discrepancies, negotiate the actions that the whole group is going to take and come to an agreement. The goal of a good collaborator and the process of learning collaboratively are normally together. This task requires open exchange of ideas by the members of the group.

5. Become intrinsically motivated to learn.

Intrinsic motivation takes place when students work on a task or problem motivated by their own interests. Determining an adequate problem for heterogeneous students, as the case of VET students, require that the teacher understands what is interesting for that group of students. Learners are much more motivated when they value what they are learning. That occurs solving meaningul problems.

Regarding the main characteristics of the PBL, the proposals of Barrows (Barrows, 1986) are accepted by most of the authors as of their application in the Faculty of Sciences of the Health of the University of McMaster, Canada:

- Learning is student-centered.
- Learning occurs in small groups.
- Teachers are facilitators in this process.
- Problems are the focus of organisation and stimulation for learning.
- Problems are a vehicle for developing problem-solving skills.

• New information is acquired through self-directed learning.

Collaborative learning

Collaborative problem-solving groups are a main feature of PBL. Students work together to construct collaborative explanations. Working in small groups distributes the cognitive load among the members. Research suggests that small discussions in PBL lessons enhances problem solving and higher order thinking, as well as knowledge construction (Hmelo-Silver, 2004).

The role of the facilitator

In PBL contexts, the facilitator role is essential in modeling thinking skills and providing metacognitive scaffolding. In PBL, the teacher is able to model strategies for learning and thinking, rather than just an expert in the content itself (Hmelo-Silver, 2004).

2.3.2. Phases

The structure to be followed with the PBL methodology differs from that followed in teaching using traditional methodology. The conventional methodology is based on a theoretical contribution of the educator and ends with the implementation of this knowledge. With the PBL, the learning process starts with the presentation of a problem to which students have to respond. The Instituto Tecnológico y de Estudios Superiores de Monterrey (2004) establishes the following steps in the process of learning in the PBL, as it can be observed in Figure 3.

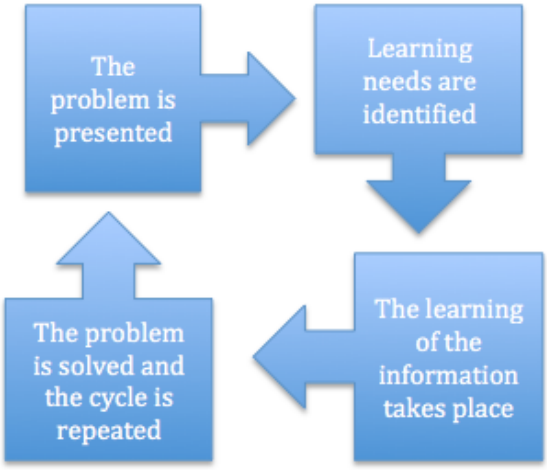

Figure 3. Phases of the learning process in PBL. Adapted from Instituto Tecnológico y de Estudios Superiores de Monterrey (2004, p.8)

When the teacher designs the lessons according to the PBL methodology, it must be taken into account before constructing the problem, the learning objectives that are intended to be achieved, the time that the experience will require, how to evaluate the problem and the process to be followed. Subsequently, the educator should design the learning strategies that allow the students to acquire the necessary knowledge to find the solution (Morales and Landa, 2004).
According to Morales and Landa (2004), there are eight phases in the development of the PBL process, as it shows the Table 1.

Table 1. *Development of the PBL process*

Step 1: Read and analyse the scenario of the problem Students are expected to verify their understanding of the scenario by discussing it within their work team.
Step 2: Brainstorming Students usually have theories or hypotheses about the causes of the problem. These must be listed and accepted or rejected as the research progresses.
Step 3: Make a list of what is known Students should make a list of everything the team knows about the problem.
Step 4: Make a list of what is unknown Students have to make a list of everything the team should know to solve the problem, and it is unknown. There are many different types of questions; some may relate to concepts or principles that must be studied to resolve the situation.
Step 5: Make a list of what needs to be done to solve the problem Students should plan research strategies. It is advisable that in groups the students prepare a list of the actions to be carried out.
Step 6: Define the problem Statements that clearly explain what the team wants to solve, produce, test or demonstrate.
Step 7: Get information The team will locate, collect, organize, analyse and interpret information from various sources.

Step 8: Present the results

The team will make a presentation in which the recommendations, predictions, inferences or whatever is convenient in relation to the solution of the problem are shown.

Adapted from Morales and Landa (2004)

Furthermore, students should evaluate the objectives of the learning process, that is, their work as a student (self-assessment) and as a group (co-evaluation). Deeper explanation about assessment is provided in section 2.4.

2.3.3. Designing problems

As has been described in previous sections, Problem-Based Learning is an instructional approach where learners are the centre; it empowers students to conduct research, integrate theory and practice, and apply knowledge and skills to develop a viable solution to a defined problem (Savery, 2006).

A problem is understood as the material that is presented to the student to trigger the learning process. Its presentation and consequent discussion should provoke in the student the interest in the learning objectives and the intrinsic motivation to know more. It is advisable that the problem is not perfectly structured, but open for the student to perceive as a challenge. Second, the problematic situation has to be linked to reality so that the student's effort to complete the learning tasks is relevant to their interests. Finally, the problem must activate the students' prior knowledge and skills, necessary for solving the problem and building knowledge (Restrepo, 2015). A good problem should foster flexible thinking and open-ended; to support intrinsic motivation, problems have to be realistic in accordance with students' previous experiences. Furthermore, a proper problem should promote argumentation and should be complex enough to require several interrelated pieces. As pupils generate hypotheses and defend them in their groups, they check their own understanding (Hmelo-Silver, 2004).

According to the Instituto Tecnológico y de Estudios Superiores de Monterrey (2004), in order to design a proper PBL problem, the case should be oriented to the student addressing different types of content, both attitudinal and conceptual.

The questions that a PBL activity should answer affirmatively are summarised in Table 2:

Table 2. *Questions to design a good PBL problem*

√ Is it student-centered?
√ Are the development of skills to solve the problem facilitated?
√ Are the skills for the autonomous learning integrated?
√ Group learning and collaborative, is it possible?
√ Is the new information acquired applied to the problem?
√ Is self-evaluation and co-evaluation used?
√ Is the teacher prepared to facilitate the learning?
√ Does the evaluation verify the achievement of the objectives?

Adapted from Instituto Tecnológico y de Estudios Superiores de Monterrey (2004)

2.3.4. PBL in Vocational Education and Training

Recent studies (Chuen Yeh, Chen, Kuo and Chung, 2011) have shown that vocational skills should be treated as priorities in our current society. The term competence involves knowledge, skills and attitude. In this sense, vocational learning cultivates problem-solving competences. In Problem-Based Learning, students are able to solve real problems through the knowledge learnt. By using problem solving, learners can be creative and co-operate with each other to solve problems.

Various advantages are associated with the use of PBL in Vocational Education and Training (Force, 2010, cited in Sada et al., 2015):

- An increased retention of meaningful information.
- The development of an integrated knowledge base.
- Lifelong learning is promoted.
- Valuable exposure to expert experience.
- An increase in motivation.
- The teacher acts as a facilitator of the learning.
- It is carried out in small groups.
- Problems are used as a tool to build knowledge.

According to Gravells (2010) cited in Sada et al. (2015), PBL is one of the most effective active learning methods known to make a positive impact on the learners' experience. PBL is really effective when the learning needs to be supported and that is often the case of vocational students due to lack of self-confidence in some cases.

Moreover, Sada et al. (2015) affirm that this methodology will reduce the gap between theory and practice, providing engaging and challenging learning materials through flexible problems. By adopting PBL in the classroom, students will gather

and evaluate information related to the proposed problem where they will make use of creativity, adaptability, motivation, civil behaviour, technical competence and the ability to work collaboratively.

2.4. The assessment combining CLIL and PBL

Authentic assessment refers to any method that is not a standardized test which shows what a student knows or can do. It is linked to formative assessment and assessment for learning. To do this, many tools can be used, for instance, skills checklists, reading and writing inventories, teacher observation, student self-evaluations, portfolios, performance-based tasks, essay writing, oral reports, presentations or interviews (Short, 1993).

In CLIL, a wide range of knowledge and skills related to assessment are integrated in order to create meaningful and supportive learning experiences for learners. With regard to the assessment component in CLIL, some important researchers in the field such as Marsh, Mehisto, Wolff and Frigols (2011) establish that CLIL teachers are able:

- To create CLIL-specific assessment needs and objectives.
- To develop assessment tools.
- To assess for learning, that is, assessment as a basis for improvement, bearing in mind summative and formative evaluation as well as the Common European Framework of Reference for Languages (CEFR).

Mehisto et al. (2008), define the portfolio as a presentation of students' work, which has been collected over a period of time, where students show knowledge, skills and progress in achieving learning outcomes. Portfolio assessment in CLIL can prove really useful in making informed decisions on students' skills and abilities if it is accompanied by self and peer assessment along with teacher support. Furthermore, the use of electronic portfolios is becoming a common practice among CLIL teachers, for example, Google Sites or Dropbox.

Regarding PBL assessment, Sáenz (2009) points out some assessment tools that can be used in a PBL-based activity:

• Conceptual maps: students represent their knowledge through logical relationships between concepts and their graphic representation. They are also suitable for co-evaluation.

• Oral presentations: PBL gives students the opportunity to practice their communicative skills. In addition the means used can be evaluated.

• Written reports: allow to practice written expression.

• Learning file, folder or portfolio: instrument to evaluate quality of the learning process and the student's effort.
• Rubrics: double entry tables with a list of categories to evaluate.

2.5. Connections between VET, CLIL and PBL

Industry is telling the education sector they need graduates who are ready for a job, being able to be productive as soon as possible. There is a clear need for PBL in the VET sector to ensure that the needs of the industry are fulfilled (Sada et al., 2015). In addition, the CLIL approach is changing educational parameters insofar, as it is involving the whole educational community. It gives the students the chance to use the language in an authentic and meaningful context in a society where the knowledge of more than one language is more and more necessary (Marsh, 2002). Several connections can be made as far as integrating VET, CLIL and PBL are concerned:

- Collaboration

In the near future, pupils will find themselves in jobs where they will have to share information and work as team members productively. PBL provides a context for the development of these essential skills. During a PBL lesson, the teacher asks questions to ensure that the relevant information has been shared in relation to the group's problem (Savery, 2006). In Problem-Based Learning, as Chuen Yeh et al. (2011) explain, students are able to solve real problems through the knowledge learnt. By developing problem solving skills, learners can be creative and co-operate with each other to solve problems. Moreover, CLIL researchers (Coyle et al., 2010) have claimed that working in groups collaboratively, foster perception, communication and reasoning.
Learning is not done in isolation; students learn by doing and they prefer to work in groups (Sada et al., 2015).

- The role of the facilitator

The teacher acts to facilitate the learning process rather than to provide knowledge. As seen previously, some goals of PBL and CLIL include helping students to develop flexible knowledge, where the educator as a mentor is essential. (Hmelo-Silver, 2004; Coyle et al., 2010).

- Prior knowledge and active learning

Sada et al. (2015) claim that learners who are being taught using traditional methods in VET appear to be disconnected from their studies. In order to improve this situation, problems are set as a starting-point for learning and they are used as tools for learners to build upon prior knowledge. Some features of the millennium generation include experiential and engaging learning where active learning plays a key role. In PBL, CLIL and VET students can work on a problem that does not have a single correct answer, where knowledge is built flexibly. Besides, PBL offers opportunities to increase active learning through the development of presentation skills, and the learning of negotiation and research abilities. These skills are very valuable in VET programmes as well (Sada et al., 2015).

- Scaffolding and the cognitive aspect of the learning process

In PBL, students are self-directed, managing their learning goals. The teacher guides the students to learn the cognitive skills needed for problem solving (Hmelo-Silver, 2004). Moreover, scaffolding is necessary in CLIL because more strategies are needed to support the understanding of both language and content. As seen above, students require teacher's help to face the requirements of PBL.

Additionally, the cognitive demands of a VET Bilingual Programme are often high, where language support is needed. In some cases, the curricula have not included language teaching. CLIL can act as a means to accommodate the learning needs, as well as preparation for working life (Coyle et al., 2010). The evidence suggests that PBL is an instructional approach that helps students to develop flexible understanding and lifelong learning skills (Hmelo-Silver, 2004).

Besides, CLIL can be used to introduce a foreign language at vocational level, where these days English has a dominant position. Some of the content found in VET need to be designed with integrated principles. In those cases where support is required, such as learning content through an additional language, there are moves towards the adoption of CLIL (Coyle et al., 2010).

3. Intervention proposal

In this section, an intervention proposal has been designed based on the combination of the CLIL approach and the PBL methodology in the first year of a Higher Vocational and Educational Training (VET) Bilingual Programme to facilitate the learning of occupational hazards in the English language.
In the next sections, the intervention proposal is described in detail: educational context and target group, objectives and content, methodology, timing, sessions and activities, learning assessment and finally, assessment of the proposal.

3.1. Educational context and target group

As described above in section 2.1.1., according to the 'Boletín Oficial del Estado' (2012), the curriculum of Higher Technician in Business Administration and Finance, incorporates the English language in at least two professional modules that compose the whole Higher Vocational Education and Training programme. In this case, the professional module taught in English is Vocational Training and Guidance, 3 hours per week. The intervention proposal is designed for unit 9 occupational hazards and it is directed to the first year of the Higher Vocational and Education Training Bilingual Programme in Business Administration and Finance. This programme is taught in the High School 'Valle de Camargo' in the village Revilla de Camargo, Cantabria.

The characteristics of the proposal are considered for a group of 12 students from different backgrounds. These students have heterogeneous profiles, aged 18-30 years. All of them are Spanish and their English level is between B1 and B2, according to the CEFR. Two of them have lived in an English-speaking country for a short period of time (4 months). A high percentage of these learners are working and studying at the same time. They have different reasons for choosing Vocational Education and Training: most of them want to acquire professional skills in order to find a job and other ones have chosen it because it is a way of combining studies with their job. They believe that the Bilingual Programme adds value to their profiles.

3.2. Objectives and contents

The contents developed in unit 9 "occupational hazards" are shown in Table 3. They are aligned with the objectives or learning outcomes, according to the 'Boletín Oficial de Cantabria' (2012), which establishes the curriculum of the Higher Vocational Education and Training Bilingual Programme in Business Administration and Finance in the Autonomous Community of Cantabria.

Table 3. *Contents and learning outcomes of the intervention proposal*

Contents	Learning outcomes
1. Work hazards/risks.	- Understand that work involves risks that can cause health problems.
2. Hazards related with safety conditions.	- Identify the types of occupational hazards that may exist in a job.
3. Physical hazards due to working environment.	- Know the effects of different risks.
4. Hazards associated with contaminants at work.	- Learn to take action to prevent risks from becoming health hazards.
5. Hazards related to physical strain in the workplace.	- Value the importance of the prevention of occupational risks.
	- Detect the most common risk situations in the workplace that can affect the health and know how to apply the corresponding protection and prevention measures.
	- Determine preventive and / or protective actions, minimising risk factors and the environmental consequences they produce.

Adapted from the Boletín Oficial de Cantabria (2012, p. 20,014)

3.3. Methodology

The intervention proposal is based on an active methodology. The intention is that students participate in the learning process dynamically and collaboratively; they are not passive recipients of knowledge. In this case the teacher becomes a mentor to facilitate the learning of occupational hazards through different activities. The proposal is designed according to the CLIL principles and the 4Cs framework for the first three CLIL sessions. In addition, the four skills (writing, speaking, listening and reading) have been taken into account in these sessions. Then, the phases of the Problem-Based Learning described in the literature review section have been considered to develop knowledge and skills, as well as the learning objectives, following the curriculum of the module through six sessions.

3.4. Timing

The interventional proposal has been created for 9 sessions of 60 minutes. In the first three sessions, students will learn following the CLIL approach and the next six sessions are designed according to the PBL phases. Table 4 presents the timing and description of the proposal.

Table 4. *Timing and description of the intervention proposal*

Sessions	Activities	Description
1 CLIL	1, 2, 3	Warm-up, video, questions, reading a text.
2 CLIL	4, 5, 6	Text, video, vocabulary, questions, searches for information.
3 CLIL	7	Inspection checklist.
4 PBL	Phases 1 and 2. Presentation of the problem and brainstorming.	Presentation of the PBL methodology and the problem. Formation of groups. Identification of previous knowledge and needs. Distribution of tasks in the teams. Students start working on the personal workbook and the team portfolio.
5 PBL	Phase 3. Search for information.	Search and selection of information. Students share and organise the information.
6 PBL	Phase 3. Search for	Search and selection of information.

	information.	Students share and organise the information.
7 PBL	Phase 4. Problem resolution.	Application of what was learnt in the elaboration of the answer to the problem.
8 PBL	Phase 5. Presentation of results.	Students present their results orally with the help of an ICT tool.
9 PBL	Phase 6. Evaluation.	Presentation of the workbook and the team portfolio to the teacher. Self-evaluation and evaluation of the group.

3.5. Sessions and activities

In this section a detailed description of each session is provided. The intervention proposal starts with 3 sessions of CLIL, followed by 6 sessions of PBL. Each lesson lasts 60 minutes. As explained in the literature review, learning a subject or module through a foreign language requires a lot of support, which has been taken into account in the design of the proposal to favour the learning of occupational hazards.

SESSION 1

In this first session of the intervention proposal, the main purposes are the activation of students' previous knowledge and the introduction of the unit.

The lesson will begin with the introduction of the unit, trying to attract the attention of the learners. The teacher should explain the different parts of the unit and what they are going to learn briefly in each section. The unit can be presented making use of the PowerPoint presentation to show the contents visually (10 minutes):

1. Work hazards/risks.
2. Hazards associated with safety conditions.
3. Hazards associated with the physical working environment.
4. Hazards associated with contaminants at work.
5. Hazards associated with the workload.

Activity 1: Warm-up (10 minutes)

In this first activity, the teacher will begin the unit by asking the following questions:

- What do you know about work hazards? Are risks and hazards the same?
- Can you name some hazards or risks that take place in a work environment?

- Can you share a personal experience about hazards and risks at work?

After that, students will have to work in pairs to do this activity. Working in pairs is a good way to feel more relaxed and students usually have less fear of making mistakes. Also, they can choose their partners. In this sense, the teacher creates a safe environment in which students can give their opinions in the foreign language.
In addition, the teacher will provide some scaffolding with a poster giving some expressions that students could use to communicate (see Appendix I).
Then, the ideas will be shared with the whole group.

Activity 2 (30 minutes)

Students will watch a short video of 5 minutes two times in which hazards and risks are introduced. They will learn the content while listening and watching the video.
Before watching it, the teacher will present some questions about the content of the video that students need to answer individually:

1. Are hazards and risks the same?
2. What is 'The Proportionality Principle"?
3. How can we manage the risks?
4. What is considered safe?
5. Risk and perception of risk are not always aligned, what do you think?
6. To evaluate the risk, how many factors do we have to take into account?
7. How can we quantify a risk?

Then, students will read each question and their answers. The teacher will correct the questions orally, and if it is necessary, further explanation will be provided.

Activity 3 (10 minutes)

For the last 10 minutes, three students will have to read aloud different parts of a text in which a definition of hazard and risk is provided. The aim is that students become familiar with the terminology (see Appendix II).

Table 5. *CLIL session 1*

Objectives	**Activities**	**Materials and resources**
- Know the differences between risks and hazards.	1. Warm-up. 2. Video[1] and questions. 3. Reading a text.	Powerpoint, computer room, poster, text, video, teacher's notes.

[1] https://www.youtube.com/watch?v=PZmNZi8bon8

- Understand that work involves risks that can cause health problems. - Use the foreign language to express opinions.		
The 4Cs		
Content	**Cognition**	**Culture**
Work hazards and risks.	Explanation of prior knowledge.	Exposure to alternative perspectives.
Communitacion		
Language of learning	**Language for learning**	**Language through learning**
Hazards, risks, The Proportionality Principle, safety conditions, chemical, physical and biological agents, toxic, carcinogenic, hazardous substance. Read and listen to texts.	Language for introducing a topic, showing organisation of ideas, concepts and information; asking and answering questions using evidence.	Language used in the activities.
Skills promoted	Reading, writing, listening, speaking	

SESSION 2

Activity 4 (15 minutes)

Students will have their first contact with hazards related to safety conditions. After the explanation provided by the teacher, they will have to read a text individually about safety conditions to become familiar with the language (see Appendix III). In the case that students do not understand a word, they are allowed to use the computers to check it with the help of an online dictionary. Also, students are expected to collaborate with each other to solve their doubts.

Activity 5 (25 minutes)

As soon as they finish with the text, learners will watch a second video called 'Office Safety Essentials' which is particularly relevant for them because they will probably work in an office. Although the video lasts 25 minutes, they will see the first 6 minutes twice. The teacher should stop the video to provide further explanation the second time. Before watching it, the educator will clarify some important

vocabulary: electrical equipment, pathways, cable protectors, to route cables, cardboard boxes, pallets, handrails, untidiness, cabling, highly polished surfaces, slip hazard, to take precautions, spills and torn carpets.

Once the key vocabulary is clear, students will have to answer some questions about the video:

1. Are the dangers in an office obvious? Why?
2. How can we prevent workplace injuries?
3. What are the office safety essentials?
4. What are the most common causes of tripping in offices?
5. If you notice a spill, what do you have to do?
6. How can we reduce slip and trip accidents?

While learners are watching the video, they can take notes. The pupils will correct the questions and the teacher will give the answer only in the case that none of the students have it.

Activity 6 (20 minutes)

In this last activity, students will have to organise the table (see Appendix IV) by matching the possible hazards with the correct type of job. Besides, learners will have to use the Internet to search information about how to apply the corresponding protection and prevention measures in each case. Then, students will share their findings with the rest of the class.

Table 6. *CLIL session 2*

Objectives	**Activities**	**Materials and resources**
- Learn to take action to prevent risks from becoming health hazards. - Detect the most common risk situations in the workplace and know how to apply the corresponding protection and prevention measures. - Value the importance of the	4. Text. 5. Video, vocabulary, questions 6. Organisation, search for information.	Text, video[2], computer room with Internet access.

[2] https://www.youtube.com/watch?v=fYPGtZgm2Tw

prevention of occupational risks.		
The 4Cs		
Content	**Cognition**	**Culture**
Hazards related with safety conditions	Extract relevant information from the video.	Reflect on the importance of protection and prevention measures in any country. Intercultural understanding.
Communitacion		
Language of learning	**Language for learning**	**Language through learning**
Obstacles, handrails, platform, slip, stumble, lit, slippery floors, sharp objects, heavy lifting, cable protectors, spills, cabling, cardboard boxes, untidiness, highly polished surfaces.	Language for collaboration in pairs and as a whole group. Expressing opinions and ideas and answering questions using evidence.	Language that appears while doing the different activities and also in the video.
Skills promoted	Reading, writing, listening, speaking	

SESSION 3

Activity 7 (60 minutes)

In groups of 4 students, and in cooperation with the school, the teacher will assign students an area of the school to inspect. Making use of the inspection checklist (See Appendix 5) learners will look for hazardous situations that can cause injuries. Students should write a report. For each hazard they find, they will have to explain:

1. Why it is dangerous.
2. What would happen if the hazard was not corrected.
3. Two options for correcting the situation.
4. Who should be advised of the hazard.

Table 7. *CLIL session 3*

Objectives	**Activities**	**Materials and resources**
- Learn to take action to prevent risks. - Identify the types of occupational hazards that may exist in a job.	7. Inspection Checklist.	Inspection Checklist
The 4Cs		
Content	**Cognition**	**Culture**
Hazards associated with safety conditions and with the physical working environment.	Apply the learning in a real-world situation.	Value the importance of prevention in our daily lives.
Communitacion		
Language of learning	**Language for learning**	**Language through learning**
Overloaded, file cabinet, splices, trip hazard, plugged, circuits, lighting, fire extinguisher, inspection tag, emergency exits, and ceiling. Interpret different types of texts.	Language for working as a team member. Language for communicating. Language for building arguments,agreement and disagreement. Language for writing a report.	Language that appears in the Inspection Checklist.
Skills promoted	Writing and speaking.	

SESSION 4: Presentation of the problem and brainstorming

In this session, the teacher will start phases 1 and 2 of PBL. Firstly, the lesson will begin with the introduction of the PBL methodology. Then, the problem is presented. Also, students should form cooperative groups of 3 students per team, so the class is divided into 4 groups. Moreover, the teacher will explain what should be included in the personal workbook, in the team portfolio and in the final presentation of their work. After that, students will start with the brainstorming. They should reflect on what they know and what they need to know to solve the

problem. Each team will prepare a table with two columns to include the aspects that the team knows and another column for what they do not know and will have to investigate. Each team will distribute the work among its members in order to begin the investigation, making use of the team portfolio. Besides, each student will note in his workbook the assigned task.

The problem:

Spain is one of the European countries where more occupational accidents occur. Consider the following professions: María works in an office; Juan works in a printing shop; Luis works as a vehicle mechanic; Rosa as a veterinarian; Pedro works as a cook in a restaurant, and finally Ana is working as X-ray technician. You have to answer these questions:

1. Identify and explain the risk factors in each profession.
2. What are the acceptable working conditions in each case?
3. What kind of damage can they suffer?
4. Describe the preventive measures you would take against each risk.
5. Imagine that next year you will be working for a company in the UK (you can choose the company). Compare the legislation with regard to preventive measures in the workplace between Spain and the United Kingdom.

Clue: you should take into account hazards related to safety conditions, physical hazards due to the working environment, hazards associated with contaminants at work and hazards related to physical strain.

The research process will be done in groups of three. To present the research, you will have to submit three documents through Google Drive: a portfolio of the teamwork process, a personal workbook and a presentation exposing the results using a PowerPoint or Prezi program.

SESSIONS 5 and 6: Search for information

The phase 3 of PBL will be carried out during sessions 5 and 6. In the first part of session 5 (30 minutes) the teams will search for information autonomously. The teacher will observe the teamwork. In the second part, the educator will perform the review and tutoring of the work, resolving doubts and guiding the process.

The result of the group work is placed in the team portfolio. At the end of the session the work is distributed again in order to investigate outside the classroom and also individually. Students will point out their tasks in the personal workbook.

The same process will be repeated in session 6.

SESSION 7: Problem resolution

In this session the students will use what was learned to elaborate a response to the problem, accompanied by sufficient data and arguments to present it. Each team will elaborate on its portfolio a draft with all the information: problem definition, chosen answer, data, and so on.

SESSION 8: Presentation of results

In session 8, the teams will present their results with the help of an ICT tool (Powerpoint or Prezi, for example). While one team is presenting its results, the rest of the class will take notes to assess the work with the rubric provided by the teacher. The ratings will be written in the portfolio of each team.

SESSION 9: Evaluation

This is the last phase of the PBL learning process. Students should present the personal workbook and the team portfolio. Learners will evaluate their own team, as well as the rest of the teams and their own individual workbook (self-evaluation and evaluation of the group) through rubrics.

3.6. Assessment

The assessment is divided into two sections. Firstly, the learning assessment is explained and secondly, the evaluation of the intervention proposal.

3.6.1. Learning assessment

As far as the CLIL sessions are concerned, students will be assessed following the rubric that can be seen in Table 8. Learners can create a public folder in Dropbox to share their portfolios with the teacher and also with their classmates. In this folder, they will include the activities from 1 to 7. This tool supports multiple file types and can be used collaboratively by sharing folders.

Table 8. *Rubric to assess the CLIL sessions*

Category	4	3	2	1
Comprehension	The student can accurately answer almost all the questions.	The student can accurately answer most of the questions.	The student can accurately answer a few questions.	The student cannot answer the questions.

Language	There is not spelling mistakes or grammatical errors.	There are three or fewer spelling mistakes and / or punctuation errors.	There are four spelling mistakes and / or grammatical errors.	There are more than four spelling mistakes and grammar mistakes.
Quality of work	The work is of the highest quality.	The work is quality.	The work occasionally needs to be checked by the teacher or redone to ensure its quality.	The work usually needs to be checked by the teacher or redone to ensure their quality.
Content	The student shows a complete understanding of the subject.	The student demonstrates a good understanding of the subject.	The student shows a good understanding of parts of the subject.	The student does not seem to understand the subject very well.
Oral interaction	The student speaks clearly and distinctly all the time and has no bad pronunciation.	The student speaks clearly and distinctly most of the time. It has no bad pronunciation.	The student speaks clearly and distinctly all the time, but with a bad pronunciation.	The student is not understood or has poor pronunciatio n most of the time.
Culture	The student always shows interests in the topics and values their importance.	The student often shows interests in the topics and values their importance.	The student sometimes shows interests in the topics and values their importance.	The student never shows interests in the topics and values their importance.
Quality of reflection and response to feedback	The student shows insightful comments on his own progress and future needs. Clear evidence of response to feedback.	The student shows some thoughtful comments on his own progress and future needs. Shows some evidence of response to feedback.	The student shows some evidence of emerging ability to reflect on his own progress and respond to feedback.	The student shows little or no evidence of ability to reflect on his own progress and respond to feedback.

Regarding the PBL process, students should present three different documents:

1. A **portfolio** of the teamwork process. Students will file the whole material elaborated or obtained in the different sources, all the annotations or scripts made

throughout the investigation, pictures, definitions or glossaries, etc. All in all, the information that learners consider relevant for their learning.

2. The **personal workbook** is individual, where it will reflect what each student has learnt, in what way, the tasks that the student was responsible for, sources consulted and organization.

3. A **presentation** of the solution, in a PowerPoint or Prezi program.

Students should include the approach of the problem, the solution and the arguments.

The tables below show the rubrics to evaluate the PBL activity.

Table 9. *Assessment of the PBL activity*

Team portfolio	30%	Teacher 20%	**PowerPoint file**	25%	Teacher
		Group self-evaluation 10%			
Personal workbook	20%	Teacher 10%	**Oral presentation**	25%	Teacher 15%
		Student 10%			Peers 10%

Table 10. *Rubric to assess the oral presentation*

Category	4	3	2	1
Body posture and eye contact	The student has good posture, looks relaxed and confident. Make eye contact with everyone in the classroom during the presentation.	The student has good posture and establishes eye contact with everyone in the room during the presentation.	The student sometimes has good posture and makes eye contact.	The student has poor posture and / or does not look at people during the presentation.
Fluency and pronunciation	The student speaks clearly and distinctly all the time and has no bad pronunciation.	The student speaks clearly and distinctly most of the time. It has no bad pronunciation.	The student speaks clearly and distinctly all the time, but with a bad pronunciation .	The student is not understood or has poor pronunciation most of the time.
Content	The student shows a complete understanding of the subject.	The student demonstrates a good understanding of the subject.	The student shows a good understandin g of parts of the subject.	The student does not seem to understand the subject very well.

Comprehension	The student can accurately answer almost all the questions.	The student can accurately answer most of the questions.	The student can accurately answer a few questions.	The student cannot answer the questions.

Table 11. *Rubric to assess the team portfolio*

Category	**4**	**3**	**2**	**1**
Organisation	Well-organised content using titles and lists to group related material.	Use of lists to organise, but the overall organization seems weak.	Most of the content is logically organised.	The organisation was not clear or logical.
Quantity of work	All the work is divided equally and shared by all members of the group	Most of the work is divided and shared equally among the team members.	One person in the group did not do his part of the work.	Several people in the group did not do their part of the work.
Quality of work	The work is of the highest quality.	The work is quality.	The work occasionally needs to be checked by the teacher or redone to ensure its quality.	The work usually needs to be checked by the teacher or redone to ensure their quality.
Language	There is not spelling mistakes or grammatical errors.	There are three or fewer spelling mistakes and / or punctuation errors.	There are four spelling mistakes and / or grammatical errors.	There are more than four spelling mistakes and grammar mistakes.
Problem resolution	The student search and suggest solutions to problems.	The student refine solutions suggested by others.	The student does not suggest or refine solutions, but is willing to try solutions proposed by others.	The student does not try to solve problems or help others. Let others do the work.

Table 12. *Rubric to assess the personal workbook and the Powerpoint file*

Category	4	3	2	1
Organisation	Well-organised content using titles and lists to group related material.	Use of lists to organise, but the overall organization seems weak.	Most of the content is logically organised.	The organisation was not clear or logical.
Language	There is not spelling mistakes or grammatical errors.	There are three or fewer spelling mistakes and / or punctuation errors.	There are four spelling mistakes and / or grammatical errors.	There are more than four spelling mistakes and grammar mistakes.
Content	The student shows a complete understanding of the subject.	The student demonstrates a good understanding of the subject.	The student shows a good understanding of parts of the subject.	The student does not seem to understand the subject very well.

3.6.2. Assessment of the intervention proposal

In this section, the assessment of the intervention proposal is described. Once the proposal has been implemented in the classroom, the teacher will assess its design and the evaluation of the results obtained. The main purpose is to detect possible difficulties and introduce some improvements if they are necessary.

Furthermore, the opinion of the students will be very useful to assess the proposal. The teacher will ask learners several questions:

- What is your opinion about the occupational hazards after the experience with CLIL and PBL?
- What is your level of motivation after the learning of this unit?
- Will you repeat the same methodology in the next unit?
- What was your favourite CLIL activity?
- Do you think that the combination of CLIL and PBL has helped you to understand the unit?
- What aspect did you enjoy the most? What aspect did you like less?
- What would you change or improve?

Table 13 shows the evaluation criteria with which the educator could evaluate the intervention proposal.

Table 13. *Indicators to evaluate the intervention proposal*

Indicators	**Yes**	**No**	**Observations**
The objectives and the activities proposed were aligned with the curriculum.			
The implementation of the 4Cs (content, cognition, communication and culture) was appropriate for the group.			
The four skills (writing, speaking, listening and reading) were promoted correctly.			
The CLIL principles were considered.			
The activities and the problem were motivating and attractive.			
The resources and materials were adequate.			
The teacher considered students' preferences and prior knowledge.			
Peer scaffolding was helpful.			
Students' communicative competence in English has improved.			
Problem solving skills were developed through PBL.			
Effective collaboration between the students.			
The English language was introduced progressively.			
Authentic assessment methods were introduced.			

4. Discussion

In this intervention proposal, the combination of the CLIL approach and the PBL methodology have been applied to facilitate the learning of occupational hazards in the first year of a Higher Vocational and Education Training Bilingual Programme through the English language.
The intention is that students participate in the learning process dynamically and collaboratively throughout the unit. Thus, the proposal is based on an active methodology with two clear parts. Firstly, three CLIL sessions have been designed in order to support the learning of both content and language, where the four skills (writing, speaking, listening and reading) were developed through different activities. Secondly, six sessions following the PBL methodology have been considered to promote the learning of knowledge and skills.

Regarding the design of the CLIL sessions, the 4Cs conceptual framework by Coyle et al., (2010) was taken into account. As a result, content, communication, cognition and culture were integrated within a meaningful context. In fact, communication has played an important role, considering the language *of*, the language *for* and the language *through*. Although the focus of these sessions has been the 4Cs, the CLIL core features explained by Mehisto et al., (2008) were also considered, specially the use of scaffolding, active learning, authenticity and creating an enriching learning environment.
As far as the PBL sessions are concerned, the different phases of the PBL process presented by Morales and Landa (2004) were adopted to design the six sessions. Students were encouraged to work collaboratively in problem-solving groups. This methodology enhances higher order thinking as well as knowledge construction (Hmelo-Silver, 2004).

In the Vocational Education and Training setting described, students are encouraged to collaborate and share information. Problem-Based Learning provides that context through the mentor asking questions to ensure that the relevant information has been shared in relation to the group's problem. The connexion with CLIL can be seen, where students work in groups collaboratively to foster perception, communication and reasoning. Moreover, in VET, CLIL and PBL active learning is promoted; students build knowledge flexibly through presentation skills, negotiation and research abilities (Sada et al., 2015). Furthermore, scaffolding is necessary in CLIL because more strategies are needed to support the understanding

of both language and content. Besides, the cognitive demands of a VET Bilingual Programme are often high, where language support is needed (Coyle et al., 2010). Likewise, in PBL, the teacher guides the students to learn the cognitive skills necessary for problem solving (Hmelo-Silver, 2004).

This intervention proposal has been designed to be implemented in a Vocational Education and Training bilingual context with the focus on CLIL and PBL to facilitate the learning of occupational hazards. Although the contents and activities of the sessions are quite specific, the methodology proposed could be successfully adapted to other educational contexts, such as Compulsory and Post-Compulsory Secondary Education, where students function with a certain level of autonomy and they have fundamental skills, such as reading, writing, teamwork, research gathering, time management and information synthesising.

5. Conclusions

This section aims to expose the conclusions of the present work. As has been shown in this paper, the main objectives of a Higher Vocational Education and Training Bilingual Programme are to establish strategies for lifelong learning, promote mobility, personal development, employability, competitiveness, the learning of foreign languages and the promotion of competences connected to the real world. Thus, the development of this work has been carried out to accomplish the principal aim of this Master's Dissertation, which is the creation of an intervention proposal for the first year of a Higher Vocational Education and Training Bilingual Programme in Business Administration and Finance to facilitate the learning of occupational hazards through the English language, combining CLIL and PBL.

As far as the first specific aim is concerned, several connections can be made between VET, CLIL and PBL so as to improve the learning of occupational hazards. Although the best approach to use in Vocational Education and Training will depend on particular aspects, such as students' prior knowledge, qualification of the teacher, timing and resources available, in this study, the use of CLIL and PBL in a particular Vocational Education and Training context is hypothesised. In CLIL lessons, the content provides a context for using the language. In this sense, the integration of content and language is more productive if the learning experience is linked to real applications. PBL is an adequate methodology to offer real life learning experiences where learners are active participants. Furthermore, there is a clear requirement for PBL in the VET scenario to ensure that the necessities of the industry are fulfilled. Occupational hazards are present in many different sectors and the companies need workers who are ready to prevent risks and to take action.

The importance of collaboration is a key element to facilitate the learning of occupational hazards. In VET, students have to share information and work as team members. Likewise, in PBL lessons learners work together to solve problems, as well as in CLIL, where it has been claimed that working in groups collaboratively develops communication.

Similarly, active learning seems to be a relevant factor to foster the learning of occupational hazards. In PBL, CLIL and VET students can work on a problem that does not have a single correct answer, building their knowledge and skills flexibly. Problems are set as a starting-point for learning and they are used as tools to build upon prior knowledge. Besides, PBL and CLIL offer opportunities to increase active learning through the development of communication and presentation skills. In this

context, the teacher acts as a mentor to facilitate the learning process rather than to provide knowledge.
Moreover, the cognitive demands of a VET Bilingual Programme are often high, where language support is needed. The CLIL approach provides useful strategies such as scaffolding, in order to help learners to understand both language and content.

The second specific aim intends to integrate VET, CLIL and PBL in the design of the intervention proposal. As a result, dynamic sessions have been proposed to favour the learning of occupational hazards taking into account the 4Cs framework, the CLIL principles, the four skills (reading, writing, speaking and listening) and the PBL phases, while the teacher acts as a facilitator of knowledge. Students are expected to increase their motivation through the different activities, and as a result, they will improve the learning of content and language.

The third specific aim is the evaluation of the proposal. Once the proposal is implemented in the classroom, the opinion of the students will be useful to evaluate the unit, making use of the questions proposed. Additionally, the teacher can use the table provided where the main indicators to assess the intervention proposal are included.

The learning of occupational hazards is expected to increase through the implementation of the sessions designed in this work. Although the proposal has not been carried out in a classroom to see the results, the aims of the Master's Dissertation have been achieved, and a combination of CLIL and PBL has been shown to facilitate the learning process in a Vocational Education and Training context.

6. Limitations and further research

In this last part, the limitations of the work are presented, as well as the possible future lines of action and research. There are several limitations in the different phases of this Master's Dissertation.

Firstly, some difficulties were found during the research. Although proper connections can be made between PBL, CLIL and VET based on prestigious authors, it was not possible to find any publication where these three elements were combined to design a lesson plan of occupational hazards. Thus, specific strategies of the CLIL approach and the PBL methodology were selected to create the sessions of the unit. Likewise, the benefits of using PBL in VET contexts were found in literature studies from a theoretical point of view. Finding examples of lessons that apply this methodology would have been enriching to design the sessions.

Regarding the intervention proposal, it should be noted that it has not been implemented. Consequently, it has not been possible to verify if the methodology considered (combination of CLIL and PBL) meets the purpose for which it was created, that is to say, to facilitate the learning of occupational hazards through the English language.

On the other hand, it is fundamental to consider possible shortcomings of the implementation of the proposal:

- The use of specific vocabulary in the foreign language. Some terms of occupational hazards can be challenging if learners do not master the L2. Students should be encouraged to participate in class in order to improve the learning.
- Teachers should take into account that PBL requires a lot of time and preparation in terms of problem design, group formation and content development.
- The level of language proficiency might be different among students. In this case, the teacher should provide scaffolding with graded activities.
- Working in small groups in which each student is a fundamental piece has the disadvantage that a correct functioning of the group is complicated when there is school absenteeism. This situation can be frequent in some Vocational Education and Training contexts.

Once the implementation of the intervention proposal is carried out in the classroom, it would be useful to see the impact on the students' learning. This would allow the teacher to evaluate the proposal and then, introduce the necessary changes. Besides, it would be interesting to include a control group. Furthermore, the proposal can be adapted to other educational contexts, such as Compulsory and Post-Compulsory Secondary Education.

Last but not least, another line of research to give continuity to this work could be the elaboration of interdisciplinary proposals of CLIL and PBL to link contents of different subjects or modules.

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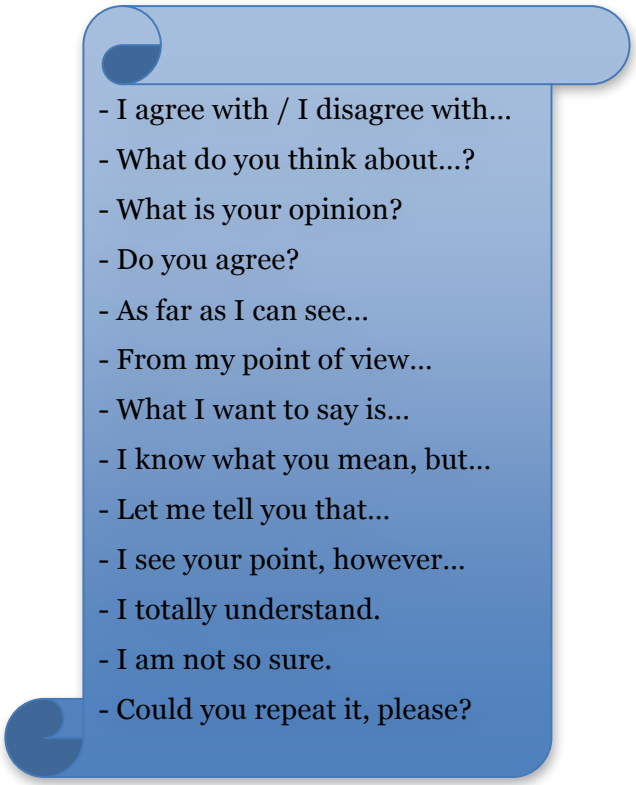
8. Appendices

Appendix I. Language poster to foster communication



Appendix II. Text of hazards and risks

A waiter working a full shift at a hotel must spend eight hours of his day, on his feet, carrying trays, serving customers and resolving potential conflicts at the hotel.... This worker is surrounded by various **hazards** and **risks** so he may end his working day suffering an accident.

What is the difference between 'hazard' and 'risk'?

This two words could be synonymous but they aren´t.

A **hazard** is something that can cause harm. It is something that can hurt you or make you ill. For example: electricity, chemicals, climbing up a ladder, noises, a keyboard, 'a bully at work', stress.

A **risk** is the chance, high or low, that any hazard will actually cause somebody harm.

"For example, working alone away from your office can be a hazard. The risk of personal danger may be high. Electric cabling is a hazard. If it has snagged on a sharp object, the exposed wiring places it in a 'high-risk' category."

Source: https://es.scribd.com/document/82796217/Unit-11

Appendix III. Text of hazards related with safety conditions

The workplace

We are referring to all of the **hazards associated with the architecture of the workplace**. The **building** where the employee performs his work, the design, and its **structures** inside and outside the building and more specifically:
• The **floor** of the building, any **stairs**, **handrails**, **platforms** and / or defective scaffolding or scaffolding in poor conditions.
• The **walls** and workplace partitions, **doors** and **windows** that are defective or in disrepair.
• Defective **roofs** or roofs in disrepair.
• Lack of organization and **cleanliness**.
• Poor **signage** and a lack of warning signs.

Statistics tell us that **falls** are one of the most frequent accidents in workplaces. Falls are closely related to the structures of buildings and how the company is organized. Falls can be in the same plane or from a height.

Hazard of falling on the same level

The worker can **fall**, **slip**, **stumble**, or take a bad step in the workplace causing an injury. In most of the cases workers fall to the surface or fall into an object. The possible causes or hazards could be the following:
- **Dirty** floors or **slippery** floors
- **Obstacles** in the walkways or in the entrances
-The workplace may not be properly **lit**
-Irregular **floors** or floors with gaps.

Hazard of falls from a height

The worker can hurt himself when he works at **various heights**. The hazards that can cause labour accidents can be the following:

- Staircases
- Working in attics, lofts, or other elevated areas
- Elevated storage
- Holes or gaps in the floor

Tools used on the job

Many of the injuries that occur in the workplace are due to the **misuse** of **tools**. Using them in an improper way can cause many injuries and some of them can be very serious.

Source: https://es.scribd.com/document/82796217/Unit-11

Appendix IV. Material needed for the activity 6

Shops/sales	Poor computer work Poor seating Stress Harassment
Cleaning	Slippery floors Hot cooking equipment Sharp objects
Office	Verbal abuse and physical violence from customers Heavy lifting Long periods standing
Restaurants	Toxic chemicals in cleaning products Sharp objects in rubbish Slipping and falling hazards

Appendix V. Inspection checklist for the activity 7

Inspection Checklist: Walking Surfaces

Walking Surfaces	**Yes**	**No**	**N/A**	**Comments**
1. Aisles are clear of clutter				
2. No tripping hazards are present				
3. Floors are even (no holes or cracks)				
4. Carpets and rugs are secure				
5. Floors are dry and not slippery				

Inspection Checklist: Bookcases, Shelves and Cabinets

Bookcases, Shelves, and Cabinets	**Yes**	**No**	**N/A**	**Comments**
1. Shelves are sturdy and in good repair				
2. Shelves are not overloaded				
3. Heavy storage cabinets, bookcases and file cabinets are secured from tipping				
4. File cabinet/desk drawers are closed when not in use and only one cabinet drawer is open at a time				

Inspection Checklist: Electrical Hazards

Electrical Hazards	**Yes**	**No**	**N/A**	**Comments**

Inspection Checklist: Electrical Hazards

Electrical Hazards	Yes	No	N/A	Comments
1. All extension cords are 3-wire type and in good condition with no splices or broken insulation				
2. Extension cords are secured and do not form a trip hazard				
3. Only one extension cord is used - cords are not plugged into each other				
4. Equipment power cords are in good condition with no splices or broken insulation				
5. Plugs are in good condition with no exposed wires				
6. Wall outlet covers are in place				
7. Circuits are not overloaded with too many things plugged in at once				

Inspection Checklist: Storage Areas

Storage Areas	Yes	No	N/A	Comments
1. Adequate lighting is in place				
2. No storage within 18 inches of sprinkler heads				
3. Step ladders provided for high storage areas				

Inspection Checklist (Fire Prevention)

Fire Prevention	Yes	No	N/A	Comments
1. Fire extinguishers have inspection tags with inspection dates in the last year				
2. Emergency exits are not blocked				
3. Emergency exits are marked and exit signs are lit up				
4. Good housekeeping is kept with excess paper, boxes, and trash removed				
5. Students know emergency procedures				
6. A fire emergency sign is posted in each classroom with directions about how to exit the building in case of fire				

Inspection Checklist: Classroom Furniture & Equipment

Classroom Furniture & Equipment	Yes	No	N/A	Comments

Inspection Checklist: Classroom Furniture & Equipment

Classroom Furniture & Equipment	**Yes**	**No**	**N/A**	**Comments**
1. Desks/tables are in good condition				
2. Chairs are in good condition				
3. Audio/visual equipment (e.g. TVs, screens) are on stable surfaces and cannot tip over				

Inspection Checklist: Lighing/Windows/Ceiling

Lighting/Windows/Ceiling	**Yes**	**No**	**N/A**	**Comments**
1. Ceiling fixtures are in good working order with no burned out or flickering bulbs				
2. Windows are clean and in good repair				
3. Blinds/curtains are in good working order				
4. Ceiling tiles are in place and in good condition				

Source: http://www.livesafeworksmart.net/english/coop/pdf/checklist.htm