

Master's Dissertation/
Trabajo Fin de Máster

**Technology in 3rd of
Compulsory Secondary
Education:
A CLIL proposal**

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1. ABSTRACT

Although the offer of books and materials devoted to helping teachers and students in the integration of contents and English increases every course, none of them current classroom resources have not been designed for the real implementation of Content and Language Integrated Learning (CLIL, hereinafter). Moreover, most of them are a direct translation into English of originally existing Spanish books. The sort of activities and tasks proposed are identical to those prepared for monolingual Spanish teaching and learning processes. The level of the English language is, overall, insufficiently adapted to the level of students and there is an evident lack of scaffolding, particularly for productive skills. It can be claimed that adapted books have not been designed for a successful implementation of CLIL in our context.

Being fully aware this is the current situation we face in the subject Technology – that I teach in secondary schools in Andalucía –, this Masters' thesis presents a course lesson plan intended to integrate CLIL principles efficiently. Thus, the different teaching units have been designed taking the four basic pillars of CLIL into account: content, communication, cognition, and culture. Furthermore, scaffolding has been clearly prioritized in the teaching proposal, since it is essential to achieve the desired learning outcomes when teaching contents through an additional language in secondary schools.

The result is a lesson plan with an intentionally reduced number of teaching units, to promote student-centred methodologies that allow peer support and teamwork in tasks and projects as an effective methodology. The main objective is the development of the communicative competence and the use of the English language as a necessary tool for daily communication in the classroom so students learn to use the language and use the language to learn.

2. INTRODUCTION

The present Master's Thesis is intended to contribute to the field of Content and Language Integrated Learning and bilingual education by analyzing current resources and materials in CLIL and presenting a lesson plan in the subject Technology for the 3rd course of Compulsory Secondary Education or *Educación Secundaria Obligatoria* (hereinafter ESO) in Andalucía. It has been written with the aim of providing a useful tool to be used by CLIL teachers, and summarizing some of the knowledge, competences and skills acquired through this inter-university Master's Degree in Bilingual Education and CLIL (henceforth MIEB, as per its Spanish acronym). The reason that lay behind this proposal is the aim to contribute to a better implementation of the CLIL approach, with special attention to the integration of the curriculum of the subject English Language into the Technology lessons. In addition, this document is not only intended to be the culmination of this Master's Degree but also to providing a practical application in class with my students.

This course lesson plan has been designed in agreement with the Spanish and Andalusian educational regulations. For that reason an important part of the document is necessarily dedicated to collecting those aspects enacted by our educational legislation, such as the objectives, the educational contents, the key competences, the assessment criteria or the assessable learning standards. As a direct consequence, the organization of this lesson plan includes all the compulsory elements marked by the Article 6 of the Organic Law for the improvement of educational quality 8/2013, of December 9th.

Furthermore, the lesson plan is intended to solve some of the shortcomings for the successful development of CLIL. These weaknesses have been identified in the analysis of two student books of the subject Technology of 3rd of ESO (Moreno Márquez, 2016, and Resa i Blanquez, 2015) which are extensively used in bilingual schools in Andalucía.

The lessons learned from the MIEB are especially present in the sections devoted to the methodology and the design of the didactic units. Hence, the introduction of scaffolding, the integration of the English language in the teaching sequences, the use of student-centred methodologies and cooperative learning or

the different assessment instruments that have been considered are in line with the tenets and principles of CLIL studied in the Master.

The present document is organized in three parts: The first one describes the context of the teaching proposal, with references to the legal framework, the socio-economic setting, and the particular characteristics of the students. The second part is devoted to establishing the objectives, contents, and competences pursued by this lesson plan. Finally, the third part presents the teaching proposal and describes the methodology, the assessment, the didactic units and the sample materials that have been proposed.

3. LEGAL FRAMEWORK

In order to design the lesson plan the following Spanish and Andalusian regulations on Education have been taken into account:

3.1. National educational regulations

The current national educational legislation corresponds to the legislative development of the Organic Law for the improvement of educational quality 8/2013, of December 9th, which included in its preamble the mastery of a second foreign language as a priority in education and the promotion of multilingualism as an essential objective for the construction of a European project. The national educational regulations are the following ones:

- [Organic Law of Education 2/2006, of May 3rd \(Consolidated text, 03-23-2018\).](#)
- [Organic Law for the improvement of educational quality 8/2013, of December 9th \(Consolidated text, 03-23-2018\).](#)
- [Royal Decree 1105/2014, of December 26th, which establishes the basic curriculum of the Compulsory Secondary Education and Baccalaureate \(Consolidated text, 06-03-2017\).](#)
- [Order ECD /65/2015, of January 21st, which describes the relationships between competencies, content and evaluation criteria of primary education, compulsory secondary education and Baccalaureate.](#)

3.2. Regional educational regulations

The Andalusian educational regulations that transpose and expand the national regulations within its powers are:

- [Law of Education of Andalusia 17/2007, of 10 December 2007.](#)
- [Decree 111/2016, of 14 June 2016, which establishes the organization and the curriculum of the Compulsory Secondary Education in the Autonomous Community of Andalusia.](#)

- [Order of 14 July 2016, which develops the curriculum of Compulsory Secondary Education, regulates certain aspects of the attention to diversity, and establishes the organization of the evaluation of the students' learning process.](#)
- [Order of 25 July 2008, which regulates the attention to diversity of students who attend basic education in public schools in Andalusia.](#)
- [Order of 28 June 2011, which regulates bilingual education in the educational centres of the Autonomous Community of Andalusia.](#)
- [Instructions of 15 May 2019, from the General Directorate of Educational Planning and Evaluation, about the organization and operation of bilingual education for the course 2019/2020.](#)

Out of these regulations, the national Royal Decree 1105/2014, the Andalusian Decree 111/2016, and the Order of 14 July 2016 are of utmost importance in the design of the curricular aspects of this course lesson plan in the subject Technology, while the Andalusian regulations, Order of 28 June 2011, and especially the Instructions of 15 May 2019 are crucial in the integration of the curriculum of the subjects Technology and English Language and in the implementation of CLIL in the lesson plan, and in the teaching practice. Thus, these instructions determine vital aspects such as:

- The subject Technology in 3rd of ESO can be taught in English (instruction 3, point 3.1),
- The teaching of the different languages taught in the school will have to be harmonized by means of School Language Project that must include the Integrated Curriculum of Languages and the contributions of the subjects participating in the bilingual program (instruction 4, point 2),
- Bilingual schools must provide bilingual education using the Integrated Learning and Foreign Language (CLIL) approach (instruction 5, point 1),
- The vehicular language used for instruction in the non-linguistic areas must be the second language, with a minimum of 50% of the teaching hours and being desirable the highest percentage possible (instruction 5, point 3),

- Evaluation tests must be adapted to the language in which the contents have been taught (instruction 5, point 3).

Therefore, the Instructions of 15 May 2019 have been taken as a fundamental reference when designing the lesson plan presented in this Masters' thesis.

4. CONTEXT

This course lesson plan has been designed for the state secondary school where I work this course (Instituto de Enseñanza Secundaria Hermanos Medina Rivilla). This section is devoted to describing the context in which the lesson plan will be put into practice.

4.1 Setting

The secondary school is located in Bailén, an Andalusian town with a current population close to 18,000 inhabitants¹. The village was strongly affected by the economic crash of 2008 due to the fact that one of its fundamental economic activities is closely linked to the construction industry. As a consequence, the village lost about a thousand inhabitants in the last decade due to the decrease in birth rate and emigration and socio-economic situation of the population has worsened objectively.

4.2 The school

The school premises include the school building, two sports courts, a large courtyard, a little orchard with a greenhouse, several garden areas and a car park. The school building is an old two-story construction dating from 1967. It was a secondary school until 1990, when it was closed due to the transfer of the secondary school to a new building. Between 1997 and 1999 the building housed a primary school and finally it reopened its doors in September 2000 again as a secondary school, a function it continues playing today.

The school building has on its ground floor a multipurpose room, a library, a teacher's room and a small cafeteria. On the top floor, the building has two classrooms for Music and Art, an ICT lab (provided with 15 computers and a beamer), a science laboratory, a gym, and the Technology workshop. Most ordinary classrooms are all equipped with interactive whiteboards, and the rooms of the didactic departments are distributed between both floors while the all offices of the board of teachers and the secretary's office are located on the ground floor.

¹ [Acc. to the Multi-territorial Information System of Andalusia, SIMA 2018.](#)



Picture 1. Aerial picture of the School. Source: Bing maps.

The school educational offer is formed by:

- Compulsory Secondary Education.
- An Initial Vocational Training Specific Program (PEFPI, as per its Spanish acronym) of Agriculture, gardening and flower arrangements.
- A Specific Unit of Special Education.

In the academic year 2019-2020 there are 298 students enrolled in several levels and groups, as it can be seen in Table 1:

		Number of Students
Specific Unit of Special Education		2
1 st of Agriculture, gardening and flower arrangements		4
2 nd of Agriculture, gardening and flower arrangements		5
1 st of ESO	A	28
	B	27
	C	27

2 nd of ESO	A	26
	B	27
	C	27
3 rd of ESO	A	27
	B	27
4 th of ESO	Science	24
	Social Sciences	23
	Technology	24
Total		298

Table 1. Distribution of students.

The school staff includes 38 teachers out of which three form the board. In addition, there is one administrative assistant ascribed to the Secretary's Office, one assistant for the Especial Education Specific Unit and a janitor. The Technology Department has three teachers two of which participate in the bilingual project in the subjects Technology (2nd and 3rd of ESO) and ICT (4th course of ESO).

The school develops a bilingual project in English since the course 2005-2006. It was one of the secondary schools that joined in the Andalusian Plan for the Promotion of Plurilingualism (APPP) that was officially approved in 2005. Bilingual sections were introduced in Andalucía in 1998 with the experimental introduction of Spanish-French sections and the implementation of Spanish-German sections in 2000. The [Agreement of 22 March 2005](#), of the Governing Council of Government, that approved the Plan for the Promotion of Plurilingualism in Andalusia, sets the turning point in the promotion of bilingual streams in the region. Since then, the number of bilingual and multilingual primary and secondary schools in Andalucía has kept a steady growth, reaching 1,161 state schools offering bilingual education in Andalusia in the academic year 2019-2020². Therefore, our school is one of the pioneers in the implementation of bilingual secondary education in English in our autonomous community.

In the present academic year, the subjects offered in the bilingual streams in third of ESO are Technology, Physics and Chemistry, Social Sciences, and Physical

² Source: [Noticias de la Junta, 03 May 2019](#).

Education. Coordination meetings of the content teachers that participate in the bilingual project with the bilingual coordinator are scheduled once a month during the breaks.

4.3 Cultural and socioeconomic context

The data from the social, economic and cultural environment of our students show that the highest percentage of the pupils comes from middle-class families³. However, there is also an important part of our students that come from the only Zone with Social Transformation Needs existing in Bailén: The Barrio del Pilar is a clearly defined urban space with situations of severe poverty and social marginalization³. Most of the parents of the school students have primary school levels of attainment. There is a small number of immigrant students (3,7 %)⁴ and an important number of Romani students (8,7 %)⁴. As a result, the Socioeconomic and Cultural Index (ISC for its acronym in Spanish) of the students of the school is -0.58⁵ which represents a medium-low level compared to the average of secondary education schools in Andalusia (-0,62 < ISC < -0,32 corresponds to medium-low Socioeconomic and Cultural Index). For these reasons, since 2017, the school is regarded as a compensatory school by the educational administration of Andalucía. This means that the schools have an additional teacher to impart support lessons for those students that are considered to be at risk of cognitive impairment and low educational achievement.

The Association of Mothers and Fathers of Students (AMPA for its acronym in Spanish) collaborates in the organization of some end-of-course trips and in the preparation of some activities but without a significant implication in the academic life of the school.

4.4 The students

Third-year students in ESO are, in general, between 13 and 14 years old. Therefore, they are in full puberty, that is, in a stage of very important physical and

³ Acc. Educational Compensation Plan of IES Hermanos Medina Rivilla.

⁴ In the in the academic year 2019-2020 acc. SENECA, the Platform for the Management of the Andalusian Educational System.

⁵ Data at the end of the academic year 2018-2019 acc. SENECA.

psychological changes. As a result, they tend to feel misunderstood and need the recognition of others to gain self-confidence and self-esteem. In addition, these physical and hormonal changes can cause episodes of anxiety, irascibility or depression. Therefore, it is extremely important that the actions within the classroom serve specially to strengthen their confidence in themselves and in their capacities. These characteristics have been taken into account in this course lesson plan in order to always make positive assessments in the assessment instruments and in the continuous feedback to students, as well as planning activities that favours social interaction such as group activities and collaborative learning (Álvarez Jiménez, 2010) so that all students can achieve the objectives and develop their key competencies to improve confidence in their possibilities.

Being this a CLIL proposal, it is also paramount to be aware of the English language level of students in 3rd of ESO. The [Instructions of 15 May 2019](#), states for indicative purposes that students who attend bilingual education should reach the level B1 of language proficiency according to the Common European Framework of Reference for Languages (CEFRL) in 4th year of ESO. That means that students in 3rd of ESO should have already acquired an A2 level and they should be approaching the B1 level. As a result, they should be initially considered as basic users of the language that according to the CEFRL are capable of:

- Understand sentences and frequently used expressions related to areas of most immediate relevance (e.g. very basic personal and family information, shopping, local geography, employment)
- Communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar and routine matters
- Describe in simple terms aspects of his/her background, immediate environment and matters in areas of immediate need. (Council of Europe Language Policy Unit, 2001: page 24)

However, an initial basic assessment in terms of reading, writing, listening and speaking competences is planned during the first weeks of the course in order to get a real picture of the English level of every single student. In addition, it has been planned to get the feedback from the teachers of English Language, who are

responsible to assess the language competence of students in English language in order to complement this initial evaluation. This needs analysis or placement test is fundamental because the school receives students mainly from two primary schools and one of them is not into the bilingual project. Furthermore, the school receives an important number of Roma students, who normally underperform in all subjects, especially in English.

5. OBJECTIVES

The Spanish and Andalusian educational legislation explicitly establish the general objectives of Compulsory Secondary Education, and the specific goals of the subject Technology within this educational stage. In the following points I present those objectives directly translated from the legislation as an essential part of any course lesson plan.

5.1 Educational objectives of the Compulsory Secondary Education

The [Royal Decree 1105/2014, of December 26th](#), in its article 11, explicitly establishes that the Compulsory Secondary Education will contribute to promote the following competences and skills in the students:

- a) Responsibly assume their duties, know and exert their rights in respect for others, practice tolerance, cooperation and solidarity between individuals and groups, exercise in dialogue strengthening human rights and equal treatment and opportunities between women and men, as common values of a plural society and prepare for the exercise of democratic citizenship.
- b) Develop and consolidate habits of discipline, study, and work both, individually and as a team, as necessary conditions for an effective realization of learning tasks and as means of personal development.
- c) Value and respect the gender difference and the equality of rights and opportunities between them. Reject discrimination against people based on gender or any other personal or social condition or circumstance. Reject stereotypes which involve discrimination between men and women, as well as any form of violence against women.
- d) Strengthen their emotional capacities in all areas of personality and in their relationships with others, as well as reject violence, prejudices of any kind, sexist behaviours and peacefully solve conflicts.
- e) Develop basic skills in the use of sources of information to critically acquire new knowledge. Acquire a basic preparation in the field of technologies, especially those related to information and communication.
- f) Conceive scientific knowledge as an integrated knowledge, which is structured in different disciplines. Know and apply the methods to identify problems in the different fields of knowledge and experience.

- g) Develop entrepreneurial spirit and self-confidence, participation, critical sense, personal initiative and the abilities to learn, plan, make decisions and assume responsibilities.
- h) Understand and express correctly, both orally and in writing, in the Spanish language and, if any, in the co-official language of the Autonomous Community, complex texts and messages. Get initiated in the, knowledge, reading and study of literature.
- i) *Understand and express themselves appropriately in one or more foreign languages* (my own emphasis).
- j) Know, value, and respect the basic aspects of one's own and others' culture and history, as well as artistic and cultural heritage.
- k) Know and accept the functioning of one's own body and that of others, respect differences, strengthen body care and health habits and incorporate physical education and the practice of sport to promote personal and social development. Know and value the human dimension of sexuality in all its diversity. Critically assess social habits related to health, consumption, care of living beings and the environment, contributing to their conservation and improvement.
- l) Appreciate artistic creation and understand the language of different artistic manifestations, using various means of expression and representation.

In addition to these objectives, the Andalusian [Decree 111/2016](#) establishes in its article 3.2 two additional educational objectives for the secondary education:

- a) Know and appreciate the peculiarities of the Andalusian language in all its varieties.
- b) Know and appreciate the specific elements of Andalusian history and culture, as well as its physical and natural environments and other differentiating facts of our Community, so that it is valued and respected as its own heritage and within the framework of the Spanish and universal cultures.

5.2 Educational objectives of the subject Technology

The Andalusian [Order of 14 July 2016](#), in its Appendix II “Subjects of the block of specific subjects”, explicitly establishes that the subject Technology, in the second and third courses of the Compulsory Secondary Education, is aimed to developing the following objectives:

1. Deal with autonomy and creativity, both individually and in groups, with technological problems working in an orderly and methodical way to study the problem, collect and select information from different sources, prepare the relevant documentation, devise, design, plan and build objects or systems to solve the problem and to evaluate its suitability from different points of view.
2. Have sufficient technical skills and knowledge for the analysis, intervention, design, elaboration and handling in a safe and precise way of technological materials, objects and systems.
3. Analyze technical objects and systems to understand their operation, to know their elements and the functions they perform, to learn the best way to use and control them, and to understand the fundamental conditions that have intervened in its design and construction.
4. Express and communicate ideas and technical solutions, as well as to explore their viability and scope using the technological means and graphic resources, as well as the appropriate system of symbols and vocabulary.
5. Adopt favourable attitudes towards solving technical problems and to develop interest and curiosity towards the technological activity, analyzing and critically assessing the technological research and development and its influence on society, on the environment, on health and on personal and collective well-being.
6. Understand the functions of the physical components of computers and devices to process digital information, as well as their operation and ways of connecting them. To handle ICT applications and resources that allow searching, storing, organizing, manipulating, retrieving, presenting and publishing information with ease and to use communication networks regularly.
7. Solve problems through designing and programming control systems.
8. Assume critically and actively the progress and emergence of new technologies, incorporating them into the daily work.
9. Act in a dialogic, flexible and responsible way in teamwork for the search for solutions, decision making and the execution of the assigned tasks, with an attitude of respect, cooperation, tolerance and solidarity.

6. EDUCATIONAL CONTENTS

6.1 Educational contents of the subject Technology of 3rd of ESO

The educational contents of the subject Technology in ESO are briefly described in Appendix II, section 23 (Technology) of the [Royal Decree 1105/2014](#). The [Order of 14 July 2016](#) includes and expands, in the section Technology of its Appendix II the contents that are established in the aforementioned royal decree. Thus, the Order of 14 July 2016 incorporates a new block of educational contents to those defined by the royal decree, the block five, so that the educational contents for the subject Technology of the course 3rd of ESO are organized into the following six blocks:

Block	Educational Contents
Block 1: The process of solving technological problems	<ul style="list-style-type: none"> • The phases of the technical project <ul style="list-style-type: none"> ○ search for information ○ design ○ planning ○ construction and evaluation • The technical report • The classroom-workshop • Health and safety standards in the work environment
Block 2: Technical expression and technical communication	<ul style="list-style-type: none"> • Drawing instruments • Sketches and plans • Scales • Annotation • Types of pictorial drawings: isometric and cavalier views and perspectives • Computer-aided design (2D and 3D)
Block 3: Materials for technical use	<ul style="list-style-type: none"> • Materials for technical use: <ul style="list-style-type: none"> ○ plastics ○ stone materials ○ textile materials ○ glass and ceramic materials • Classification, properties and applications • Work techniques in the workshop • Environmental repercussions
Block 4: Structures and mechanisms: machines and systems	<ul style="list-style-type: none"> • Structures, loads and efforts <ul style="list-style-type: none"> ○ Elements of a structure and basic efforts to which they are subjected ○ Types of structures ○ Conditions that must be met by a structure <ul style="list-style-type: none"> ▪ stability ▪ rigidity ▪ and resistance

	<ul style="list-style-type: none"> • Mechanisms and machines <ul style="list-style-type: none"> ○ Simple machines ○ Transmission mechanisms and transformation of movement ○ Basic parameters of mechanical systems ○ Applications. Use of mechanical simulators • Electricity <ul style="list-style-type: none"> ○ Effects of electric currents ○ The electrical circuit: elements and symbols ○ Basic electrical quantities ○ Ohm's Law and its applications ○ Measurement of electrical quantities ○ Use of simulators for the design and testing of circuits, basic electronic devices and applications ○ Circuit assembly Electrical and electronic control ○ Electricity generation and transportation ○ Power stations ○ The electricity and the environment
Block 5: Initiation to programming and to control systems	<ul style="list-style-type: none"> • Block based coding • Environments in programming environment • Code blocks in programming • Program flow of control • Interaction with the user and between objects • Introduction to everyday automatic systems: sensors, control elements and actuators • Programming the control of simple automatic devices
Block 6: Information and Communication Technologies	<ul style="list-style-type: none"> • Hardware and software <ul style="list-style-type: none"> ○ The computer and its peripherals ○ Operating systems ○ Concepts of free and proprietary software ○ Types of licenses and uses ○ Basic office tools: word processors, editors of presentations and spreadsheets ○ Installation of software and basic maintenance and tasks • Internet: concepts, services, structure and operation • Network security • Web services: search engines, collaborative web documents, clouds, blogs, wikis, etc. • Access and availability of shared resources in local networks

Table 2: Blocks of educational contents according to Spanish and Andalusian legislation for the subject Technology in the 3rd course of Compulsory Secondary Education

6.2 Curriculum integration with the subject English Language

In addition to the contents presented in Table 2, which are specific to the subject Technology, and following the directives of the [Order of 28 June 2011](#), some educational contents of the English Language curriculum of 3rd of ESO have been also introduced in the course lesson plan to promote content and language

integration. These specific contents have been determined in agreement with the teachers of the English Language Department in charge of the groups of 3rd of ESO and with the approval of the coordinator of the bilingual program of the school. The aim of this curricular integration is to apply the linguistic structures that students have already worked with in the English Language subject to Technology. This approach pursues meeting the following objectives:

- Improve the adaptation of the linguistic level of the Technology lessons to the real level of students.
- Apply linguistic structures already known by the students to the subject Technology.
- Enhance the comprehension of students and promote the use of known structures in oral and written productions in the Technology lessons.

The linguistic contents agreed with the English Language Department are included and sequenced in the didactic units included, and they summarized in Table 3:

Unit	English Grammar Structures
1	There is / There are / There was / There were
2	Present simple / Present continuous
3	Past simple / Past continuous
4	Present perfect simple
5	Future simple
6	1 st and 2 nd Conditionals
7	Past perfect simple

Table 3: Grammatical structures to be used in the Technology lessons after agreement with the English Language Department.

7. KEY COMPETENCES

Spanish legislation adopted the key competences for the lifelong learning that were established by the [Recommendation 2006/962/EC of the European Parliament and of the Council of 18 December 2006](#) in section 14 of the preamble of the [Organic Law 8/2013](#) and in all subsequent educational legislation, both national and regional. Within this legal framework, it is worth mentioning [Order ECD /65/2015](#) because it defines which are the key competences in the Spanish educational legislation and describes, in a general way, the links between these key competences, the educational contents and the evaluation criteria in Primary Education, Compulsory Secondary Education and Baccalaureate. However, it is worth mentioning that in Order ECD /65/2015 the first two competences of Recommendation 2006/962/EC – communication in the mother tongue and communication in foreign languages – were merged in only one competence, linguistic communication. Regarding the lesson plan presented in the current Masters' Thesis, it is [Order of 14 July 2016](#) the piece of legislation that makes explicit how the subject Technology contributes to achieve the key competences:

- **Linguistic communication competence** (hereinafter CCL, as per its Spanish acronym). The subject technology contributes to the development of linguistic communication competence by incorporating specific vocabulary that is necessary in the processes of searching, analyzing and selecting information. Also, through the reading, interpretation and writing of technical documents, the use of different types of texts and their formal structures and through the public dissemination of the work developed. The use of English in the CLIL lessons also contributes to the development of this same competence but in a foreign language, the Communication in Foreign Languages which corresponds to the second key competence of the [Recommendation 2006/962/EC](#) that was not adopted in the same manner by the Spanish legislation.
- **Mathematical competence and basic competences in science and technology** (hereinafter CMCT, as per its Spanish acronym). The subject Technology has a mayor contribution to the development of these three competences through the knowledge and understanding of objects,

processes, systems and technological environments, with the development of skills to manipulate objects with precision and security and with the instrumental use of mathematical tools in a strongly contextualized way, such as the measurement and calculation of basic quantities, the use of scales, the reading and interpretation of graphics or problem solving based on the application of mathematical expressions referred to physical principles and phenomena.

- **Digital competence** (hereinafter CD, as per its Spanish acronym). The subject Technology contributes to this competence through the acquisition of basic knowledge and skills to be able to transform information into knowledge, to create content and communicate them on the web, acting with responsibility and democratic values and by building an emotionally balanced identity. In addition, by means of the use of digital tools to simulate technological processes and program solutions to posed problems and using specific languages such as the iconic or the graphic, which will subsequently be applied in Technology and in other subjects.
- **Learning to learn** (hereinafter CAA, as per its Spanish acronym). The subject Technology contributes to this competence through the search, research, analysis and selection of useful information to address a project, as well as by means of the analysis of technological objects and systems, and by the development of strategies and attitudes necessary for autonomous learning.
- **Social and civic competences** (hereinafter CSC, as per its Spanish acronym). The subject Technology helps to acquire social and civic competences through the knowledge of the organization and operation of societies, the analysis of technological progress and its influence on economic and organizational social changes that have taken place throughout history. In addition, it helps to develop this competence due to the fact that during the process of solving technological problems students have multiple opportunities to express and discuss ideas and reasoning properly, and to manage conflicts and make decisions through dialogue, respect and tolerance.
- **Sense of initiative and entrepreneurship** (SIEP, as per its Spanish acronym). The subject Technology helps to develop this competence through

the methodology used to address the technological problems and the development of the competence is enhanced by confronting the technological problems in an autonomous and creative way.

- **Cultural awareness and expression** (hereinafter CEC, as per its Spanish acronym). Finally, the subject Technology helps to develop this competence by giving value to the importance that the finish and the aesthetics of the products acquire, the materials chosen for their manufacture and the treatment given to them, as well as facilitating the diffusion of our industrial heritage. Likewise, the analysis of the architectural solutions of historical buildings of different cultures, such as bridges, palaces, cathedrals, aqueducts, etc., allows students to learn more about these cultures and understand the contribution to their technological development.

8. METHODOLOGY

The Andalusian [Decree 111/2016](#) and [Order of 14 July 2016](#) introduce a series of methodological recommendations among which those that present close relationship with CLIL have been taken into account in this course lesson plan. Therefore, the didactic units in this lesson plan have been designed to:

- Adapt to the students' initial level of competencies and cater for diversity
- Consider the different learning rhythms and styles through individual and cooperative work practices
- Favour the involvement of students in their own learning, stimulate individual improvement, the development of all their potential and promote their self-concept and their self-confidence
- Promote autonomous learning, collaboration and teamwork
- Stimulate the interest and habit of reading, the practice of written expression and the ability to express themselves correctly in public
- Stimulate critical thinking as well as the processes of individual and collective construction of knowledge, discovery, research, entrepreneurial spirit and personal initiative
- Adopt interactive strategies to share and build knowledge and energize it through the verbal and collective exchange of ideas and different forms of expression
- Promote learning through projects, centres of interest, or case studies
- Favour participation, experimentation and motivation of students
- Use information and communication technologies regularly for learning and knowledge.

8.1 Benefits of CLIL

As we have learned in the MIEB, CLIL started at the University of Jyväskylä (Finland) in 1994. Since then, CLIL has been put into practice in many European educational systems with the aim to facilitate the learning of contents and language through this dual approach and promote the communicative competence of students in an additional language (Coyle, Hood and Marsh, 2010; Lorenzo, Trujillo and Vez,

2011; Pérez-Cañado, 2012). In Spain, we have witnessed how CLIL schools proliferated in the last decade on the basis of the cognitive, linguistic and intercultural benefits derived from learning non-language areas or content-subjects through an additional language (see, for instance, Lasagabaster and Ruiz de Zarobe, 2010).

The success of CLIL and its pervasiveness today can be explained, in my opinion, on the basis of its very definition as a “planned pedagogic integration of contextualized content, cognition, communication and culture into teaching and learning practice” (Coyle et al. 2010: 6). In this definition, we can find the underpinning of CLIL, the so-called 4 C’s framework developed by Coyle (2007), and also the keys that explain why CLIL has conquered its relevant position on the educational systems in Europe:

- The integration of content and language is planned and contextualized
- The language is used to learn and at the same time is learned through its use in the subject matters.
- The language is learned and used not as the main target but as a tool to learn and develop different cognitive processes.
- The language is learned as a vehicle to know, and communicate with other cultures in an increasingly multicultural environment, specially favoured by the European Union.

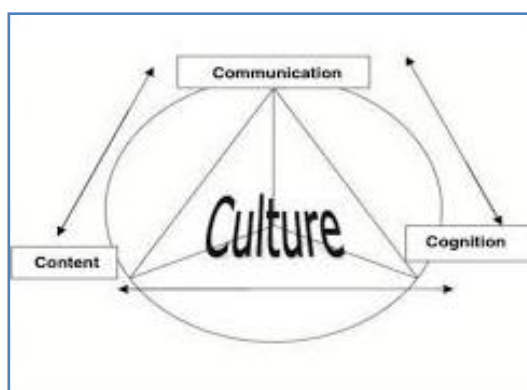


Figure 1. The 4Cs Framework for CLIL (Coyle 2007: 551)

In Andalucía, as we have already mentioned in section 3.2, there is a legal framework that supports and encourages the application of CLIL in bilingual sections.

In fact, the Andalusian [Instructions of 15 May 2019](#) specify that bilingual schools must provide bilingual education under CLIL. However, going beyond the legal framework, in the MIEB we have learned how the benefits of CLIL justify its application in Primary and Secondary Education. Among these beneficial effects in the teaching and learning process mentioned in the Master's materials, I consider the following grounds to be particularly important:

- The undeniable increase in foreign language competence especially in students' communicative skills.
- The increased lexical knowledge that students achieved thanks to studying content subjects in the foreign language.
- The more meaningful learning of a foreign language used for real communicative purposes in several content subjects on a daily bases.
- The enhanced understanding of students about the importance of knowing a second language to prepare themselves for their future working life that will be necessarily developed in a multicultural, European and international world where knowing a second language is a must.
- And especially, the higher motivation that methodologies associated with CLIL, like task-based, project-based, and cooperative learning, develop in students.

Furthermore, we have learned how there is a relevant and prolific corpus of research that confirms the beneficial effects that CLIL brings for students, among which I would like to remark:

- Better results in productive skills of CLIL students (Pérez Cañado and Lancaster, 2017).
- Better performance in English across different educational stages of CLIL students (Pérez Cañado, 2018).
- Higher cultural knowledge of CLIL students (Ramos, 2011).

It is also worth mentioning that there might be some challenges in the implementation of CLIL. When it comes to Secondary Education, the main

disadvantage of using CLIL that I would like to remark, and that come from my own experience, is the fact that the development of CLIL in the classrooms of secondary education demands an extraordinary effort from teachers to prepare specific materials and to synthesize the content matters selecting the most important and valuable contents due to the slower pace required by students in CLIL lessons.

8.2 Task- and project-based learning

In this Masters' degree, we have learned the benefits of collaborative learning that we can be briefly summarised as the higher occurrence of memorable learning when there is active participation in teamwork, the easier interaction among peers, and the higher motivation of students, enhanced with the use of ICT, due to their direct contribution to the team results (García-Valcárcel, Basilotta y López, 2014). We have also learned that Task-based learning (TBL) and Project-based learning (PBL) are clear examples of collaborative learning that have additional benefits because these methodologies are able, as no others, to introduce aspects of real life into the classroom producing real and significant knowledge (TBL and PBL are methodologies that favour the learning of content subjects but also methodologies of communicative language teaching (Richards & Rodgers, 1986) that lets the learning of the language due to the communicative interaction among students. For these reasons, TBL and PBL are methodologies that are especially suitable to be applied in the Technology subject in CLIL.

In addition, the Technology subject is characterized by its practical nature and its ability to foster creativity. Therefore, every didactic unit is built around a main task, especially in blocks of contents 1, 2, and 6 or a main project, especially in blocks of contents 3, 4, and 5, that has been designed to include elements from different blocks of educational contents aiming to achieve a cross-wise or transversal design. The different activities developed during the lessons are intended to help students to accomplish the task or the project satisfactorily.

Projects that involve the design and construction of technological objects to solve technological problems have been included in the course lesson plan, especially in block 4. The project work will be carried out following the phases of resolution of the technological problems:

- Searching for information, discussion and justification of the chosen solution
- Design
- Construction planning
- Budget making
- Construction of the technological object
- Reflection and self-evaluation of the work done

In every project, students have to prepare the technical documents that compile the work they have done. These documents will be initially written on paper and later elaborated with the aid of computers in order to develop their digital competence. Students will also have to present their work orally and to interact with their classmates answering their questions. Thus, the project becomes a powerful CLIL instrument, as the students will have to listen and read, discuss, write and speak in English during its development assuring a permanent linguistic interaction with the teacher and the classmates.

The completion of all these tasks and projects will be executed using the necessary scaffolding to allow students to make effective use of the English language. Although the three types of scaffolding; for reception, for transformation and for production (Dodge, 2001) will be used during the lessons, productive scaffolding in form of templates, written structures and guides will be used extensively because the productive skills in English are specially weak among 3rd of ESO students what prevents them from producing oral or written sentences in the foreign language fluently. This scaffolding will be used as an opportunity to integrate the grammar structures agreed with the English Language Department that were already mentioned in [section 6.2](#).

Due to the fact that the construction of the technological objects defined in the projects will be executed in the workshop and not in the ordinary classroom the workshop safety rules in English ([Appendix III](#)) will be read and translated by the students before every workshop session. In addition, visual scaffolding in form of posters with the safety rules will be permanently shown on the workshop walls.

The students will be reorganized in groups and they will be allocated any new task and project in order to promote the collaboration with a maximum number of different classmates. In the arrangement of the groups criteria of equality in gender and students' capacities will be strictly applied in order to foster feelings of mutual respect, inclusion, respect for diversity and gender equality as the most valuable cross-curricular contents.

8.3 Implementing CLIL in the classroom

Throughout the MIEB the solid foundations of CLIL have been widely revealed and analyzed. However, as a teacher, the biggest issue is translating theory into daily practice in the classroom. To solve the lack of specific CLIL materials, as well as their application in the classroom, the criteria established by Peeter Mehisto and the examples of application in the classroom of his article "Criteria for producing CLIL learning materials" (Mehisto, 2012, 17-25) and the tips of John Clegg (2016) to plan CLIL lessons, have been taken as fundamental references. As a result, the following criteria will be followed in the design of CLIL lessons and materials:

- **Making the learning intentions and process visible to students** by using scaffolding to facilitate the content assimilation, using analogies to develop language skills and summarizing students' contributions to promote learning skills.
- **Fostering academic language proficiency** by means of subject-specific vocabulary, synonyms of technical words, highlighting key structures and phrases and giving contextual information.
- **Fostering learning skills development and learners' autonomy** with the aid of simple and guided exercises to introduce more difficult texts and concepts, doing pre-reading activities to find unfamiliar words that will be translated before reading the text and asking students to make diagrams and mind maps of the content.
- **Including formative assessment** like self and peer assessment especially by giving the rubrics to students together with the definition of the assigned tasks and projects.

- **Helping to create a safe learning environment** through providing language scaffolding in order to let students focus on understanding the content and avoiding this way learning overload, dividing the difficult concepts into little bits of knowledge easier to understand and providing visual organizers. Also, by fostering inclusion, respect of diversity, and team spirit in the activities in the classroom and in the workshop.
- **Fostering cooperative learning** via doing face to face and small groups activities tasks and projects and giving scaffolding such as phrases and expressions to manage and analyze the group work and results.
- **Incorporating authentic language and authentic language use** with the aid of authentic materials from different media including the Internet with authentic purposes related with the task or projects that have been assigned and with cultural connections to increase student knowledge of other cultures.

- **Fostering critical thinking** by posing challenging tasks and projects that demand from students the efforts to apply, analyze, evaluate and create technological documents and objects from the information given in the materials and students guide and from the

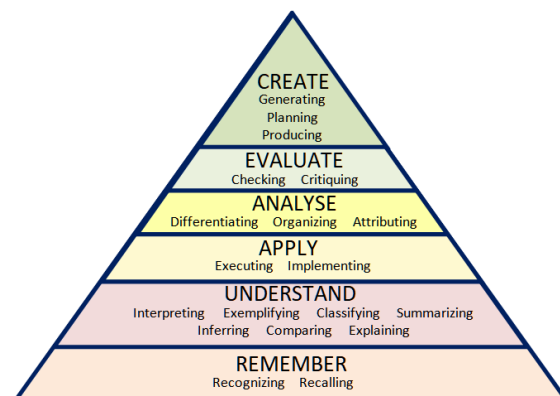


Figure 2. Revised Bloom's Taxonomy (Krathwohl, 2002)

information found by students on the Internet, following this way the Bloom's Taxonomy of educational objectives reviewed by Krathwohl et al.

- **Fostering cognitive fluency through scaffolding** of content, language and learning skills respectively through:
 - Using graphic organizers, calling attention to key ideas and concepts, providing sample structures and answers, using explanatory videos and animations.
 - Repeating new terms, simplifying texts, adding synonyms in parentheses, providing translations of some key words.

- Giving examples of correct procedures and answers, guiding students to assess activities and tasks, and providing the rubrics that will be used to evaluate their work.
- **Helping to make learning meaningful** by means of highlighting the connections with previous knowledge and between the new knowledge and students' lives, trying to connect it with students' interests, including cross-curricular contents and giving students opportunities to decide about the projects that they will have to elaborate.

9. ASSESSMENT

The assessment of the learning process of students that is considered in this course lesson plan is in accordance with the Spanish and Andalusian educational regulations. Thus, the assessment is designed as a continuous, formative and inclusive process. It is continuous because it is developed all along the course with the aim of detecting deficiencies in the process and implementing the necessary countermeasures as soon as possible. It is formative, because it has the intention to give to the students and to the teacher the opportunity to reflect about their learning and teaching processes in order to improve them permanently. And, it is inclusive, because its aim is to assess the global achievement of the educational stage objectives and the development of the key competences.

In addition, the evaluation of the subject Technology in 3rd of ESO has to be carried out taking into account the assessment criteria and the assessable learning standards defined in the Spanish educational legislation. These concepts were introduced by the [Organic Law 8/2013](#) and they are specified, for every subject, in the [Royal Decree 1105/2014](#). Furthermore, the Andalusian [Order of 14 July 2016](#) modifies the aforementioned royal decree adding some new assessment criteria and assessable learning standards. This order also states the relationships between every assessment criterion established for every subject and the different key competences.

9.1 Assessment criteria and learning standards

The following table presents the assessment criteria, the learning standards and the links with the key competences for every block that will be taken into account in the evaluation of the current lesson plan (Table 4). The discrepancies between the assessment criteria defined by the Royal Decree 1105/2014 and the assessment criteria added by the Order 07/14/2016 (i.e., the divergences in the correspondent assessable learning standards) are in italics and they have been solved taking the assessment criteria as the correspondent assessable learning standards and changing the tense of the verb to present simple. For the sake of simplicity, Table 4 also includes the contribution of the different assessment criteria to the final mark of every block of content.

3rd ESO. Technology.				
Block of contents 1: The process of solving technological problems				
Educational Content Order 07/14/2016	Assessment criteria Order 07/14/2016	Assessable learning standards Royal Decree 1105/2014	Key competences Order 07/14/2016	Criterion contribution to block mark (%)
<ul style="list-style-type: none"> • The phases of the technical project: <ul style="list-style-type: none"> ○ search for information ○ design ○ planning ○ construction and evaluation • The technical report • The classroom-workshop • Health and safety standards in the work environment 	1.1. Identify the necessary stages for the creation of a technological product from its origin to its commercialization, describing each one, investigating its influence on society and proposing improvements both from the point of view of its usefulness and its possible social impact	1.1.1. The student designs a prototype that provides a solution to a technical problem, through the process of solving technological problems	CAA, CSC, CCL, CMCT	20%
	<i>1.2. Perform the technical operations provided for in a work plan using material and organizational resources with criteria of economy, safety and respect for the environment and assessing the conditions of the work environment</i>	<i>1.2.1. The student performs the technical operations provided for in a work plan using material and organizational resources with criteria of economy, safety and respect for the environment and assessing the conditions of the work environment</i>	SIEP, CAA, CSC, CMCT	20%
	1.3. Perform the necessary technical documents in a technological process properly, respecting the associated standardization	1.3.1. The student prepares the necessary documentation for the planning and construction of the prototype	CMCT, SIEP, CAA, CD, CCL	40%

	<i>1.4. Use the Information and Communication Technologies for the different phases of the technological process</i>	<i>1.4.1. The student uses the Information and Communication Technologies for the different phases of the technological process</i>	CD, SIEP, CAA	10%
	<i>1.5. Give value to technological development in all its dimensions</i>	<i>1.5.1 The student gives value to technological development in all its dimensions</i>	CAA, CSC, CEC	10%
Block of contents 2: Technical expression and technical communication.				
Educational Content Order 07/14/2016	Assessment criteria Order 07/14/2016	Assessable learning standards Royal Decree 1105/2014	Key competences Order 07/14/2016	Criterion contribution to block mark (%)
<ul style="list-style-type: none"> • Drawing instruments • Sketches and plans • Scales • Annotation • Types of pictorial drawings: isometric and cavalier views and perspectives • Computer-aided design (2D and 3D) 	2.1. Represent objects through views and perspectives (isometric and cavalier) applying normalization criteria and scales	2.1.1. The student represents by means of views and perspectives objects and technical systems, through sketches and using standardized criteria of dimensioning and scale	CMCT, CAA, CEC	40%
	2.2. Interpret sketches as information elements of technological products	2.2.1. The student interprets sketches as information elements of technological products		
		2.2.2. The student produces the necessary documents related to a prototype using when necessary specific software		

	2.3. Explain and prepare the necessary technical documentation for the development of a technical project, from its design to its commercialization	2.3.1. The student explains and performs the necessary technical documentation for the development of a technical project, from its design to its commercialization	CMCT, CAA, SIEP, CCL, CEC	10%
	2.4. Know and handle the main technical drawing tools	2.4.1. The student knows and handles the main technical drawing tools	CMCT, CAA	20%
	2.5 Represent objects using computer-aided design applications	2.5.1 The Student represents objects using computer-aided design applications	CD, CMCT, SIEP, CAA, CEC	10%
Block of contents 3: Materials for technical use.				
Educational Content Order 07/14/2016	Assessment criteria Order 07/14/2016	Assessable learning standards Royal Decree 1105/2014	Key competences Order 07/14/2016	Criterion contribution to block mark (%)
<ul style="list-style-type: none"> • Materials for technical use: <ul style="list-style-type: none"> ○ plastics ○ stone materials ○ textile materials ○ glass and ceramic materials • Classification, properties and applications • Work techniques in the workshop • Environmental repercussions 	3.1. Analyze the properties of the materials used in the construction of technological objects, recognizing their internal structure and relating it to the properties they present and the modifications that may occur	3.1.1. The student explains how the mechanical properties of technical materials can be identified	CMCT, CAA, CCL	25%
	3.2. Manipulate and mechanize conventional materials by associating the technical documentation with the process of producing an object, respecting its characteristics and using appropriate techniques and tools with special attention to safety and health standards	3.2.1. The student identifies and manipulates the tools of the workshop in basic operations of forming materials for technical use	3.2.2. The student prepares a work plan for the work in the workshop with special attention to health and safety standards	SIEP, CSC, CEC

	3.3. Know and analyze the classification and most important applications of materials for technical use	3.3.1. The student knows and analyzes the classification and most important applications of technical materials. (plastics, stones, textiles, glass and ceramics)	CMCT, CAA, CCL	25%
	3.4. Identify the different materials with which objects of habitual use are manufactured	3.4.1. The student identifies the different materials with which objects of habitual use are manufactured (plastics, stones, textiles, glass and ceramics)	CMCT, CAA, CSC, CCL, CEC	25%
Block of contents 4: Structures and mechanisms: machines and systems.				
Educational Content Order 07/14/2016	Assessment criteria Order 07/14/2016	Assessable learning standards Royal Decree 1105/2014	Key competences Order 07/14/2016	Criterion contribution to block mark (%)
<ul style="list-style-type: none"> • Structures, loads and efforts <ul style="list-style-type: none"> ○ Elements of a structure and basic efforts to which they are subjected ○ Types of structures ○ Conditions that must be met by a structure: <ul style="list-style-type: none"> ▪ stability ▪ rigidity ▪ resistance • Mechanisms and machines <ul style="list-style-type: none"> ○ Simple machines ○ Transmission mechanisms and transformation of movement ○ Basic parameters of mechanical systems ○ Applications. Use of mechanical simulators 	4.1. Analyze and describe the efforts to which structures are subjected, experimenting with prototypes. Identify the different types of structures and propose measures to improve their strength, rigidity and stability	4.1.1. The student describes, based on written, audiovisual or digital information, the characteristics that constitute the types of structures 4.1.2. The student identifies the characteristic efforts and their transmission in the elements that form the structure	CMCT, CAA, CEC, SIEP, CCL	20%
	4.2. Observe, know and manage mechanical operators responsible for transforming and transmitting movements, in machines and systems, that are integrated into a structure	4.2.1. The student describes through written and graphic information how the different mechanisms transform or transmit the movement		

<ul style="list-style-type: none"> • Electricity. <ul style="list-style-type: none"> ○ Effects of electric currents ○ The electrical circuit: elements and symbols ○ Basic electrical quantities ○ Ohm's Law and its applications ○ Measurement of electrical quantities ○ Use of simulators for the design and testing of circuits, basic electronic devices and applications ○ Circuit assembly Electrical and electronic control ○ Electricity generation and transportation ○ Power stations ○ The electricity and the environment 		4.2.2. The student calculates the transmission ratio of different mechanical elements such as pulleys and gears		
		4.2.3. The student explains the function of the elements that form a machine or system from a structural and mechanical point of view		
		4.2.4. The student simulates mechanical circuits through specific software and through standardized symbols		
	4.3. Relate the effects of electric energy and its capacity to be transformed in other forms of energy. Know how electricity is generated and transported, schematically describing the operation of the different renewable and non-renewable power plants	4.3.1. The student explains the main effects of electric current	CMCT, CSC, CCL	25%
		4.3.2. The student uses the basic electrical quantities		
		4.3.3. The student designs basic electrical circuits using specific software and appropriate symbols and experiments with the elements that configure it		
	4.4. Experiment with measuring instruments and to obtain the basic electrical quantities. Know and calculate the main magnitudes of electrical and electronic circuits, applying the laws of Ohm and Joule	4.4.1. The student manipulates the measuring instruments to know the electrical quantities of basic circuits	CAA, CMCT	10%

	<i>4.5. Know the main elements of an electrical circuit. Design and simulate circuits with appropriate symbols and to assemble circuits with elementary operators from a predetermined scheme</i>	<i>4.5.1. The student designs and assembles basic electrical circuits using light bulbs, buzzers, LEDs, motors, batteries and connectors</i>	CD, CMCT, SIEP, CAA	10%
	<i>4.6. Design, build and control technical solutions to simple problems, using mechanisms and circuits</i>	<i>4.6.1. The student designs, builds and controls technical solutions to simple problems, using mechanisms and circuits</i>	SIEP, CAA, CMCT, CSC, CEC	5%
	<i>4.7. Know and assess the environmental impact of the generation, transport, distribution and use of energy, promoting greater efficiency and energy savings</i>	<i>4.7.1. The student knows and values the environmental impact of the generation, transport, distribution and use of energy, promoting greater efficiency and energy savings</i>	CSC, CMCT, CAA, CCL	10%

Block of contents 5: Initiation to programming and to control systems.

Educational Content Order 07/14/2016	Assessment criteria Order 07/14/2016	Assessable learning standards Royal Decree 1105/2014	Key competences Order 07/14/2016	Criterion contribution to block mark (%)
<ul style="list-style-type: none"> • Block based coding • Environments in programming environment • Code blocks in programming • Program flow of control • Interaction with the user and between objects • Introduction to everyday automatic systems: sensors, control elements and actuators • Programming the 	<i>5.1. Know and manage a programming environment distinguishing its most important parts and acquire the skills and knowledge necessary to develop simple computer programs using code blocks</i>	<i>5.1.1. The student knows and manages a programming environment distinguishing its most important parts and acquires the skills and knowledge necessary to develop simple computer programs using code blocks</i>	CD, CMCT, CAA, CCL, SIEP	30%
	<i>5.2. Analyze a problem and develop a flow chart and a program to solve it</i>	<i>5.2.1. The student analyzes a problem and develops a flow chart and a program to solve it</i>	CMCT, CD, SIEP, CAA	30%

control of simple automatic devices	5.3. Identify automatic systems for everyday use. Understand and describe its operation	5.3.1. The student identifies automatic systems for everyday use and understands and describes its operation	CMCT, CD, SIEP, CAA, CCL.	20%
	5.4. Develop a structured program for the control of a prototype	5.4.1. The student develops a structured program for the control of a prototype	CMCT, CD, SIEP. CAA	20%

Block of contents 6: Information and Communication Technologies.

Educational Content Order 07/14/2016	Assessment criteria Order 07/14/2016	Assessable learning standards Royal Decree 1105/2014	Key competences Order 07/14/2016	Criterion contribution to block mark (%)
<ul style="list-style-type: none"> • Hardware and software <ul style="list-style-type: none"> ○ The computer and its peripherals ○ Operating systems ○ Concepts of free and proprietary software ○ Types of licenses and uses ○ Basic office tools: word processors, editors of presentations and spreadsheets ○ Installation of software and basic maintenance and tasks • Internet: concepts, services, structure and operation • Network security • Web services: search engines, collaborative web documents, clouds, blogs, wikis, etc. • Access and availability of 	6.1. Distinguish the operative parts of a computer, locating the connections, its storage units and its main peripherals	6.1.1. The student identifies the parts of a computer and is able to replace and assemble key parts	CD, CMCT, CCL	20%
		6.1.2. The student installs and manages basic programs and software		
		6.1.3. The student uses computer equipment and electronic devices properly		
	6.2. Use information exchange systems securely. Maintain and optimize the use of a computer (install, uninstall and update programs, etc.)	6.2.1. The student manages web spaces, platforms and other information exchange systems	CD, SIEP	20%
		6.2.2. The student knows the security measures applicable to each risk situation		
	6.3. Use a computer develop and communicate technical projects	6.3.1. The student develops technical projects with a computer and is able to present and disseminate them	CMCT, CD, SIEP, CSC, CCL	15%

shared resources in local networks	6.4. Apply basic skills to manage operating systems, distinguishing free software from proprietary	6.4.1. The student applies basic skills to manage operating systems, distinguishing free software from proprietary	CD, SIEP, CCL.	10%
	6.5. Apply basic skills use elementary office tools (word processor, presentation editor and spreadsheet)	6.5.1. The student applies basic skills to use elementary office tools (word processor, presentation editor and spreadsheet)	CD, SIEP, CCL.	10%
	6.6. Know the concept of the Internet, its structure, operation and basic services, using them safely and responsibly	6.6.1. The student knows the concept of the Internet, its structure, operation and basic services, and uses them safely and responsibly	CD, CAA, CSC	10%
	6.7. Use the Internet securely to search, publish and exchange information through web services, correctly citing the type of license of the content (copyright or collaborative licenses)	6.7.1. The student uses the Internet securely to search, publish and exchange information through web services, and cites correctly the type of license of the content (copyright or collaborative licenses)	CD, CAA, CSC, SIEP, CLL.	10%
	6.8. Give value to the impact of new information and communication technologies in today's society	6.8.1. The student gives value to the impact of new information and communication technologies in today's society	CD, CSC, CEC.	5%

Table 4: Assessment criteria and assessable learning standards for the different blocks of contents of the subject Technology in 3rd course of ESO.

In addition, the [Instructions of 15 May 2019, from the General Directorate of Educational Planning and Evaluation, about the organization and operation of bilingual education for the course 2019/2020](#) determine important aspects in the assessment of the students under CLIL, such as:

- Linguistic competence of students in the second language will be assessed by the English Language teachers (instruction 7, point 1).
- Teachers of non-linguistic areas will give priority to the objectives of their own subjects over the language production that will not have a negative influence in the final assessment of their subject (instruction 7, point 2).
- Contents taught in the second language have to be evaluated in that language and teachers of non-linguistic areas will take into account the percentage of use of the second language as vehicular teaching language to design the assessment tools (instruction 7, point 3).

9.2 Formative assessment

Formative assessment is a key factor in CLIL. It can be seen as a powerful part of the learning process because formative assessment activities provide relevant feedback to students, so they can be aware of their performance and improve before the summative assessment takes place. Thus, formative assessment gives students the opportunity to reflect about their own learning and guides them to select the key concepts and procedures training them to perform the summative assessment. It provides also important feedback to the teacher in order to adjust the teaching practice and design the summative assessment. Therefore, some of the planned activities of formative assessment will be:

- Producing summaries, mind maps and graphic organizers
- Producing visual representations and flash cards
- Producing short videos explaining important topics
- Collaborative assessment like explaining topics to peers, reading and commenting colleague's summaries
- Conducting self-assessment of their tasks and projects using the rubrics

This formative assessment will take place as part of our daily work. Rubrics will be delivered together with the definition of tasks and projects so that students know how their work will be assessed in advance.

9.3 Summative assessment

Although the formative assessment gives ongoing feedback about the performance of students, it can be considered as part of the learning process and is not graded. However, the Spanish legislation requires teachers to determine if students are meeting the assessable learning standards and criteria and this evaluation has to be feed backed to students and families at least three times along the year in terms of marks that are graded from 1 to 10 in ESO. For that reason, the following summative assessment instruments are considered in this course lesson plan, depending on the activity to be carried out, to grade the achievement of the assessment criteria:

- Observation checklists used in regular lessons in the ordinary classroom and, especially, during the workshop sessions to assess participation and oral production.
- Written and oral test and quizzes which can include multiple choice, fill in the blanks, matching, and short answers.
- Presentations at the end of the tasks and project assignments.
- Project technical documents.

The percentage that each type of summative assessment instrument represents on the final mark varies depending on the specific instruments planned and applied in the development of every didactic unit. These percentages are always communicated to the students in the definition of projects, tasks, and rubrics.

9.4 Grading criteria

The different assessment instruments will be evaluated with marks from cero points (not done) to ten points (fully and perfectly accomplished). Oral questions and short tests of two three questions will be perform regularly as a way monitor the daily work of students.

Rubrics will be used to evaluate the technical documents, the final technological objects built by students and their presentations. Examples of the rubrics of tasks and projects that are given to students can be seen together with the sample materials. As we have seen during these MIEB, it is very important that students are

aware of how they are going to be evaluated. For that reason, the rubrics will be given to student together with the definition of the main assignment in tasks and projects.

The final mark of every block of contents will be calculated as the weighted average of all the assessment instruments used in the block of content. The weights of the different assessment instruments are included in the summary tables of every didactic unit and the weights of every assessment criterion are specified in Table 4.

Following Instruction 7, point 2 of [Instructions of 15 May 2019](#) as a teacher of a non-linguistic area I will give priority to the objectives of the Technology subject over the language production in English that will not have a negative influence in the final assessment. On the contrary, the language production and language skills will have always a positive influence by means of extra points that will reward the effort in using the English language in class and in their assignments. BICS and CALPS will be taken into account to award the extra points although fluency and intelligibility will be considered over accuracy.

9.5 Assessment of the teaching practice

In addition to the teacher's notes based on his own reflection that are taken on a daily basis in each of the lessons and at the end of every didactic unit, the assessment of the teaching practice is planned to be carried out more formally at the end of each of the three terms of the course. A survey ([Appendix II](#)) has been planned as an instrument to obtain students' feedback to find out what contents and activities they have found more complex and which activities have been more enriching for them.

Once this feedback is collected, a deeper reflection will be carried out to establish, whenever possible, mechanisms for improving the teaching process such as modification of activities to be carried out, modification of the adaptations that have been made, the timing of activities, the organization of the classroom and groups or the change in resources to be used. The modifications will be incorporated into the lessons plans of the following units and will be taken into account for future courses.

10. ATTENTION TO DIVERSITY

In the design of the attention to students with special education needs it is necessary, once again, to refer to the [Instructions of 15 May 2019](#) since instruction 6 clearly states, in its point 1, that the Bilingual Program in Andalusia is aimed at all students and therefore, methodological and evaluation alternatives have to be designed in accordance with the students' needs, as it is done in non-bilingual tuition, when using the English language as vehicular language for the instruction.

For this reason, the use of inclusive methodologies that allow any student to be excluded, lagged or oblivious to the learning process has been planned. Once more CLIL and cooperative learning appears as tools to achieve the integration of all students as they favour active participation and sense of responsibility in their learning and thus motivation. The collaborative learning opportunities offered by work by tasks and by projects as well as the extensive use of information and communication technologies in the realization of these are fundamental to achieve this purpose.

Likewise, the formative assessment gives the necessary feedback to promptly differentiate students' instruction in response to their performance in the assessment activities. This is why in this lesson plan I have include corrective activities for those students that do not reach the standards and enrichment activities for those that need additional challenges and instruction opportunities due to their higher level. This strategy means to level the instruction and the assessment to adapt it to the diversity in learning styles and learning capacities and skills.

Furthermore, for each didactic unit, reinforcement and recovery activities and exercises have been planned to ensure that students who do not achieve a positive qualification of their learning process can reach the necessary degree of acquisition of basic skills and objectives. Finally, a written recovery test has been scheduled prior to each evaluation session.

11. DIDACTIC UNITS

The summaries of the didactics units that have been prepared for this course lesson plan are presented in this section. They have been elaborated taking as a starting point the template for the elaboration of the integrated curriculum presented in Appendix 2 of unit three of the subject Integrated Curriculum Design of this MIEB but simplifying it for the integration of the subjects Technology and English Language.

11.1 Students' book analysis

As mentioned earlier, prior to the design of the teaching units, the main shortcomings of current CLIL materials in Secondary Education were taken into account. In particular, two textbooks that are widely used to teach Technology in Andalusian schools have been taken into account. The books analyzed were: Technology 3. ESO Student's Book, Dual Initiative project of Oxford University Press (Márquez, 2016) and Technology II of the Teide publishing house (Resa i Blanquez, 2015).

Actually, both textbooks are literal translations of the existing Spanish versions, and my experience has shown me that students are not able to use these books autonomously due to their high level in both vocabulary and grammar. To make an objective analysis of the CLIL characteristics of these materials, a simple checklist has been developed with the main principles of the CLIL methodology, which has been applied to both books. The findings are shown in Tables 5 and 6.

	Inadequate (1)	Good (2)	Optimal (3)	Mark
Content and language integration	Completely in English. Activities with integration of content and language are present but in little quantity			2
	Multimedia support and Internet links are available			2
Communication	Low number of cooperative activities, tasks, projects			1
	Does not offer examples of communicative structures			1
	Low number of listening, speaking, discussing activities			1
	Mostly written and individual activities			1
Cognition	Texts are too complex and do not help students in their cognitive progression			1
	Projects are too complex			1
	Visual scaffolding and key words. Reduced scaffolding for productive skills			2
	Has an important section dedicated to self evaluation			3
Culture	No cultural references to English speaking countries			1
	No cultural references to other European countries			1
Total				17/36

Table 5. Findings about the book Technology 3. Inicia Dual. Oxford University Press.

	Inadequate (1)	Good (2)	Optimal (3)	Mark
Content and language integration	Completely in English. Activities with integration of content and language are present but in little quantity			2
	Reduced multimedia support and Internet links are available			1
Communication	Very low number of cooperative activities, tasks, projects			1
	Does not offer examples of communicative structures			1
	Low number of listening, speaking, discussing activities			1
	Mostly written and individual activities			1
Cognition	Texts are too complex and do not help students in their cognitive progression			1
	Complexity of projects is too demanding			2
	Visual scaffolding and key words. No scaffolding for productive skills			2
	Reduced section dedicated to self evaluation			1
Culture	No cultural references to English countries			1
	No cultural references to other European countries			1
Total				15/36

Table 6. Findings about the book Technology II. Editorial Teide.

The findings show that these books are far from following CLIL's basis principles and methodology especially when it comes to communication and culture. In the design of didactic units, this proposal makes extensive use of cooperative activities, tasks, and projects that have been included together with cultural references to English speaking countries.

11.2 Timing

Table 7 includes the sequence and timing of the didactic units. The number of sessions of every didactic unit has been planned to take into account that the subject Technology in 3rd of ESO have 3 sessions of an hour according to the Appendix IV of the [Order of 14 July 2016](#), and the [Resolution of 28 May 2019 of the Territorial Delegation of the Ministry of Education, Sport, Equality, Social Policies and Conciliation in Jaén, which dictates the rules that will govern the school calendar for the academic year 2019/2020 in all school centres of the province with the exception of university centres](#) that establishes the beginning and the end of the academic year. Taking both documents into consideration, the current academic year has a total 103 sessions to develop the lesson plan. However, the number of sessions considered to design the plan was 95. This choice was taken to elaborate a more realistic plan foreseeing the loss some lessons in each term due to unforeseen causes.

Unit	Name	Sessions
1	Project planning using software tools	12
2	Drawing technological objects in perspective	12
3	Materials for technical use	14
4	Designing and building structures and mechanisms	16
5	Designing and assembling electrical circuits	15
6	Programming control systems	14
7	Information and communication technologies	12

Table 7: Didactic units and sessions.

11.3 Didactic Unit 1: Project planning using software tools

DIDACTIC UNIT No.1: PROJECT PLANNING USING SOFTWARE TOOLS

Justification: This didactic unit is related to the content Blocks 1 and 6 of the [Order of 14 July 2016](#) for the subject Technologies

Timing: 12 sessions, 23rd of September to 18th of October

Objectives

Technology

- Develop a simple technological project that solves a problem posed following the phases of the technological method
- Learn to work collaboratively in the planning and implementation of a technological project
- Use the computer for the search, treatment, organization, presentation and storage of project information
- Use text, graphics, presentations and spreadsheets editing tools to write the technical documents and to follow up and present projects

English

- Use the structures There is / There are / There was / There were in affirmative, negative and interrogative sentences in written form in the project documents and in oral form in the project presentation

Contents

Technology

- Stages of the technological process
- Web browser Chromium
- Gmail
- Google Drive Documents, Google Drive Spreadsheets, Google Drive Presentations
- Google Drive Project Planning add-ons

English

Grammar:

There is / There are / There was / There were

Vocabulary

File, document, sheet, spreadsheet, slide, save, copy, paste, cut, insert, format, add-on, hyperlink, table, column, row, cell, formula, need, idea, design, budget, tools, construction, measurement, verification

Cultural elements: The Big Ben and the Houses of Parliament**Linguistic competence**

Reading	Writing	Speaking- Conversation	Listening
Texts on the internet and texts provided by the teacher	Write the project documents	Project discussion within the team and project presentation	Listen to the teacher directions and to the mates' presentations

Activities (Ac), Tasks (Tk), Projects (Pj) / Timing / Grouping / Resources

Creating a Google account	Ac	1/2 session	Pair work & individual	Computers room
Explaining the Google Drive access and types of files	Ac	1/2 session	Class work	Computers room
Reading, listening and filling in the blanks activity The technological process	Ac	1 session	Pair work & Individual	Computers room
Creating a Google Drive document following all the steps of the technological process	Tk	2 sessions	Pair work	Computers room
Creating a Google Drive spreadsheet with the basic budget of the project. (Ac/ 1Session / Individual-Class work)	Tk	2 sessions	Pair work	Computers room
Designing and building a desk organizer that resembles the London Big Ben and the Houses of Parliament with at least three stationery holders using reused materials (cardboard, plastic bottles, cans ...)	Pj	6	Team work	Workshop & Computers room

Attention to diversity.

Collaborative work in pairs and teams and teacher support

Assessable learning standards acc. to Table 4.

1.1.1 / 1.2.1 / 1.3.1 / 1.4.1 / 1.5.1 / 6.3.1 / 6.5.1 / 6.7.1

Assessment instruments:

Rubrics of tasks and project. Class log to record students' participation and attitude, use of English and answers to oral questions

11.4 Didactic Unit 2: Drawing technological objects in perspective

DIDACTIC UNIT No.2: Drawing technological objects in perspective	
Justification: This didactic unit is related to the content Block 2 of the Order of 14 July 2016 for the subject Technologies	
Timing: 12 sessions, 21 st of October to 15 th of November	
Objectives	
Technology	
<ul style="list-style-type: none"> • Interpret technical drawings correctly • Use the technical drawing to represent simple objects • Know and respect the basic drawing standards and annotation criteria • Make simple drawings in two and three dimensions using computer tools including the possibility to print them in 3D 	
English	
<ul style="list-style-type: none"> • Use the present simple and present continuous to describe actions related with the realization of technical drawings 	
Contents	
Technology	
<ul style="list-style-type: none"> • Isometric and cavalier perspectives • Standardization, scale and dimensioning in technical drawing • Measured with the tape measure, micrometer and caliper • Design in 3D with FreeCAD • 3D Printing with Prusa printer 	
English	
Grammar:	Vocabulary
Present simple and Present continuous	Front view, side view, top view, profile, scale, annotation, isometric perspective, cavalier perspective, axis, graphs, caliper, micrometer, drum, set squares, draft, parallels, perpendiculars, angles
Cultural elements: British red telephone boxes	

Linguistic competence				
Reading	Writing	Speaking- Conversation	Listening	
Texts on the internet and texts provided by the teacher	Write texts describing drawings and objects	Describe objects in oral presentations	Listen to the teacher directions and to mates' presentations	
Activities (Ac), Tasks (Tk), Projects (Pj) / Timing / Grouping / Resources				
Drawing a red telephone box in 2D and measuring objects	Ac	2 sessions	Pair work & individual	Classroom
Drawing a red telephone box in isometric and cavalier perspectives	Ac	4 sessions	Pair work & individual	Classroom
Drawing a red telephone box in 3D using FreeCAD	Tk	4 sessions	Pair work	Computers room
Introduction to 3D printing with a Prusa printer	Ac	1 session	Class work	Workshop
Printing a red telephone box with a Prusa printer	Ac	1 session	Class work	Workshop
Attention to diversity. Collaborative work in pairs and teacher support				
Assessable learning standards acc. to Table 4. 2.1.1 / 2.2.1 / 2.2.2 / 2.3.1 / 2.4.1 / 2.5.1				
Assessment instruments: Rubric of tasks. Correction of activities. Class log to record students' participation and attitude, use of English and answers to oral questions				

11.5 Didactic Unit 3: Materials for technical use

DIDACTIC UNIT No.3: Materials for technical use

Justification: This didactic unit is related to the content Block 3 of the [Order of 14 July 2016](#) for the subject Technologies

Timing: 14 sessions, 18th of November to 20th of December

Objectives

Technology

- Analyze the properties of plastics, textiles, ceramics, stones, and glass as materials used in the construction of technological objects
- Know the basic techniques of manufacturing those materials
- Manipulate and mechanize plastics and textiles
- Value the importance of those materials in daily life as well as the environmental impact produced by their exploitation, transformation and disposal
- Know the benefits of the recycling those materials to protect the environment

English

- Use the past simple and past continuous to describe the use of materials and the work with them in past situations

Contents

Technology

- Production, properties, classification and applications of different types of plastics, textiles, ceramics, stones, and glass

English

Grammar:

Past simple and Past continuous

Vocabulary

Monomer, polymer, thermoplastics, thermosettings, elastomers, molding, injection molding, extrusion, calendaring, vacuum forming, drilling, sanding, joining, filing, soldering, wool, silk, cotton, linen, nylon, polyester, lycra, rayon, quarrying, limestone, marble, granite, slate, plaster, lime, cement, concrete, fiber-cement, terrazzo, clay, terracotta, earthenware, refractory, stoneware, porcelain, glass molding and casting, laminated glass

Cultural elements: Characteristic building materials of English cottages.

Linguistic competence

Reading	Writing	Speaking- Conversation	Listening
Texts on the internet and texts provided by the teacher	Write documents describing the materials of technological objects and their properties	Speaking about materials and their properties in oral presentations and task and project work	Listen to the teacher directions and to the mates' presentations

Activities (Ac), Tasks (Tk), Projects (Pj) / Timing / Grouping / Resources

Life of a bottle. Listening and writing activities	Ac	1 session	Pair work & individual	Classroom
Types of plastics. Mind map with coggle	Tk	2 sessions	Pair work	Computers room
Types of plastics presentations	Pj	2 sessions	Group work	Classroom
Types of textiles. Mind map with coggle	Tk	2 sessions	Pair work	Computers room
Types of stones. Mind map with coggle	Tk	2 sessions	Pair work	Computers room
Types of ceramics. Mind map with coggle	Tk	2 sessions	Pair work	Computers room
Process of manufacturing glass. Mind map with coggle	Tk	2 sessions	Pair work	Computers room
Presentations. Materials in English cottages	Tk	1 session	Pair work	Classroom

Attention to diversity.

Collaborative work in pairs and teams and teacher support

Assessable learning standards acc. to Table 4.

3.1.1 / 3.2.1 / 3.2.2 / 3.3.1 / 3.4.1

Assessment instruments:

Rubrics of tasks and project. Class log to record students' participation and attitude, use of English and answers to oral questions

11.6 Didactic Unit 4: Designing and building structures and mechanisms

DIDACTIC UNIT No.4: Designing and building structures and mechanisms	
Justification: This didactic unit is related to the content Blocks 4, 1, 2, 3 and 6 of the Order of 14 July 2016 for the subject Technologies	
Timing: 16 sessions, 08 th of January to 14 th of February	
Objectives	
Technology	
<ul style="list-style-type: none"> • Know the basic elements of structures and techniques to provide them with greater, rigidity, stability, and flexibility • Know the basic mechanisms of transmission and transformation of movement and their applications • Design and build articulated model of structures and mechanisms 	
English	
<ul style="list-style-type: none"> • Use the present perfect simple to describe actions that were done in the past design and construction of technological objects 	
Contents	
Technology	
<ul style="list-style-type: none"> • Elements of structures and mechanisms • Classification of the mechanisms • Mechanisms of linear transmission • Turn transmission mechanisms • Mechanisms of movement transformation • Movement control mechanisms. • Energy absorption mechanisms • Coupling and clamping mechanisms • Transmission relations • Gear or pulley trains 	
English	
Grammar:	Vocabulary
Use the future simple to talk and write about the future design and construction of technological objects	Lever, pulley, block and tackle, friction wheels, belt drive, gears, chain, wheel, rack and pinion, nut and bolt, crank, crank

		and rod, spring, clutch, ratchet, freewheel			
Cultural elements: The London Tower bridge					
Linguistic competence					
Reading	Writing	Speaking- Conversation		Listening	
Texts on the internet and texts provided by the teacher	Write the project documents and an essay about the London Tower bridge	Project discussion within the team and project presentation		Listen to the teacher directions and to the mates' presentations	
Activities (Ac), Tasks (Tk), Projects (Pj) / Timing / Grouping / Resources					
Reading and listening activity. Structures		Ac	1 session	Pair work & individual	Classroom
Reading and listening activity. Mechanisms		Ac	1 session	Pair work & individual	Classroom
Mind map of Mechanisms using GoCongr		Tk	2 sessions	Pair work & Individual	Computers room
Design and build an articulated model of the London Tower bridge using, cardboard, plywood and plastic		Pj	10 sessions	Team work	Workshop & Computers room
Presentations of the London Tower bridge		Tk	2 sessions	Team work	Classroom
Attention to diversity. Collaborative work in pairs and teams and teacher support					
Assessable learning standards acc. to Table 4. 4.1.1 / 4.1.2 / 4.2.1 / 4.2.4 / 4.2.3 / 4.2.4 / 1.1.1 / 1.2.1 / 1.3.1 / 1.4.1 / 1.5.1 / 2.3.1 / 3.2.1 / 6.3.1 / 6.5.1 / 6.7.1					
Assessment instruments: Rubrics of project and tasks, correction of activities. Class log to record students' participation and attitude, use of English and answers to oral questions					

11.7 Didactic Unit 5: Designing and assembling electrical circuits

DIDACTIC UNIT No.5: Designing and assembling electrical circuits	
Justification: This didactic unit is related to the content Blocks 4, 1, 2, 3 and 6 of the Order of 14 July 2016 for the subject Technologies	
Timing: 15 sessions, 17 th of February to 27 th of March	
Objectives	
Technology	
<ul style="list-style-type: none"> • Know and calculate the basic electrical quantities in elementary electrical circuits • Differentiate between sinusoidal alter current and direct current • Interpret and design elementary electrical circuits through the symbols of the elements of a circuit • Analyze, design, and assemble simple electrical circuits 	
English	
<ul style="list-style-type: none"> • Use the future simple to talk and write about the future design and construction of technological objects 	
Contents	
Technology	
<ul style="list-style-type: none"> • Electrical circuits: representation and symbols • Series, parallel and mixed circuits • Electrical quantities: voltage, intensity, resistance • Ohm's law • Energy and power • Design and assembly of basic electrical circuits 	
English	
Grammar:	Vocabulary
Future simple	generators, loads, battery, bulb, lamp, motor, bell, relay, switch, fuse, ammeter, voltmeter, multimeter, circuit, electric vs. electrical, resistors, resistance, voltage, volts, Intensity, amperes, power, watts, energy, joules
Cultural elements: Thomas Edison	

Linguistic competence					
Reading	Writing	Speaking- Conversation	Listening		
Texts on the internet and texts provided by the teacher	Write the project documents and essay about Thomas Edison and Nikola Tesla	Project discussion within the team and project presentation	Listen to the teacher directions and to the mates' presentations		
Activities (Ac), Tasks (Tk), Projects (Pj) / Timing / Grouping / Resources					
Reading and listening activities. Elements of circuits. Symbols. Types of circuits	Ac	2 session	Pair work & Individual	Classroom	
Electrical quantities. Ohms law. Exercises	Ac	2 session	Class work Pair work & Individual	Classroom	
Measuring Voltage, Intensity and Resistance with the multimeter	Ac	1 session	Pair work & Individual	Classroom	
Simulating circuits with tinkercad	Tk	4 sessions	Pair work	Computers room	
Video listening and writing activity. Thomas Edison and Nikola Tesla	Ac	1 sessions	Pair work	Classroom	
Design and assemble an electrical circuit able to raising and lowering the bridge of the London Tower model created in the previous unit	Pj	5 sessions	Team work	Workshop & Computers room	
Attention to diversity. Collaborative work in pairs and teams and teacher support					
Assessable learning standards acc. to Table 4. 4.3.1 / 4.3.2 / 4.3.3 / 4.4.1 / 4.5.1 / 4.6.1 / 4.7.1 / 1.1.1 / 1.2.1 / 1.3.1 / 1.4.1 / 1.5.1 / 2.3.1 / 3.2.1 / 6.3.1 / 6.5.1 / 6.7.1					
Assessment instruments: Rubrics of tasks and project. Class log to record students' participation and attitude, use of English and answers to oral questions					

11.8 Didactic Unit 6: Programming control systems

DIDACTIC UNIT No.6: Programming control systems	
Justification: This didactic unit is related to the content Block 5 of the Order of 14 July 2016 for the subject Technologies	
Timing: 14 sessions, 30 th of March to 08 th of May	
Objectives	
Technology	
<ul style="list-style-type: none"> •Analyze automatic systems, understand their operation, their types and the elements that form them •Solve problems through designing and programming control systems •Know different types of sensors, and how to use them •Know the characteristics of actuators used to develop a robot or control system •Use a controller or programmed digital circuit to develop control systems that employ sensors and actuators 	
English	
<ul style="list-style-type: none"> •Use first and second conditionals to talk and write about the work of program controlled systems 	
Contents	
Technology	
<ul style="list-style-type: none"> •Control systems •Sensors, actuators and control elements •Robots •Programming environment and program blocks •Graphic programming •Use of Arduino to control simple automatic systems 	
English	
Grammar:	Vocabulary
1 st and 2 nd conditionals	Sensors, actuators, control elements, amplifiers, LEDs, motors, cylinders, program flow, variable, loops, digital and analogue inputs and outputs, signals
Cultural elements: The ENIAC computer	

Linguistic competence				
Reading	Writing	Speaking- Conversation	Listening	
Texts on the internet and texts provided by the teacher	Write the task documents and the essay about supercomputers	Task discussion within the team and presentations	Listen to the teacher directions and to the mates' presentations	
Activities (Ac), Tasks (Tk), Projects (Pj) / Timing / Grouping / Resources				
Listening, reading and writing activities. Elements of a control system.	Ac	2 session	Pair work & Individual	Computers room
Simulating Arduino with Tinkercad	Tk	2 sessions	Pair work	Computers room
Programming with the Arduino IDE	Ac	4 sessions	Pair work	Computers room
Design and program a traffic light using Arduino , LEDs and sensors	Pj	6 sessions	Team work	Workshop & Computers room
Attention to diversity. Collaborative work in pairs and teams and teacher support				
Assessable learning standards acc. to Table 4. 5.1.1 / 5.2.1 / 5.3.1 / 5.4.1				
Assessment instruments: Rubrics of tasks and project. Class log to record students' participation and attitude, use of English and answers to oral questions				

11.9 Didactic Unit 7: Information and Communication Technologies

DIDACTIC UNIT No.7: Information and Communication Technologies	
Justification: This didactic unit is related to the content Blocks 6 of the Order of 14 July 2016 for the subject Technologies	
Timing: 12 sessions, 11 th of May to 5 th of June	
Objectives	
Technology	
<ul style="list-style-type: none"> • Know the different types of computer networks and the Internet • Know different ways to obtain, manage and share digital information • Use the cloud as a means to store and share information • Know the different rights of use of programs and data obtained in the Internet • Create information by publishing web pages and blogs • Create a Personal Learning Environment PLE 	
English	
<ul style="list-style-type: none"> • Use the past perfect simple to speak and write about the origins of Information and Communication Technologies and their evolution 	
Contents	
Technology	
<ul style="list-style-type: none"> • Open and closed source software: free, proprietary, commercial, Freeware • Creative Commons licenses • Creation of a blog • Creation of a website • Social networks and network security 	
English	
Grammar:	Vocabulary
Past perfect simple	World wide web, land, wand, Wi-Fi, hardware, software, proprietary, commercial, freeware, malware, shareware, virus, antivirus, cloud, blog, website, wiki, operative system, Personal Learning Environment
Cultural elements: The origin and evolution of Internet	

Linguistic competence				
Reading	Writing	Speaking- Conversation	Listening	
Texts on the internet and texts provided by the teacher	Write the tasks documents and presentations about Internet, and social networks	Task discussion within the partner	Listen to the teacher directions and to the mates' presentations	
Activities (Ac), Tasks (Tk), Projects (Pj) / Timing / Grouping / Resources				
Reading, listening and writing activities about the origin of the Internet and facebook	Ac	2 session	Pair work & individual	Computers room
Reading, listening and writing activities about network security and Creative Commons Licenses	Ac	2 session	Pair work & individual	Computers room
Creating a website with WIX	Tk	3 session	Pair work	Computers room
Creating a blog with Blogger	Tk	3 sessions	Pair work	Computers room
Crating a PLE with Symbaloo	Tk	2 sessions	Pair work	Computers room
Attention to diversity. Collaborative work in pairs and teams and teacher support				
Assessable learning standards acc. to Table 4. 6.1.1 / 6.1.2 / 6.1.3 / 6.2.1 / 6.2.2 / 6.3.1 / 6.4.1 / 6.5.1 / 6.6.1 / 6.7.1 / 6.8.1				
Assessment instruments: Rubrics of tasks and correction of activities. Class log to record students' participation and attitude, use of English and answers to oral questions				

11.10 Development of didactic units

The conceptual framework of the 4Cs developed by Coyle has been taken into account in the design of the teaching units presented in this document. Furthermore, CLIL's methodological principles should also be taken into account when bringing them to the classroom.

- **Content:** Subject-specific contents, cross-curricular elements and language contents are integrated. This integration is promoted in the lessons not only through the use of the L2 in the materials but also in the oral production of the teacher and students. Thus, the contents of Technology are learned through English as the tuition language. At the same time, the foreign language is learned through its use. The specific vocabulary of the subject is defined and learned in English and Spanish while English grammar and structures are reviewed in the classroom.
- **Communication:** The collaborative design of these didactic units that include peer work, tasks, and projects extensively, force the need for communication among students creating the communicative context. The learning process is student-centered. It is the students' cooperation and collaboration that drives the learning of the contents and the development of skills. The teacher guides the students to complete the activities, tasks, and projects and offers help and scaffolding when needed.
- **Cognition:** The activities have been designed so every unit is more complex than the previous one, trying to be challenging and appealing enough to motivate students. The creation of mind maps has been included to help students to develop the skills to extract and organize the main ideas and contents producing these graphic organizers. A balance of initial activities of lower-order thinking skills (LOTS) followed by activities with higher-order thinking skills (HOTS) have been included.
- **Culture:** In every didactic unit there is a cultural element around which students will have to read, write, speak and listen. This way they can acquire intercultural awareness that is essential to CLIL, developing attitudes and skills like respect for otherness, the discovery and interaction

with other cultures or the behavioral flexibility among others (Byram, Nichols, and Stevens, 2001).

Finally, in the materials and during the lessons, scaffolding is permanent and varied to let students build their knowledge. Thus, in addition to the collaborative scaffolding offered by peers in activities, tasks and projects, other forms of scaffolding like the use of adapted and simple texts and expressions, templates and examples of productive structures and activities, initial guided tasks and projects, glossaries of keywords, dictionaries, or even the use of the mother tongue when needed, are among the different types of scaffolding offered to students.

12. CONCLUSIONS

This dissertation summarises my efforts to critically analyze my personal experience of ten years teaching in bilingual groups. This Masters' thesis was intended to address how should be CLIL be implemented in the subject Technology in Secondary Education using the theoretical underpinnings acquired in this Master's Degree. The overarching objective of my dissertation was to synthesise the learning outputs of the MIEB in a teaching plan that may contribute to a successful implementation of CLIL with my own students.

It has to be noticed that the success of CLIL programs does not only depend on teachers and their performance in the classroom, as there are other factors which do influence the teaching and learning process (e.g. the support of the school management, the effective collaboration among teachers, the involvement of the families and the support of the educational administrations). However, to my best understanding, teachers' work and commitment to the appropriate implementation of CLIL principles in the classroom are essential factors to facilitate that students improve their language competence and use the additional language to learn subject-contents.

The didactic proposal unfolded in this document is an attempt to develop CLIL in my school boosting students' participation and motivation. The teaching units also required the systematic planning of CLIL principles and the introduction of TBL and PBL in order to promote the development of linguistic competence in an area such as Technology, where projects and teamwork are of paramount importance. Likewise, some materials have been proposed to carry out the development of the skills and competencies of the subject through the English language, given the importance of the materials for the practical implementation of CLIL in the classroom.

Unfortunately, the work in the elaboration and compilation of high-quality CLIL materials initiated by the educational administration of Andalusia⁶ was unfinished and is insufficient in many subjects. In the specific case of Technology, only four didactic sequences are available in the main area of the multilingual portal and no one is accessible among the materials prepared by teachers and compiled by the Teachers'

⁶ [Andalusian multilingual portal.](#)

Centres⁷ (CEP's). Therefore, this document aims to fill a gap in the field, as the proposal included in this Masters' thesis may help teachers in bilingual sections, especially in the subject of Technology.

In my opinion, the initial efforts dedicated by the Andalusian educative administration to select and concentrate on a specific website CLIL quality materials elaborated by teachers should continue because the implementation of CLIL in our schools demands real CLIL materials to support teachers practice our classrooms.

⁷ [CEP's compilation of CLIL Materials prepared by teachers.](#)

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15. APPENDIXES

Appendix I CLIL sample materials

This section presents how the materials included in current students' books that have been edited in English as a direct translation from the Spanish version can be improved. Namely, we suggest how they can be adapted into CLIL materials to be used in the classroom and how real materials taken from the Internet can also be used. Scaffolding techniques should support students throughout the learning process. The sources used to prepare the materials presented in this appendix are indicated. The original materials have been selected, simplified and adapted in order to be used in real CLIL lessons.

Appendix I.I
Listening activity
The life of a plastic bottle

Activity 1:	The life of a plastic bottle.
Subject:	Technology
Level:	3 rd of ESO
Didactic Unit:	No. 3, Materials for technical use: plastics
Type of activity:	Introduction
Language skill:	Listening
No. of students:	27
Grouping:	Pair work → Group → Individual → Group
Aim	To learn about the applications, production process, environmental repercussions and recycling of plastics.
Time:	30 minutes
Activity description:	<ol style="list-style-type: none"> 1. Copies of the material are handed out to students and the teacher explains the activity to the group. 2. Students work in pairs to translate the key words in the vocabulary table. 3. Key words are read and translated loud by volunteers in front of the mates and when needed, pronunciation and translation are corrected, by the teacher. 4. The video is reproduced three times and students fill the gaps with the key words individually. 5. Finally the answers are corrected loud by volunteers and the by the teacher.
Resources:	Interactive whiteboard, photocopies.
Source:	YouTube. https://www.youtube.com/watch?time_continue=154&v=erGnf7ws20E and own creation.

CLIL Materials Unit 3: Plastics
Listening: The life of a plastic bottle

- **Instructions. Step 1:** Read the key words in the vocabulary table and fill in the cells with the Spanish translation.

Vocabulary table			
English	Spanish	English	Spanish
Polymer		Containers	
Preform		Natural gas	
Environment		Magnets	
Crude oil		Raw materials	
Recycling		Flakes	
Resin		Contaminants	
Pellets		Monomers	

- **Instructions. Step 2:** Listen to the video and fill in the gaps in the following text with the correct keyword from the table.

Video transcription

They say it's important to **recycle** plastic bottles but why?. The answer starts underground or the ocean floor where _____ is pumped up through the ground and sea in long pipes and sent to an oil refinery. Likewise, _____ is extracted from rock formations deep under fields and waterways.

Crude oil and natural gas are _____ so next they'll go through a process using energy and water to alter their structure. Starting with a chemical reaction, hundreds of thousands of small molecules called _____ combine to form a _____ **chain**.

Millions of polymer chains are formed at once creating a mass known as a _____. Resins come in different **shapes** and **sizes**. _____

like these are what is used in plastic manufacturing. Using high heat and pressure the pellets are melted down and injected into the mold of a small tube known as a _____. Once heated back up air expands the tube open like a balloon in a blow mold and as it cools down finally starts to take shape.

That's when it looks like the bottles you see in stores and vending machines. It takes a lot of work and materials to make one single bottle which is why _____ is so important. Putting a bottle in the trash means it will likely end up in landfill where these useful resources won't get a chance to take on a new life. Littering is even more destructive wasting natural resources and creating a negative impact on our community's **wildlife** and _____.

But recycling a bottle enables these resources to keep being useful. After being put in a **recycling bin**, plastic bottles get hauled to a **materials recovery facility** or MRF where recyclables are dumped and put on a line and sorted. Materials move through a **disk screen** that separates paper from _____. **Metals** are separated by _____ and plastics are sorted by visual inspection using a combo of machines and people. Plastic is then sorted into categories by type.

Once enough bottles have been accumulated, they're compacted into giant bales and sent to a central plastic **reclaiming plant**. There, they're shredded into _____. Some facilities use a float sync process to separate the different types of plastic. Ultimately, all the plastic is washed thoroughly to remove _____ and prepare them for their new life. The flakes are then melted down into resin pellets to be used to make new bottles or other cool things. The simple act of recycling a bottle gives it a new life, preserves resources and energy, keeps our planet healthy and makes a big impact.

Appendix I.II
Reading activity
The life of a plastic bottle

Activity 2:	The life of a plastic bottle.
Subject:	Technology
Level:	3 rd of ESO
Didactic Unit:	No. 3, Materials for technical use: plastics
Type of activity:	Introduction
Language skill:	Reading
No. of students:	27
Grouping:	Pair work → Group → Group
Aim	To learn about the applications, production process, environmental repercussions and recycling of plastics.
Time:	25 minutes
Activity description:	<ol style="list-style-type: none"> 1. After correcting the listening the teacher explains the activity to the group. 2. Students are required to read the text and work in pairs in order to fill the vocabulary table, answer the questions about the text and complete the diagram of the cycle of plastics. 3. Students read their answers to the group. 4. Students present their diagrams of the cycle of plastics.
Resources:	Photocopies.
Source:	YouTube. https://www.youtube.com/watch?time_continue=154&v=erGnf7ws20E and own creation.

CLIL Materials Unit 3: Plastics.

Reading: The life of a plastic bottle

- **Instructions. Step 3:** Read the text and find the English words that correspond to every Spanish word in the table.

Find in the text the English word that correspond to the Spanish meaning			
English	Spanish	English	Spanish
	Bombear		Recursos
	Tubería		Fauna
	Refinería de petróleo		Criba de discos
	Reacción química		Contenedor de reciclado
	Fabricación		Hecho trizas
	Molde		Clasificado
	Vertedero		Fundido / Derretido

- **Instructions. Step 4:** Read the text and answer the following questions. You can work in pairs and use the dictionary. Ask the teacher if you have any vocabulary doubt.

1.- Which are the main raw materials of plastic?

The main raw materials of plastic _____

2.- What are monomers?

Monomers _____

3.- What are pellets?

Pellets _____

4.- In which facilities are recycled materials classified and sorted out?

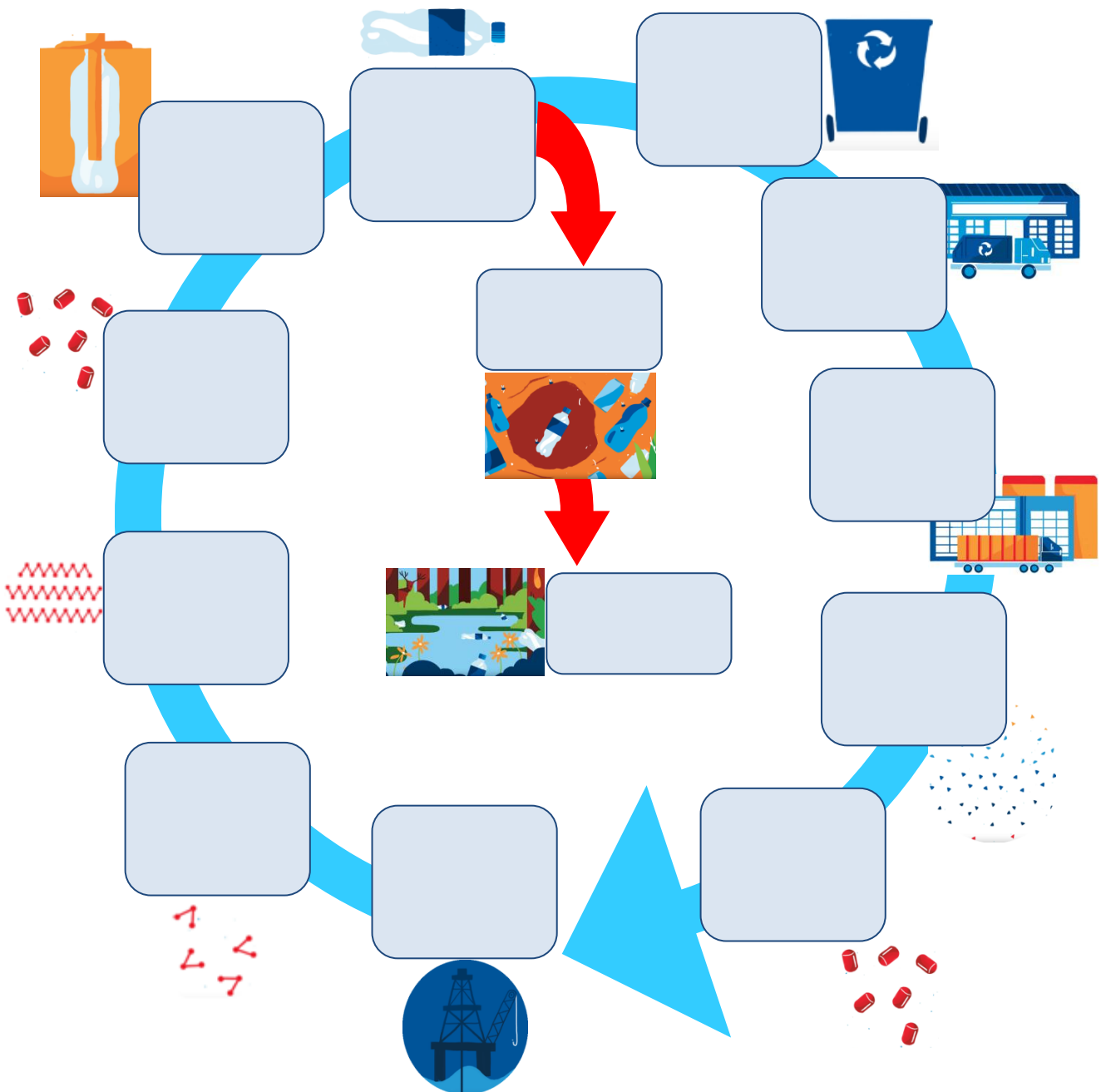
Recycled materials _____

5.- What happens to plastic flakes before they are processed into pellets?

Plastic flakes _____

➤ **Instructions. Step 5:** Work in pairs and complete the diagram of the cycle of plastics with the correct key words from the box. Use the text as a reference to order the process correctly.

Resins & Pellets	Monomers	Pollution
Landfill	Resins & Pellets	Flakes
Use	Polymers	Molding process
Reclaiming plant	Recycling bin	Materials recovery facility
Crude oil and natural gas		



Appendix I.III
Reading and writing activity
Types of plastics

Task 1:	Types of plastics.
Subject:	Technology
Level:	3 rd of ESO
Didactic Unit:	No. 3, Materials for technical use: plastics
Type of activity:	Development
Language skill:	Reading and writing
No. of students:	27
Grouping:	Group → Pair work
Aim	To learn about the classification, properties and applications of plastics. To learn how to make mind maps with online tools (Coggle).
Time:	100 minutes (2 sessions)
Activity description:	<ol style="list-style-type: none"> 1. The teacher will guide students to register in the Coggle website and to give the first steps in doing the digital mind map. 2. Students will use their book as a guide to produce a mind map that classifies the most common types of plastics. 3. Students will have to send the mind map to the teacher for assessment.
Resources:	Student book, computers room, Internet.
Source:	Student book (Moreno Márquez, R., et al. Translated by, Quinn, J. 2016. <i>Technology 3.º ESO Student's Book. Inicia Dual</i> . Oxford University Press España, S.A.) and own creation using Coggle .

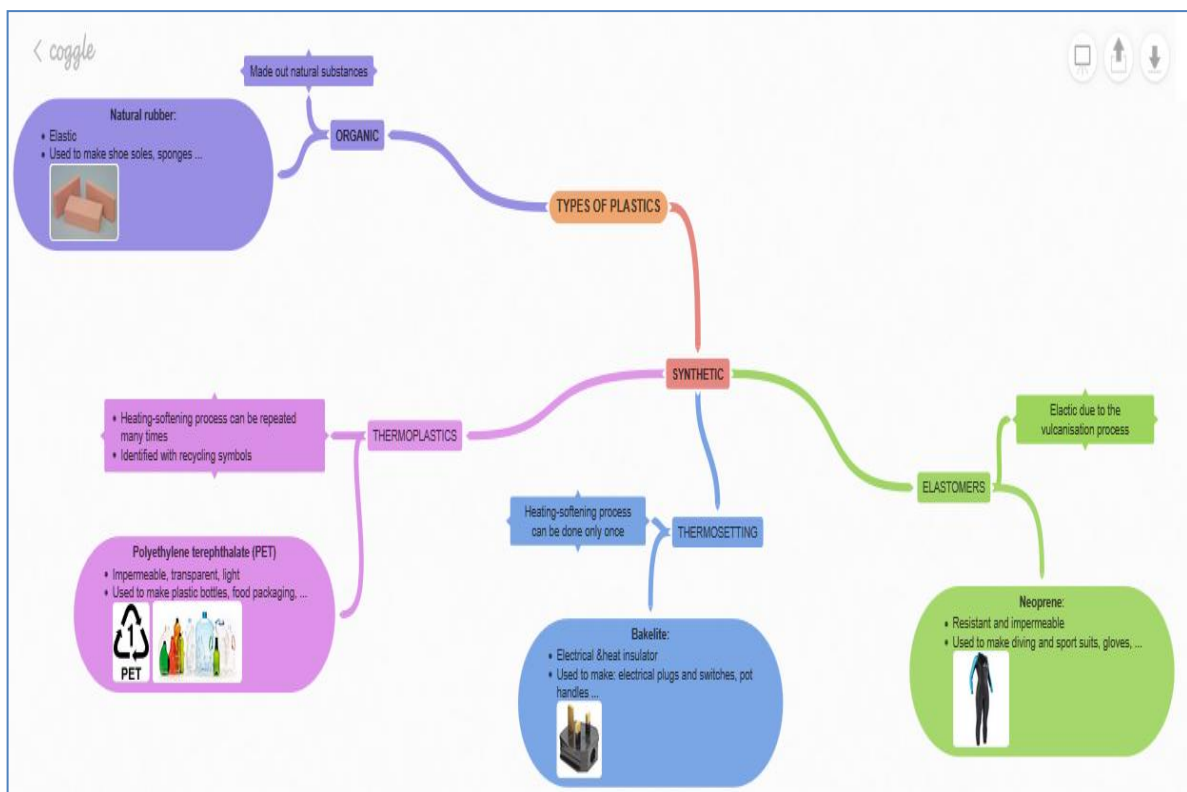
CLIL Materials Unit 3: Plastics

Reading & writing Task: Types of plastics

➤ **Instructions.** Work in pairs and use your student book to create mind map using the online tool Coggle (www.coggle.it). You have two sessions in the computers room to finish the task. At the end of the second session you will have to send an email with the link to your mind map to the teacher. The rubric will help you to know your mark in advance.

➤ **Steps:**

- Register using your Google account and invite your partner.
- Work as in the example and include all types of plastics in point 2.2, Unit 3, of your book.
- Per every type of plastics you have to include the main properties, two written examples at least and one image.
- In case of thermoplastics, you have to include an image with the recycling symbol too.
- Ask the teacher whenever you need help with the vocabulary or with the Coggle tool.



➤ **Rubric:** Use this rubric to assess your work in advance.

Criteria	Mind Map Rubric							Item mark
	No way (0)	This way you are not going to pass (2)	You need to improve (4)	Good (6)	Very good (8)	Excellent (10)	(%) Weight	
1. Includes all types of plastics	Doesn't do the activity	Includes up to 4 types	Includes up to 8 types	Includes up to 12 types	Includes up to 16 types	Includes the 20 types.	25 (%)	
2. Includes the properties of plastics	Doesn't do the activity	Includes properties in up to 4 types	Includes properties in up to 8 types	Includes properties in up to 12 types	Includes properties in up to 16 types	Includes properties in up to 20 types	20 (%)	
3. Includes two examples	Doesn't do the activity	Includes examples in up to 4 types	Includes examples in up to 8 types	Includes examples in up to 12 types	Includes examples in up to 16 types	Includes examples in up to 20 types	20 (%)	
4. Includes pictures and thermoplastic logos	Doesn't do the activity	Includes pictures & logos in up to 4 types	Includes pictures & logos in up to 4 types	Includes pictures & logos in up to 4 types	Includes pictures & logos in up to 4 types	Includes pictures & logos in up to 4 types	20 (%)	
5. Mind map organisation & edition	Doesn't do the activity	Total mess	Main categories are organised but types not. Colours are mixed.	Main categories are organised & types partially. Colours are mixed.	Item well organised but mixing colours in different categories	Clear organization of items using different colours for each category	15 (%)	
6. English Vocabulary	Leaves the activity in blank or no correct answers	Percentage according to number of correct English terms				All English terms are correctly written	+ 10 (%)	
Final mark ($\Sigma(\text{item mark} \cdot \text{weight})$) (20% of the didactic unit final mark)								
IMPORTANT NOTE: This task will be passed if you achieve a final mark of five or more points.								

Appendix I.IV
Project: Reading, writing, speaking
Types of plastics

Project 1:	Types of plastics. Alternatives.
Subject:	Technology
Level:	3 rd of ESO
Didactic Unit:	No. 3, Materials for technical use: plastics
Type of activity:	Development
Language skill:	Reading, writing, speaking
No. of students:	27
Grouping:	Groups of three-four students
Aim	To learn about the classification, properties and applications of plastics. To identify the types of plastics and how they are present in their lives.
Time:	Project homework 2 weeks + Oral presentations 2 sessions
Activity description:	<ol style="list-style-type: none"> 1. Students will have to prepare a big poster with all the types of plastics that they have studied in the unit and stick to it physical samples of plastics taken from home. 2. Students will have to discuss and write an alternative for two plastics objects, at least, that could be made with more sustainable materials, including benefits and drawbacks of the alternative. 3. Students will have to present their poster and their alternatives to the rest of the group. All the members of the group have to participate in the presentation.
Resources:	Student book, Internet, plastic objects found at home, coloured paper card, glue, sticky tape, felt tip pens.

CLIL Materials Unit 3: Plastics

Reading & writing & speaking project: Types of plastics, alternatives

➤ Project description.

- Types of plastics poster and speech about alternatives.
 - Time to finish the project: 2 weeks.
1. In groups of three-four students you have to prepare a big poster made of coloured paper card with all the types of plastics that you have studied in the unit. You have to write the name of the plastic type, its properties and the object that you have found at home and stick the object, part of it, specially the recycling symbols of thermoplastics, or a picture of it in case it is too big.
 2. In addition, the group have to choose two, at least, plastics objects from those that you have stuck on your poster and think about alternatives of more sustainable materials that could replace plastic in that object. You have to think about pros and cons of the alternative solution that you have chosen. Then, you have to write your conclusions and use the document to do an oral presentation of one to two minutes per member of the group. Every member of the group must participate in the presentation. The speech of every member of the group should take about 2 minutes. The document with the names of the members of the group has to be handed in to the teacher for assessment. Use the rubric for self assessment of your project and presentation. You can use the following boxes to order your ideas and make sentences for your written and oral presentation.
- To introduce the speech about the object and the alternatives to plastic.

We	agreed	the plastic of	<i>your object</i>	can be replaced by	<i>the alternative material.</i>
	decided				
	considered				
	chose				
	determined			could be replaced by	

- To talk about the possible advantages of the alternative material.

We	believed	that	<i>the alternative material</i>	shows	the following benefits:	<i>list of the pros of your alternative material</i>
	thought			has		
	were			presents		
	convinced			incorporates		

- To give examples of similar applications

For instance,	<i>Examples of applications with the alternative material</i>	are manufactured with	<i>the alternative material.</i>
For example,		are made of	

- To talk about the possible disadvantages of the alternative material

However,	we also	assumed	that	<i>the alternative material.</i>	could have	the following drawbacks:	<i>list of the cons of your alternative material.</i>
		considered			could show		
		presumed			could present		
		imagined			could cause	the following problems	

- To sum up your proposal.

Therefore,	we	propose	the use of	<i>the alternative material.</i>	to produce	<i>the object</i>
Thus,					to manufacture	
Hence,					to make	
Consequently,					to fabricate	

➤ **Poster:** Use this rubric to self-assess your work in advance.

Criteria	Poster Rubric							Item mark
	No way (0)	This way you are not going to pass (2)	You need to improve (4)	Good (6)	Very good (8)	Excellent (10)	(%) Weight	
1. Includes all types of plastics	Doesn't hand in the poster	Includes up to 4 types	Includes up to 8 types	Includes up to 12 types	Includes up to 16 types	Includes the 20 types.	20 (%)	
2. Includes the properties of plastics	Doesn't hand in the poster	Includes properties in up to 4 types	Includes properties in up to 8 types	Includes properties in up to 12 types	Includes properties in up to 16 types	Includes properties in up to 20 types	20 (%)	
3. Includes physical samples of plastics	Doesn't hand in the poster	Includes samples in up to 4 types	Includes samples in up to 8 types	Includes samples in up to 12 types	Includes samples in up to 16 types	Includes samples in up to 20 types	40 (%)	
4. Porter organisation & edition	Doesn't hand in the poster	Total mess.	Organization of types of plastics, samples and headings needs to be enhanced	Types of plastics are well organised but samples are poorly presented and headings are untidy	Types of plastics are well organized and samples are correctly integrated, but headings are untidy.	Clear organization of types of plastics, proficient integration of plastic samples and headings	20 (%)	
5. English Vocabulary	Doesn't hand in the poster	Percentage according to number of correct English terms				All English terms are correctly written	+ 10 (%)	
(20% of the didactic unit final mark)							Final mark ($\Sigma(\text{item mark} \cdot \text{weight})$)	
IMPORTANT NOTE: This task will be passed if you achieve a final mark of five or more points.								

➤ **Presentation:** Use this rubric to self-assess your work in advance.

Criteria	Presentation Rubric							Item mark
	No way (0)	This way you are not going to pass (2)	You need to improve (4)	Good (6)	Very good (8)	Excellent (10)	(%) Weight	
1. Content: Benefits.	Doesn't do the speech	One benefit is presented but not justified	Two or more benefits are presented but not justified	One benefit is presented & technically justified	Two benefits are presented & technically justified	Three benefits are presented & technically justified	20 (%)	
2. Content: Drawbacks.	Doesn't do the speech	One drawback is presented but not justified	Two or more drawbacks are presented but not justified	One drawbacks is presented & technically justified	Two drawbacks are presented & technically justified	3 drawbacks are presented & technically justified	20 (%)	
3. Content: Examples.	Doesn't do the speech	One example is presented but not justified	Two examples are presented but not justified	One example is presented & technically justified	Two examples are presented & technically justified	Three examples are presented & technically justified	20 (%)	
4. Originality.	Doesn't do the speech	Plastic bags & bottles	Plastic cutlery & straws	Not common objects & materials	Imaginative objects & materials	Really unsuspected objects & materials	10 (%)	
5. Time awareness.	Doesn't do the speech	Less than 30 seconds	30 seconds ± 10 "	1 minute ± 10 "	1.5 minutes ± 10 "	2 minutes ± 10 "	10 (%)	
6 Fluency, pronunciation & intonation	Doesn't do the speech	Stutters and hesitates all the time	Stutters and hesitates frequently	Clear voice with some hesitation	Clear voice and pace	Clear and appealing voice and pace	10 (%)	
7. English Vocabulary	Doesn't do the speech	Inadequate use of English terms	Insufficient use of English terms	Good use of English terms	Advanced use of English terms	Proficient use of English terms	10 (%)	
(20% of the didactic unit final mark)							Final mark ($\Sigma(\text{item mark} \cdot \text{weight})$)	
IMPORTANT NOTE: This task will be passed if you achieve a final mark of five or more points.								

Appendix II. Survey for the assessment of teaching practice

The target of this survey is to improve the lessons and make them more interesting for you. Read the questions carefully and ask the teacher if you have any doubt.

Your answers are important!!!

1.- Which was the most difficult topic during this term?

I consider that the most difficult topic was _____

2.- Why do you think that it was so difficult?

Because _____

3.- Which was the most difficult activity/task/project during this term?

I believe that the most difficult activity/task/project was _____

4.- Why do you think that it was so difficult?

Because _____

5.- Which topic did you find most interesting during this term?

I found very interesting _____

6.- Which activity/task/project would you like to repeat?

I would like to repeat the activity/task/project about _____

7.- Would you like that we do any activity that you have already done in other subject? Please describe it.

9.- How do you consider the classroom climate in normal lessons? Circle the answer that best reflects your feelings.

Very negative Slightly negative Slightly positive Very positive

9.- How do you consider the classroom climate in the workshop? Circle the answer that best reflects your feelings.

Very negative Slightly negative Slightly positive Very positive

10.- Write any proposal to improve the lessons or the climate in the classroom. At least a couple.

I would like that _____

I believe that we could _____

Appendix III. Safety rules in the workshop

- 1ST Ask the teacher if you have any doubt.
- 2nd Pay attention carefully when the teacher is explaining or demonstrating how to use a tool or machine.
- 3rd Report any cut, burn or abrasion to the teacher no matter how small.
- 4th Do not run in the workshop.
- 5th No food or drink is allowed in the workshop.
- 6th Do not smell paintings or glues.
- 7th Always tie long hair
- 8th Avoid wearing too loose clothes or too long sleeves.
- 9th Clean up spills immediately.
- 10th Do not walk with pointing or cutting tools in your hands.
- 11th Wear safety glasses when using the drill or the saw.
- 12th Never leave a hot soldering iron on the workbench. Return it back to its stand.
- 13th Do not leave a hot glue gun on the workbench. Return it back to its stand.
- 14th Make sure that you have turn the machines off when you finish working.
- 15th Do not disturb your classmates when they are working with tools or machines.
- 16th Do not damage furniture, tools or machines. Report any damage immediately.
- 17th Fooling around in the workshop will not be tolerated.

Before leaving

- 18th Put all the tools in their appropriate places.
- 19th Clean up the work bench and the work area around it.
- 20th Wash your hands.