TRABAJO FIN DE MÁSTER

VOCABULARY TEACHING IMPROVEMENT FOR THE TECHNOLOGY SUBJECT THROUGH THE TASK-BASED LEARNING METHODOLOGY (TBL).

MÁSTER UNIVERSITARIO EN LENGUA INGLESA PARA EL AULA BILINGÜE EN EDUCACIÓN SECUNDARIA

UNIVERSIDAD DE OVIEDO

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INDEX:

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INTRODUCTION

One of the main objectives of bilingual programs is to create temporal linguistic immersions, at which students are under second language exposure, providing them with the opportunity of language acquisition. At this point, it is important to differentiate between acquisition and learning. Willis (1996:5) gives a reference to Stephen Krashen, an influential American linguistic, who explains that acquisition is the subconscious process that happens naturally and leads to fluency, and learning is the conscious process.

Sometimes, learners begin to use new language structures, vocabulary and phrases to which they have been exposed without having been taught any linguistic rule. This evidence is the starting point of this study: finding the most appropriate methodology to help students improve their vocabulary.

The acquisition of scientific vocabulary is the most important linguistic objective in the CLIL Technology subject at the secondary school in Spain. It is a common objective in all learning units. The learning process can be improved by applying a known methodology, the Task-based learning methodology, commonly used by English language teachers.

When performing a task, learners focus on meaning before form: they use the second language as a vehicle emphasising on communication, experimenting and making errors in a positive way as a normal part of the learning process. Subsequently, tasks create an opportunity for language use stimulating language natural acquisition, and this is one of the main objectives of CLIL. Therefore, task-based learning is one of the most appropriate methodologies to apply by teachers in bilingual programs.

This work shows how to take advantage of this methodology to apply effective strategies for teaching vocabulary in the CLIL Technology classroom.

The structure of this work will be as follows:

I will first focus on the analysis of the task-based learning method, based on Jane Willis publication (1996). This analysis will show the different kinds of tasks that are applied in a TBL framework with a brief discussion about which tasks are suitable to be applied in the CLIL Technology classroom.

I will then continue with a design of a Technology Project, following the TBL methodology.

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1.- ANALYSIS OF THE TASK-BASED LEARNING METHOD

Jane Willis, in her book "A Framework for Task-based Learning" (1996), shows a complete guide of the TBL methodology, and proposes several ways to put it into practice, in order to adopt a real learner-centred approach.

This methodology has been designed to be applied by second language teachers. But it can be applied by CLIL teachers too, as a tool to teach specific subject contents using a second language. To specify, I am going to study how to apply this methodology in a CLIL Technology classroom at a Secondary School in Spain, focussing on scientific vocabulary acquisition: how to improve the Technology vocabulary acquisition through the TBL methodology.

The Technology project is a complete model that students make at the Technology workshop. Before performing a Technology project, students need to acquire contents about the materials they are going to work with and their properties, the type of structure they are going to construct and the different mechanisms that can be involved in the final model. Students are used to working in this subject through projects, and what is more, monolingual technology teachers apply a known specific methodology called The Projects Method (El método de proyectos) included in the *Decreto 74/2007, de 14 de junio, por el que se regula la ordenación y establece el currículo de la Educación secundaria obligatoria en el Principado de Asturias,* where this methodology is explained. The aim of this work is to analyse the TBL framework in order to apply it to the CLIL Technology classroom.

1.1.- MOTIVATION IN BILINGUAL PROGRAMS: CREATING THE BEST ENVIRONMENT.

Bilingual program students know that they are expected to make real use of the second language, and this leads them to pay special attention to what they hear and read, in order to process it. For less confident learners, we need to create a low stress atmosphere to encourage creativity. Learners who are encouraged to communicate are likely to acquire a language faster and more efficiently. (Willis, 1996:13).

Motivation is an essential condition students need to learn. When confidence is low, the teacher may select simple communicative activities that students can achieve with success. Success and satisfaction are key factors in sustaining motivation. (Willis, 1996:14).

Carefully selected tasks will provide the stimuli to take part in complete interactions, motivating students.

1.2.- DEFINIG TASKS:

What do we mean by task in task-based learning (TBL)? In this methodology, the term task is used for "activities where the target language is used by the learner for a communicative purpose (goal) in order to achieve an outcome". (Willis, 1996:23). So tasks have a specified objective that learners have to achieve, using the second language as a tool. In this way, "tasks promote optimum language learning and activate language from the learners´ store of passive knowledge" (Willis, 1996:24).

Thanh and Huan (2012:107) make a reference to Ellis (2003), indicating five tasks features:

1. A task is an activity in teaching and learning a language. This type of activity requires learners to use the second language to achieve a particular purpose.

2. A task focuses on meaningful activities or on the language form.

3. A task involves language use in terms of communication, to allow learners opportunities to take part in meaningful interactions to complete a specific assignment.

4. A task uses one or more language skills.

5. A task involves learners in understanding the use of the second language.

1.3.- TYPES OF TASKS:

All types of task can involve the four language skills, listening, speaking, reading and writing. The tasks proposed by Willis (1996:26) are the following:

LISTING: brainstorming and fact-finding (finding things out by asking each other or reading texts) lead into talk generation as students need to ask and explain, involving listening and speaking skills.

ORDERING AND SORTING: we can here design the task following one of the next processes:

- Classifying items into categories that are not given (students must decide these categories).
- Classifying items into given categories.
- Sequencing items into chronological or logical order.

Reading and writing skills are going to be involved here.

COMPARING: the task here is to find the similarities and the main differences from texts or pictures containing information of similar nature. Reading, writing and speaking skills are involved.

This kind of task can follow the list or sequence generated in one of the previous kind of task.

In the Technology classroom at the secondary school, contents like materials and their properties, structures and mechanisms will be studied in order to achieve a model construction at the Technology workshop. Listing, ordering and sorting, and comparing

are tasks that can be applied in the Technology classroom when studying this previous knowledge that students need to acquire before performing the most important activity: the project.

PROBLEM SOLVING: learners engage and satisfy to solve these tasks as their intellectual and reasoning skills are demanded. We can design short puzzles, logic problems or riddles (these can be highly cognitively demanding and require attention to language processing).

Problem solving is one of the most frequent tasks in the Technology classroom. Regarding the subject contents, mathematical processes and calculus are going to be needed in order to solve problems: mechanisms and electricity are contents that put forward a problem that need to be solved following the instructions previously given, following a procedure.

SHARING PERSONAL EXPERIENCES: this kind of tasks gives the learner the opportunity of being involved in a social conversation. This is not a goal-oriented task, but it encourages the learner to talk freely, giving opinions or describing reactions to a specific event. Talking skill is involved here, but we can let students write their ideas down if we give them time to prepare for the talking phase in advance, so writing skill will be involved too.

This kind of task can be designed to be done at the end of the next kind of task, the Project, to make students talk about their own experience when performing the project.

PROJECTS: this is a creative task that involves pairs or groups of students in order to make a creative work. This task takes more time than others to give the students the previous knowledge they need to perform the activity, and they will need time to research information, organise it, list it…so other kind of tasks are going to precede this one. We can say that this is a complete task that involves the four basic language skills (listening, talking, reading, writing) and of course, organizational skill and team work.

This is one of the most appropriate tasks that we can apply in our Technology classroom.

When students get involved into a Technology project, they will be required to perform all kind of tasks. At this point, I need to say that a Technology project is a collection of tasks that must be performed in the correct order to achieve a specific goal.

At the end of this work, I will design a complete real Technology project with all these types of tasks and explain how each one contribute to the Technology vocabulary acquisition, that is the goal of my the present work.

1.4. THE DESIGN OF THE TASK

In this section we are going to approach the design of a task in order to be applied in a bilingual Technology classroom at the Secondary School.

At this point it is necessary to explain how the Technology subject is distributed along the four years of the Compulsory Secondary Education (ESO): in Asturias, the *Decreto 74/2007, de 14 de junio, por el que se regula la ordenación y establece el*

currículo de la Educación secundaria obligatoria en el Principado de Asturias, establishes the 2nd year of ESO as the first year to start studying Technologies, as a compulsory subject, and continuing in the 3rd year of ESO with Technologies as a compulsory subject too; the 4th year offers the subject as optional. Students at the first year of ESO don't study any content related to Technology, so at the 2nd year, students start studying Technologies for the first time. This is why we need to design the subject tasks as I explain in the following paragraphs:

1.4.1.- Closed or open tasks?

Willis (1996:28) gives a second classification for tasks: closed and open tasks.

Closed tasks are those that are highly structured with a specific goal, with precise instructions and restricted information.

Due to the characteristics of the students in secondary education, specially in the 2nd year of ESO, closed tasks will be the most appropriate when designing a Technology Project, as the students at this age don't have any experience developing a project, so it will be necessary to give them a complete set of instructions and pre-designed worksheets.

Open tasks are those that can be designed with a less specific goal, for example, exchanging anecdotes, but these open tasks are not appropriate for this subject and this level. We need to focus on the subject contents, we cannot freely choose an item to work with; these items are given in the Curriculum Subject.

Between closed and open tasks, we can design midway tasks, those that have a specific goal in which students don't need to follow very specific instructions to perform the tasks. In the 3rd year of ESO, students already know how to perform technology projects, and these projects can be designed including these tasks, for example, design the Project Memory without using a pre-designed worksheets.

Consequently, depending on the Technology level and the students previous knowledge about the Projects Method, we are going to design the tasks included in the Project attending to its structure: closed tasks for 2nd year students without any experience performing a technology project, and midway tasks for 3rd course students who are able to perform a complete project without restricted instruction.

1.5.- WORKING IN GROUPS:

Following the methodology of the Projects Model, students must work in small groups (three or four members), so each student can take advantage of each others ideas and solutions.

Willis (1996:35), explains how the learners' position working in small groups gives them confidence to try out whatever knowledge they know, in the relative privacy of the small group, giving them the experience of spontaneous interaction, noticing how others express their ideas, practising and negotiating turns to speak, using the language concentrating on building meaning.

2.- COMPONENTS OF THE TBL FRAMEWORK

Willis (1996:38), outlines the main components of the TBL framework:

<table>
<tr><td colspan="3">Pre-task
Teacher explores the topic with the class, highlights useful words and phrases, helps students understand tasks instructions and prepare.</td></tr>
<tr><td>Task
Students do the task, in pairs or small groups.

Teacher monitors and encourages; stops the task when most pairs have finished, and comments the contents.</td><td>Planning
Students prepare to report to the whole class (orally or in writing) how they find the task, what they decided or discovered.

Teacher acts as linguistic adviser, giving feedback, helping students to correct, rephrase, rehearse and/or draft a written report.</td><td>Report
Some groups present their reports to the class, or exchange written reports, and compare results.

Teacher acts as chairperson, linking the contributions, summing up.

Teacher gives feedback on content and form, if whished.</td></tr>
<tr><td colspan="3">Task, planning and report compound the Task Cycle.

The task cycle may be based on a reading text or listening text. It may be followed by students hearing a recording of others doing the same task. These both give additional and related exposure.

Students may now hear a recording of others doing a similar task and compare how they all did it.</td></tr>
<tr><td colspan="3">Language focus

<table><tr><td>Analysis
Students examine and discuss specific features of the text or transcript of the recording</td><td>Practise
Teacher conducts practice of new words, phrases and patterns occurring in the data, either during or after the analysis.</td></tr></table></td></tr>
</table>

This is a framework for task-based learning of a second language. The next step is to adapt this framework to a task-based learning for the Technology subject focussing

on the scientific vocabulary acquisition.

The TBL framework provides exposure and use of the target language, and motivation. These are the three basic conditions for language learning. The task cycle offers learners a holistic experience of the language in use. (Willis, 1996:40).

In a TBL framework, the teacher guides students to achieve the task outcome using the target language. The emphasis of this method is on learners doing tasks. The teacher must ensure that learners understand and get on with the task. To help learners' motivation, the teacher can sum up what they have achieved after each lesson, and encourage them to continue working in that way.

2.1.- THE PRE-TASK PHASE.

2.1.1.- Starting points for tasks:

Willis (1996:29) gives a general overview of five possible starting points, which are:

- Personal knowledge and experience: tasks based on learners´ personal and professional experience. Evidently, due to the age of the learners in this case, this kind of starting point is not suitable for this work.

- Problems: the starting point here is the statement of a problem. Students have a few minutes for individual thinking before meeting in groups and discuss possible solutions. This is the start point of every Technology Project: students must design and construct a model, scale-model or instrument in order to give a solution to the initial problem. Constraints are given at this phase, making the task more challenging for students.

- Visual stimuli: starting points can be pictures, photographs…real objects can be useful too. Short video sequences can be used as a memory challenge, students can be asked to recall and list the actions they have seen in the right order. Their answers can be checked watching the video again.

This starting point is one of the most used activities to motivate students: we can show pictures or videos with the final model they have to construct, paying attention to the materials, the different pieces and their shape, the dimensions of the global model and each piece, how it runs…

- Spoken and written texts: "listening comprehension" and "reading comprehension" can make good task material. At this point, J. Willis (1996:30) gives selected examples as:

- Learners read or listen the first part of a story, and are given a few additional clues to write an ending.

- Learners spot differences between an original news item and a written summary of it containing an inaccuracy.

- Learners spot differences between a written story and a version read aloud by the teacher with some of the events in different order.

Before performing a project, students must be given previous concepts about the theme they are studying, so this activity is not going to be considered as a starting point. For the Technology subject, spoken and written texts are activities designed to study the specific contents the students need to know before the construction itself.

- Children's activities: children enjoy doing simple science experiments. But this is not going to be a starting point for the Technology Project: practical activities are the main part of the task (the project) in order to construct a model, and instructions are only going to be available in the target language, materials are only going to be obtained if students ask them in English. Consequently, this task, that is going to be performed in the middle of the whole Project, stimulates the natural need to understand and use of the target language.

- Combinations of starting points are going to be designed for the Technology Project: first of all, we will give the students the statement of a problem. Due to their short age and lack of experience, the work groups won't be able to give a good solution, so we will then help the groups by continuing with the second starting point, the visual stimuli: pictures, photographs of real finished models, or a real model that we can store in the workshop in order to be used for this stage. If the model has a mechanism to make any part move, we can show the students any video of a finished model in which students can take ideas to insert it into their model.

After applying the starting point, students feel motivated and ready to start with the construction. But they have to study some Technology concepts before that phase.

This is the moment at which the teacher introduces the topic. At this point, the Technology teachers must deal with the first challenge: Technology topics are completely new for students. For example, in the second year of ESO, students haven´t ever studied any content about materials properties, structures or mechanisms. So the first step is to **identify the topic language:** students must recall and activate words and phrases that will be needed during the task, so the teacher has to introduce a few vital topic-related words and phrases that students are unlikely to know. Usually these are introduced and illustrated in the textbook. Some textbooks give a glossary of key words, one in each page, or one glossary at the beginning of the lesson with the whole key words that will be needed to study the topic.

2.1.2.- Pre-task language activities:

These activities are purposed to introduce the topic and show students which words we are going to work with, so these can be named "vocabulary activities". Vocabulary does not only support the four language skills (listening, speaking, reading and writing), it also mediates between the students and the subject contents. The lack of vocabulary knowledge is an obstacle to learning. (Nam, 2010:127).

One of these vocabulary activities is the creation of a glossary with the key words students will use during the development of the following tasks. These glossaries may be used as a guided introduction to the subject specific language. Key words must be carefully selected and highlighted in the text. The teacher must give simple definitions for each word. This glossary will provide students with a useful tool for revising the

main vocabulary of the unit. (Technologies Oxford CLIL, 2012:4).

My purpose for the CLIL Technology classroom is the next: students must create their own glossary of words, with three options:

- Write each word and its meaning in English.
- Write each word and its translation into Spanish.
- Write each word, its meaning in English and its translation into Spanish.

The second and third options are the most suitable for a bilingual program, because students are learning new contents, so the new words must be studied in both languages. It has no sense in a bilingual program to teach only using the second language, it is no useful for students to learn new words only in English. At the end of the lesson, students must be able to explain the new contents in both languages, because in a bilingual program we have to deal with two kinds of objectives:

- objectives related to the subject contents: to cover all of the subject requirements prescribed by the curriculum.
- linguistic objectives (In a bilingual program in secondary education, linguistic objectives are additional objectives attending to the needs of students in a second language).

Consequently we have to focus on both contents and the second language, designing tasks with this dual aim, using a CLIL based approach. Comprehension tasks may be used more frequently than in a native language context to reinforce assimilation and processing of content, providing additional language practice. (Technologies Oxford CLIL, 2012:4)

We can continue with a text with information related to the topic: the exploration of the topic language should actively involve all learners as it gives them relevant exposure. We can design different activities to work with the text. J. Willis (1996:43) makes seven purposes that we can adapt to each topic:

- **Classifying words and phrases:** classify the key words into categories (classify the next words into raw materials and final products).
- **Odd one out**: the teacher writes sets of related words, inserting one item in each set that doesn't fit. Students must find the word that doesn´t fit.
- **Matching words and phrases to pictures.**
- **Memory challenge**: this is the same as the matching activity, but after a few minutes the teacher takes them down and the students must match the words or phrases to the pictures by memory. The students will have to specify verbally which picture they mean by describing it, stimulating more language use.

2.1.3.- Task instructions:

"The more specific the goal, and hence the instructions, the more likely students are to feel secure about doing the task". (Willis, 1996:44).

We can give task instructions in two ways: giving an explanation using the target language, or asking the students to read the instructions by themselves. However, we must ensure that students know how to do the task. The purpose here is to give the instructions in both ways; first, students must read them and then, the teacher gives an explanation, making sure that every student has understood it.

Instruction-giving brings a communicative use of the target language, providing valuable exposure and chance to grapple with the meaning.

2.1.4.- Balancing target language and mother tongue:

The mother tongue must be used to explain the most complex contents, and then, with the help of the teacher, the whole group must try to express it in English. In bilingual programs, the language switching must be frequent.

For some kind of tasks, the teacher can introduce a set of rules on mother tongue use.

2.2.- THE TASK CYCLE:

This section describes the three main phases of the task cycle: task, planning and report.

The task stage:

It is important to remark at this stage the role of the teacher: during the task cycle, the teacher acts as a monitor, observing and encouraging students from a slight distance. When working in the privacy of the small groups, students tend to use the mother tongue, so the teacher must suggest an English rendering. The teacher´s monitoring role during the task stage is less active now. After each session the teacher should take up briefly any point of interest and comment positively on the way students have done the task. (Willis, 2006:54).

The planning stage:

When the task stage has finished, students then go to the planning stage, at which we must help them to plan the reports: it must be very clear about the purpose of the report, and about what form the report will take. For Technology projects, pre-designed documents will be given to students in order to channel the work off.

The report stage:

The report is the natural conclusion of the task cycle. For the Technology subject, reports must be oral and written presentations. Jane Willis purposes six different types

of reports (listing, comparing, experience sharing, creative, ordering and sorting, and problem solving). Not all these reports are going to be useful for technology tasks. Focussing on the Technology project, listing, comparing and problem solving are the most adequate. J. Willis (1996:57) describes these as:

- Listing: Students can hear to or read others´ pairs lists and consolidate their own to see how many items they get altogether.

J. Willis gives a second purpose: vote on the most comprehensive list. It would not be necessary during the Technology classroom, Technology tasks tend to be closed, so there won´t be many differences among the resulting lists. There will probably be only one possible correct list, so it would be enough for students to listen to others´ lists, check and make corrections if necessary.

- Comparing: Students can see if others have done the task the same way, or find out if partners agree with the content of their report and why. Comparing results can be done after each type of task in order to create a debate.

- Problem solving: students can compare strategies for solving the problem and justify solutions.

2.2.1.- Writing in the task cycle:

Writing is a learning process. Writing during the task cycle, helps students to clarify ideas, order new knowledge into their mind creating a conceptual map that will be represented in a sheet of paper. Writing during the task cycle can be considered a creative activity as it helps to create new ideas.

Regarding the target language, "composing often demands a "restructuring" of language form; it forces learners to examine aspects of their current grammatical knowledge and adapt and exploit it so it will carry the meanings they wish to express." (Willis, 1996:61).

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3.- THE CLIL TECHNOLOGY PROJECT: A PROPOSAL THROUGH TBL.

After analysing the TBL methodology in order to apply it in my CLIL Technology lessons, I find it appropriate to design a real Technology Project, with a wide collection of short tasks that are going to be combined to achieve two main objectives:

- to acquire the subject contents (these include the acquisition of Spanish technical vocabulary), and

- to acquire specific technical vocabulary in the second language.

The proposal developed here is designed for students in the second year of secondary education, so they are studying Technologies for the first time. These students don´t have any knowledge about the way we work at the Technology workshop. This is the reason why the tasks purposed are going to be **closed tasks** (these are highly structured tasks, with restricted information and precise instructions).

Students must be told to form groups of three or four partners. When performing a Technology project, the work in groups in essential for active learning. Tasks must be divided and distributed in order to achieve goals successfully. This methodology promotes active participation and communication. Many of the activities require students to actively engage with the material. They may be asked to discuss questions with a partner, compare their answers with another group, share their opinions and present information to the class. (Technologies Oxford CLIL, 2012:5)

The teacher must introduce the rules on the mother tongue use from the start.

The Spanish language can only be spoken:

- If a student has a question to ask the teacher that is not able to formulate in English.

- If the teacher asks the class how they would say a word or a phrase in their language to check that a concept has been understood correctly.

- If the teacher needs to explain something quickly.

- If students are doing tasks involving translation.

The Technology teacher can use the texts contained in the students´ textbook to design the tasks for each learning units. Pathways (Teide, 2012) and Technologies Oxford CLIL (Oxford, 2012) are the ones I chose to design the tasks purposed.

Appropriate presentation of topics and subject content will be given to students through explanatory texts with concise and straightforward language, to make it easy for students to identify core concepts. (Technologies I Oxford CLIL, 2012:4)

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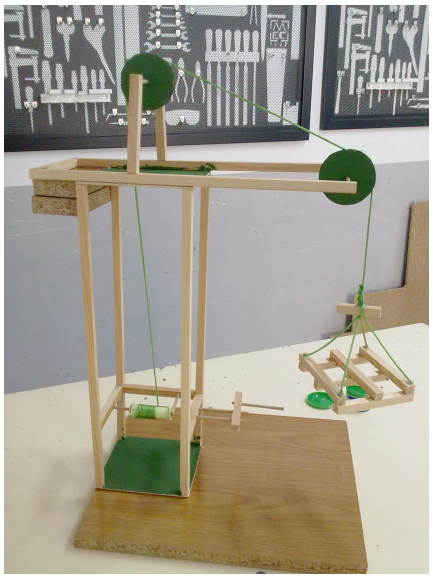
Starting points:

Following the TBL methodology, we have to start with the starting points phase. A combination of starting points is going to be applied, due to the complexity of the task.

Statement of a problem: *In groups, you must construct a scale-model of a crane. It must be made of wood. You must include a mechanism to lift loads.*

Visual stimuli: the teacher can show the students different photographs about a real model, so that they can appreciate the shapes of the different parts, real dimensions, what is the mechanism included and how the model runs.



Obviously, before the construction phase, contents about materials, structures and mechanisms must be studied. These contents are included in the *Decreto 74/2007, de 14 de junio, por el que se regula la ordenación y establece el currículo de la Educación secundaria obligatoria en el Principado de Asturias,* so the related learning units must have been studied before this one. That is the reason why this learning unit is left to the end of the term.

Next, I will give some examples of tasks for each of the three required learning units, analysing each one in order to explain how they contribute to the vocabulary acquisition.

3.1.- MATERIALS: WOOD.

Linguistic objective: vocabulary acquisition.

Key words: wood, fibrous, trunk, branch, root, cross-section, bark, phloem, sapwood, heartwood, felling, transport, sawing, drying, veneer, beam, plank, narrow board, board, strips, moulding, shavings, plywood, chipboard, pressboard, measuring, marking, bracing, sawing, universal hand saw, backsaw, keyhole saw, coping saw, fretsaw, circular saw, rasp, file, hand plane, sandpaper, sanding, polishing, drilling, portable electric drill, column drill, drill bits.

Task 1: Read and translate the next text:

Throughout history, wood has always been one of the most frequently used materials. In the beginning, humans used wood as fuel for fires and to create tools and instruments. Today, wood is not only used as fuel, it is also widely used in construction, in craft-making, in the furniture industry and to make paper. (Pathways, :75).

This text must be accompanied by photographs of the different applications mentioned in the text. We can ask students to identify each of them. Notice that one of the applications mentioned in the text is craft-making: this is an opportunity to motivate students to continue studying this chapter.

Task 2: Create a glossary of key words. Students must write the word in English, a definition for each word in English and its translation into Spanish.

This is an intentional language-learning task. (Nam (2012:128) makes a reference to Read (2004) who makes a distinction between incidental and intentional learning) Students know that they have to study key words in both languages. Most of these key words are new for students in the Spanish language too. My proposal here is to show the students the different elements that appear in the glossary, like the workshop tools and small pieces of artificial boards. (I refer to real objects, not images).

Now that students know the meaning of the key words, we can start studying the different contents of the unit, using these words as a vehicle to understand concepts and procedures. Students are going to learn vocabulary in an incidental way, while engaging in other learning activities.

Task 3: Read and translate the next text:

Wood is a fibrous substance that comes from trees, generally from the trunk, but also from the branches and roots. The cross-section of the tree trunk shows its different parts.

The characteristics of the wood depend on the type of tree and how it is treated later. Although two different pieces from the same tree may be very different, in general, most different types of wood have common properties.

(Text from Pathways I (2012:78)).

Reading and listening skills are involved in this task. One student may read aloud each paragraph. Pronunciation and stress mistakes will probably occur. The teacher must read aloud the whole text. The correct pronunciation and stress will be interiorized by students. It is important not to correct each student for each mistake in order to maintain the confidence-learning atmosphere.

Task 4: Identify the different parts of a cross-section tree trunk that correspond to the next definitions (bark, phloem, sapwood, heartwood). Then, translate the definitions:

a) This is wood in the earlier stages of development. It has a lighter colour and is softer than the heartwood.

b) This is on the outside of the tree and protects the interior layers.

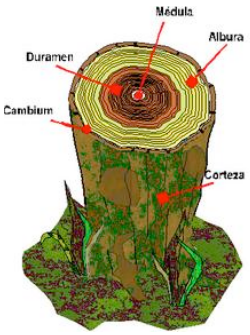
c) This is what is generally referred to as wood. It has a darker colour than sapwood. This is the hardest part of the trunk, and it has the highest quality wood.

d) This is the layer that transports the sap (a liquid that moves water and nutrients from the roots to the leaves).

Definitions from Pathways I (Teide, 2012:78).

Without any previous explanation, the groups must be able to analyse the definitions and decide which definition fits best with each key words. Notice that definitions of key words were given in the glossary unit. Not all members of the group will remember each definition, but they must share knowledge in order to achieve an outcome.

Task 5: Identify the different parts of the next cross-section tree trunk image:



Notice that Spanish terms for the different parts are given. Students must learn Spanish terms too, so these must be included in the different tasks, in order to work with Spanish vocabulary acquisition.

Task 6: Before wood from a tree can be used, it must first be taken from the forest and transformed into a usable material: it must be processed. This process consists on four main phases: felling, transport, sawing and drying. (tala, transporte, aserrado y secado). The explanations for each phase are the following. First, read them individually. Then, work in groups to decide which explanations correspond to each phase. Write them in the correct order. When finished, each group must explain the class their decisions.

a) In this part of the process, the **trunks** are taken to the **sawmill** using different means of transport: road, rail or waterway.

b) At the sawmill the **bark** is removed and the **timber** is cut or processed to obtain different results: **beams, planks, boards, sheets, strips**, etc.

c) This is the act of cutting the trunk of the tree so that it falls to the ground. Once the tree has been cut down, **branches** are removed so that the tree trunk is clean.

d) This process eliminates moisture from the wood. There are two ways of accomplishing this: natural drying, or air drying, consists of stacking the wood in such a way that sufficient space is left between the pieces of wood for air to circulate; artificial drying consists of circulating hot air in the space between the pieces of wood inside warehouses.

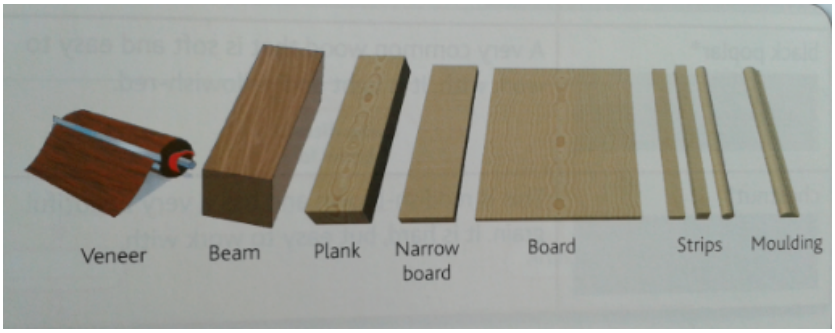
Notice that the translation of each process name is given in order to work with Spanish terms and help the groups decide which explanations correspond to each phase.

Reading, writing and speaking skills are involved in this task.

Incidental learning is involved: terms in bold are going to be used. Notice that these terms are key words that students have just studied. Using these words once and again through the different tasks will provide students with real vocabulary acquisition.

Ana González Guisasola
D.N.I.:71.640.523-P

Task 7: The illustration shows the most common different forms of natural wood available on the market. A description to each one is given below. The corresponding Spanish terms are given too. Read the descriptions carefully. Work in groups to match each illustration to its corresponding description and its corresponding Spanish term.



Descriptions:

a) This is generally formed by joining several narrow boards.

b) A thin strip with a square, rectangular or round cross section.

c) This is the largest of the pieces available for sale. It generally has a square cross section.

d) This is cut from a rotating trunk. It is very thin and is used to cover other types of wood of less quality.

e) This is a large piece of wood with a rectangular cross section.

f) This is a thin piece with a complex section and is generally used as a decorative element.

g) This is flat and not very thick.

(Images and descriptions from Pathways I (Teide, 2012:79)).

Spanish terms: tablón, chapa, viga, perfiles, moldura, tabla, tablero.

This kind of task is classified as Pictorial Vocabulary Teaching (Nam, 2010:130). Students can deduce from evidence the meanings of unknown words from pictures, rather than from explicit statements. Using both pictorial and written annotations, target vocabulary items are provided with their equivalent pictures and written annotations.

Task 8: Artificial or prefabricated boards are made from wood which is pressed and glued together using natural wood sheets, shavings or fibres. The next text describes the characteristics of the most used prefabricated boards.

a) Read it aloud:

- **Plywood**: this is made by placing **sheets of wood** one top of another with the direction of the **grain** in each sheet perpendicular to the one below it and then gluing them together. The number of sheets must be odd to keep the **boards** from warping and

the grain of the two outside sheets must be parallel. Most **furniture** used in schools is made of plywood.

- **Chipboard**: also sometimes called **particle board**, this is made with **shavings** or **leftover wood** that is treated with special glue and pressed between rollers. Most furniture is made with chipboard.

- **Pressboard** or **fibreboard**: this is made with **wood fibre** and synthetic resin which are compressed under high pressure. Fibreboard comes in different density grades, the most commonly used grade is medium density fibreboard (MDF), which is sold is different sizes and **thicknesses**. If wood fibre resin is used instead of synthetic resin in the compression process, the resulting board is called **tablex**. This is used very frequently on the back of pieces of furniture.

(Descriptions from Pathways I (Teide (2012:81)).

b) Work in groups. Different pieces of artificial boards are given to each group. Classify each piece of wood. Analyse each type attending to the density and the fibre size of each piece.

c) Spanish terms for each type of artificial boards are: **contrachapado, aglomerado, tablero de fibras**. Decide which term corresponds to each type of board studied.

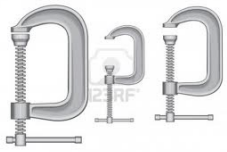
d) Try to explain the other groups the main characteristics of each type of artificial boards. You can use the pieces given to the groups.

Comprehension reading and speaking are the language skills involved in this task. Key words, in bold in the text, must be included in the oral explanations required.

Task 9: With the help of the textbook, write a description for the next processes: measuring and marking, bracing, sawing, sanding and polishing. You must use the next words: saw lines, tools, metal ruler, hold, brace, sawdust, smooth finish, sandpaper.

The mentioned processes are key words, and the words students must use to describe the processes are key words too, so to achieve the goal of this task, students are going to work with specific vocabulary, and this will help to interiorize it. Each process itself needs to be acquired by students too, and working in this way, learners will develop the specific subject contents.

Task 10: Match the processes mentioned in the previous task with the most appropriate tools used to work in each process: universal hand saw, firmer chisel, gouge, sandpaper, backsaw, file, electric sanders, circular saw, clamp, hand plane, metal ruler. Then, fill the next table according to the images:

Process	Tools	Image
		
		
		 

Show the resultant table to the other groups and explain how we name each tool in Spanish.

Technical vocabulary is involved in this task. Groups must take decisions and look for information to decide which tool is used for each process. Looking for information is a learning process, and the use of key words is obviously involved. Translation is essential: one of the objectives of the Technology subject is that students have to learn the different tools used at the workshop and the processes for which they are used.

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3.2.- STRUCTURES.

Linguistic objective: vocabulary acquisition.

Key words: structure, stability, rigidity, resistance, solid structures, triangulated structures, shell structures, frame structures, suspended structures, natural structures, artificial structures.

Task 1: Read aloud and translate the next text:

If you look carefully around you, you will see that we are surrounded by all types of ***structures****.*

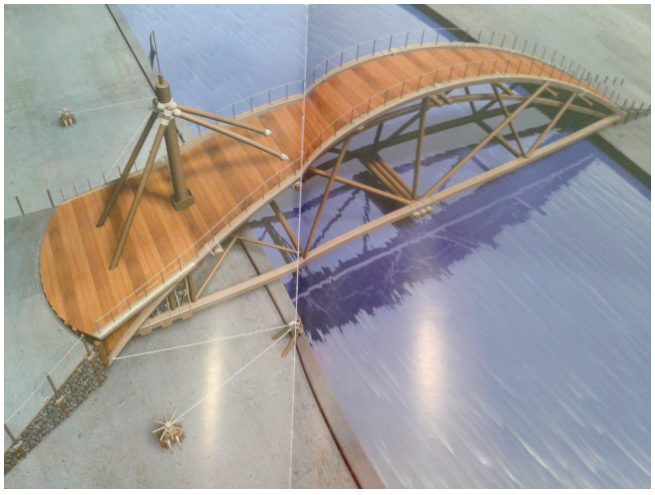
Both living beings and the great number of objects that have been designed and created by human beings can be understood as structures; some are very simple and others are more complex: the human skeleton, the trunk of a tree or a bridge, tower or building of any kind.

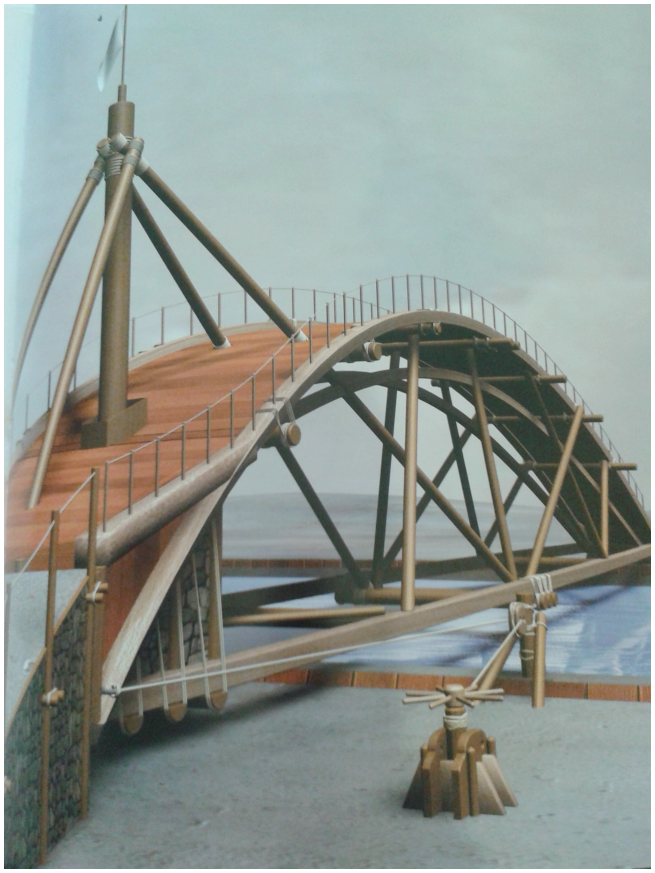
The structures of manufactured materials have always been one of the ways humankind has manifested its genius.

Structures are designed to hold objects, mechanisms, systems or any type of body; they can also overcome barriers, like the course of a river. So, structures have to be ***resistant*** *and* ***stable****.*

(Text from Pathways I (2012:36)).

Visual stimuli must accompany this task. Next illustrations from Leonardo da Vinci designs are a good example:





(Images from Le Machine di Leonardo (2009:149, 154)).

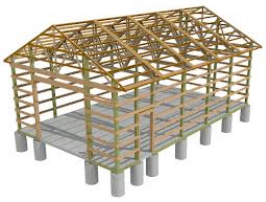
Task 2: a) Read the text again and search for examples of natural structures and artificial structures. Think about another example of each type.

After a few minutes to search for answers, we may create a short debate at which students can exchange their examples and decide if their partners have chosen the right ones. It is very probable that students had thought to be a natural structure was nevertheless an artificial one. This task will help students to differentiate natural from artificial structures while they are using key words. Reading and speaking are the language skills most involved in this task.

Task 3: Create a glossary of key words.

Students must write the word in English, a definition for each word in English and its translation into Spanish. The objective of this task is the same mentioned for the previous unit (Wood, task 2).

Task 4: The next table shows a collection of structure types, descriptions and images. The structure type, the description and the image in each row don´t match correctly. In groups, reconstruct the table with the correct information for each row:

Structure	Description	Image
Solid or gravity structures	These are based on the use of panels of material that are shaped to increase their resistance. The body of a car or a metal cabinet would be examples of this type of structures.	
Shell structures	These structures are built joining bars to form triangles, like those in construction cranes.	
Frame structures	These structures are used mostly for bridges in which cables attached to towers bear the weight.	
Triangulated structures	These structures are built with horizontal and vertical components, and include structures such as a table or a ladder.	
Suspended structures	These are solid, heavy structures built on the basis of an accumulation of materials. They are the oldest type of artificial structures. Pyramids and cathedrals are examples of solid structures.	

(Descriptions from Pathways I (2012:38)).

3.3.- MECHANISMS.

Linguistic objective: vocabulary acquisition.

Key words: mechanisms, effort, inclined plane, wheels, screw, lever, pulley, belt, axle, weight, rope, winch, rack, pinion, toothed bar, cogwheel, circular motion, straight motion, drive element.

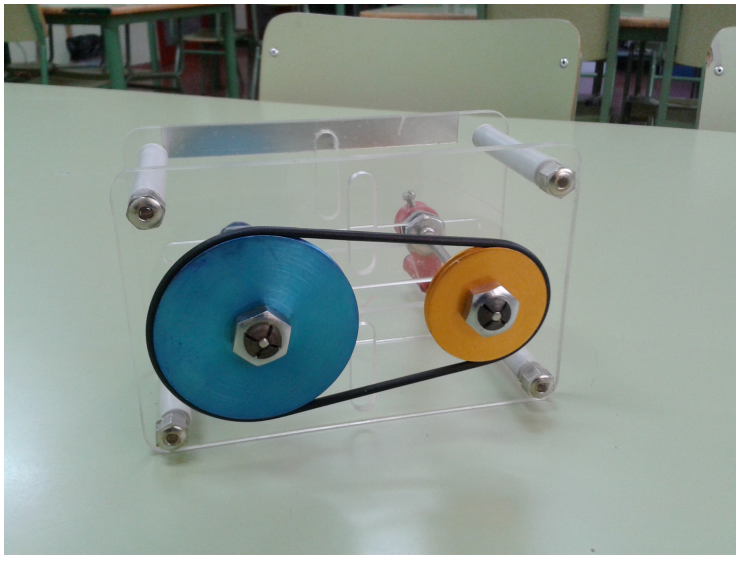
Task 1: a) Read the next text and translate it.

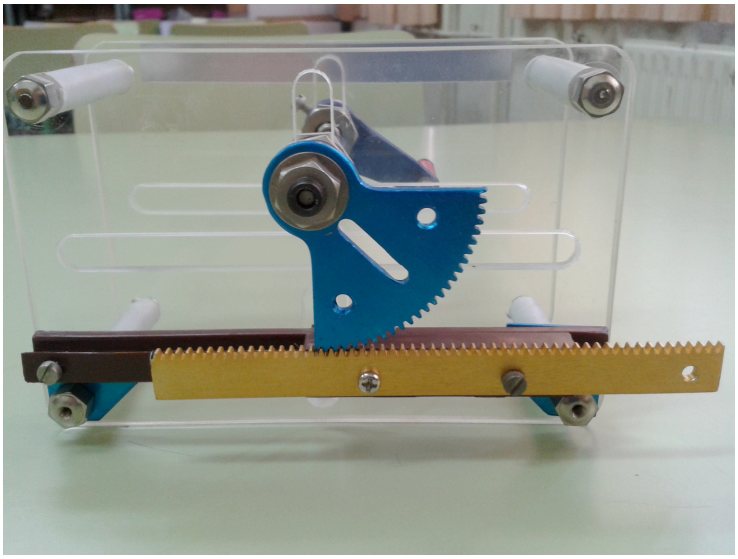
Mechanisms *are devices that are used to reduce the amount of* ***effort*** *needed to complete a number of different actions. Humans have used them since ancient times, and they include everything from simple machines to the extremely sophisticated designs of today.*

If you analyse your day-to-day actions you can find examples of mechanisms being used. When your alarm goes off in the morning, you use a ***lever*** *to make it stop ringing. You raise your blind by pulling on a cord (and probably, in addition to the cord, there is a system of* ***pulleys****). When you open a door the latch system also employs a mechanism, so do the lifts you use and the bicycle you might ride to school.*

In this unit, we will look at the study of simple machines and mechanisms using examples that are very familiar to all of us. (Pathways I, 2012:23).

b) Mechanisms always involve a movement, so an appropriate starting point here could be a video in which students could appreciate how a mechanism works and the type of movement involved. Real mechanisms can be appropriate too. Collections of mechanisms models are available in any Technology workshop. My proposal is to show students the next ones:





We can give one model to each group and let them manipulate the mechanism in order to appreciate the movement involved.

Task 2: Create a glossary of key words.

Students must write the word in English, a definition for each word in English and its translation into Spanish. The objective of this task is the same mentioned for the previous unit (Wood, task 2).

Task 3: Simple machines are devices that humans use to complete tasks using less effort. Five of them are the inclined plane, the screw, the wheel, the lever and the pulley. Descriptions are given. Work in groups to decide which description matches with each simple machine:

- *Using an inclined plane you can lift a heavy object with less effort.*
- *The first wheels were simple wooden cylinders, such as tree trunks, which were used to move heavy objects. The principle of the wheel is used for motion and also to transmit motion.*
- *It consists of a rod or rigid element that pivots on a support point. Using it, heavy objects can be lifted with little force.*
- *It is composed of a **wheel** with an **axle** that can turn freely. A **rope** is passed around the outside of the wheel. The object to be moved is attached to one end and the force is applied on the other. It makes it easier to lift a weight because you can use the **weight** of your whole body*. (Pathways I, 2012:24).

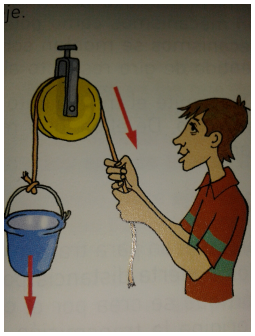
Task 4: Read the next description about the winch:

*The **winch** is an application of the wheel. As the **handle** is turned, the **motion** is transmitted to the **rope**. The longer the winch handle, the less **effort** is required to move the rope, but the action of turning covers a longer distance.* (Pathways I, (2012:27).

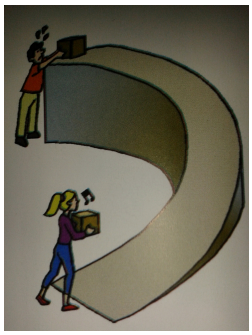
(Description and image from Pathways I (2012:27)).

Translate the text into Spanish in your notebook.

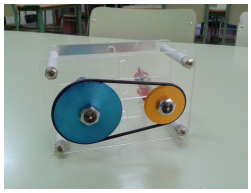
Task 5: a) Look at the pictures, read the descriptions and match each picture to the correspondent description:

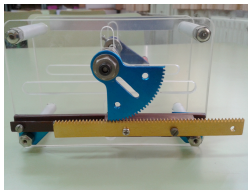


(Image from Tecnologías I (SM, 2007:101)).



(Image from Pathways I (Teide, 2012:26)).





***Inclined plane**: If a ramp has a more gradual incline, less **effort** is needed to move an object up it, but the distance the object has to be moved is greater.*

***Lever**: In the figure, you can see how the lever is **balanced** although the weight of the two people is different. The longer the lever, the less **force** is required to move an object, but the distance the lever has to be moved is greater.*

***Pulleys and belts**: The **axles** of the **pulleys** are parallel. The **direction of rotation** is not reversed if the belt is not crossed. The axles of the pulleys are relatively far away from one another*

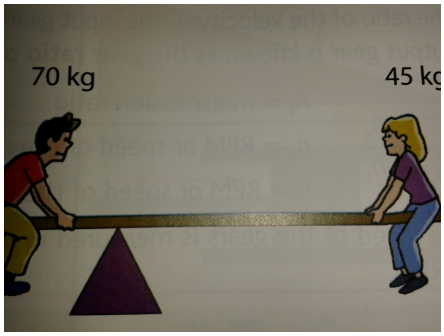
***Rack and pinion**: it consists on a **toothed bar** which engages a **cogwheel**. It transforms **circular motion** to **straight motion** and vice versa. This mechanism is reversible since the **drive element** can be either the rack or the pinion.*

(Descriptions from Pathways I (2012:26, 27, 30)).

b) Translate the descriptions into the Spanish language into your notebook.

c) Decide which of the mechanisms makes a transmission of motion (transmits motion from one point to another without changing the type of motion), and which a transformation of motion (transforms the type of motion from circular to lineal or vice versa). Write the description again explaining this point.

Task 6: With the help of the descriptions given in tasks 4 and 5, describe in detail how the mechanisms of the following illustrations work. Specify which simple machines are used and how they require less effort to complete the task. You must use the next key words: lever, force, distance, handle, effort, rope.



(Image from Pathways I (Teide, 2012:27).

(Image from Pathways I (Teide, 2012:27).

This is a composition task at which students have to make a "productive use of unknown word, getting involved in high vocabulary production processing" (Nam, 2012:132). Non-intentional learning of technical vocabulary is involved in this task, through the writing skill development. This task implies a highly demanding cognition process.

Task 7: *After reading the previous descriptions you have written, try to retell them without reading them from the notebook. Pay attention to the key words.*

"Retelling what we have read greatly improves vocabulary gains for unfamiliar words because it demands a higher level of generation". (Nam, 2012:132).

Task 8: Write your own summary of the unit, filling the blanks with key words: (**belts, reduce, parallel, simple, mechanism, transformation, long, lever**). (Pathways I, 2012:34).

- _____ *machines were the first devices used by humans to make their work easier. They include the inclined plane, the screw, the wheel, the* _____ *and the pulley.*

- *Simple machines are used to* _____*the amount of effort needed to complete the task, bot the distance travelled is greater. For example, if a lever is very* _____*, less effort will be required to move an object, but the distance that the lever has to be moved is greater.*

- *A mechanism that does not change the type of motion is called a motion transmission* _____*, and one that does change the type of motion is called a motion* _____*mechanism.*

- *In transmission with pulleys and belts the axles are* _____ *and the elements can be relatively far from one another. The direction of rotation can change if the* _____ *are crossed.*

This is a high controlled vocabulary-learning task, designed so that the sentences are connected to provide a summary of the unit.

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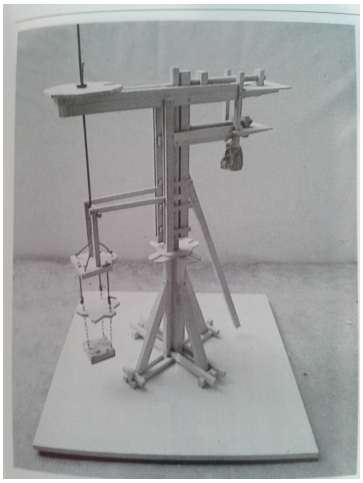
D.N.I.:71.640.523-P

3.4.- AT THE WORKSHOP: CONSTRUCTION OF THE CRANE MODEL.

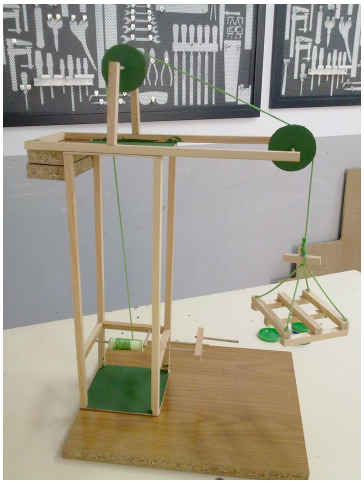
The construction of the crane model is a complete task, with a pre-task phase, a task cycle, a planning phase and a report phase. The proposal is a closed task with very precise instructions.

As a starting point, the teacher may motivate students with visual stimuli, showing photographs of different wood crane models, although only one option is going to be constructed.

These are good examples:



(Elevation machine model, Vinci´s Museum. Model constructed at the Florence University).



(Real crane model made at the Technology workshop).

The best option is to show a video of a real model to make students notice how the mechanism works, and to appreciate better the real dimensions of the model.

At this moment, all students feel a strong motivation to start with the construction, but instructions must be studied carefully. The teacher must establish the rules, and the groups need to read them and make sure they have understood every step before the construction.

Pre-task phase:

The groups receive the instructions in written format. Students must read them and take decisions. Each member of the group will have a different responsibility.

Document at this phase are the next: (the text to design this documents has been extracted from Technologies I Oxford CLIL, 2012:9-13).

ORGANISATION OF WORKSHOP ACTIVITIES

- The **coordinator** is responsible for organising the work for each group member to achieve efficient **teamwork**.

- The **person responsible for the material** collects the material needed for the work and is also in charge of recycling **leftover material**.

- The **person responsible for the tools** looks after the tools assigned to the group to make sure they are not lost or damaged.

- The **secretary** collects, checks and organises all the written documents from each group member (plans, process reports, etc.).

- The **person responsible for heath and safety** makes sure that the group members follow the **health and safety rules** in the workshop and when using tools.

- The **person in charge of cleaning** makes sure each **workstation** is left completely clean.

HEALTH AND SAFETY RULES

- To protect you health we have to follow rules when we are in the workshop.

- Tools and machines can be dangerous if we don´t use them properly.

- Safety rules prevent accidents and reduce the risk of hurting ourselves.

- To prevent accidents in the workshop, you must always follow your teacher´s instructions.

Different types of signs must be shown to the students. Some of them are in the workshop near specific machines and tools. The teacher must explain what these signs mean and make sure that students have understood that they must obey signs.

CONSTRUCT THE DESIGN

- Before constructing the model, decide how to make each piece.
- If something appears difficult to do, find that solution first. The problem may be more difficult to solve later.
- Drawing is the first step to building.
- Draw the pieces in the order you are going to make them.
- Decide how to join the next piece before you draw it. This makes it clearer what the object will be like.

Other documents that the teacher must give to the groups are the plans of the model with exact dimensions.

The task cycle:

The task cycle contains the planning, constructing and testing phases of the Projects´ Method. The task includes five activities to be done in the proposed order.

Planning phase: groups have to create a process sheet that contains the group work plan. The teacher may give the groups a pre-designed sheet with a table that the groups must fill with the information they had decided. They must use the concepts and procedures they had learnt during the previous units (wood, structures and mechanisms).

Activity 1: *Fill the table with the appropriate information.*

The materials available are wood (plywood, pressboard, chipboard, strips, boards, planks), rope, glue, plastic cylinders.

You can use all the tools and machines available in the workshop.

The model you are going to construct is a structure. Decide which type of structure it is to design it in order to obtain a rigid and stable structure. If triangulation is needed, you have to calculate how much material of each type you need to obtain a rigid and stable structure.

A mechanism to raise loads must be inserted into the structure of the crane. Decide

the most appropriate a mechanism you may construct using the materials available.

Piece number	Piece name	Piece dimensions	Material	Tools	Expected time	Responsible group member
1						
2						
3						
4						
5						
6						

It would be difficult for groups to start with the process sheet. The teacher can help the groups making the design of the first piece, filling the first row of the table.

Constructing phase:

Activity 2: *It is easy to make an object if the process is planned correctly. If you have a good design and plan, construction will be quicker and more efficient.*

Normally, you should make the biggest pieces first. These form the base of the model. When you have made the basic structure of the model, you can add secondary pieces and other details, following a logical order.

Go to your workstation. You can start with the construction. Ask the teacher for all the materials and tools you need.

During the process the groups have to design two different documents, a materials sheet and a tools sheet. You can use the next pre-designed documents, filling them:

MATERIALS SHEET

The materials needed to construct our model are the next:

-
-
-
-
-

TOOLS SHEET

The tools and machines needed to construct our model are the next:

-
-
-
-
-

Oral communication is going to be needed during all this phase. The technical vocabulary studied during the previous units is going to be practised. This is a way to practise stress, intonation and pronunciation related to the core contents. Obviously, speaking skill is involved during the whole task.

Testing phase:

This is a necessary phase in every Technology Project, to evaluate and check the model the groups have made, attending to the next points: appearance, use, materials, durability, maintenance, safety and possible modifications.

Activity 3: *You have just finished your model. Now you must evaluate your model, answering to the next questions into a new sheet:*

- *Appearance: Analyse the aesthetic aspects of the object. Could you improve it?*
- *Use: Does it work? Is it easy to use?*
- *Materials: Are they recyclable? Can you reuse them? Could you make the same object with cheaper materials?*
- *Durability: How long will the object last? Is it likely to be broken easily?*
- *Safety: Are there any risks in using this object?*
- *Possible modifications: Based on your answers to the previous questions, is there any part of the design that you could improve?*

Speaking and writing skills are involved in this activity, the groups must check the model, come to terms to decide the answer to each question and write a new sheet to be included in the final report.

The report phase:

Activity 4: *You have to design a construction report. It must contain different kinds of sheets, as the plans, the process sheet, a material sheet and a tools sheet. You must design new pages to finish you report:*

- Front page for the project*: names of the group members, name of the school, group number, year and tittle of the project.*

- Index*: a list of the report contents and a page numbers.*

- Incident report*: a description of the problems you had and how you solved them.*

- Instructions on how to use and maintain the object. *(How to maintain the wood and the structure, and how the mechanism runs).*

Activity 5: *Design a presentation to show the other groups your model, how you organised the work, how you constructed it, how the model runs, the problems you found during the construction, etc. All the group members must participate during this last task.*

CONCLUSIONS.

Progressive exposure to the core language is required for expression in a Technology context. As well as understanding the subject specific language, students learning through the medium of English also have to acquire and use the necessary technical vocabulary to enable them to express and discuss the concepts and procedures in an appropriate style.

The Task-Based Learning is a learners´ centred methodology that can be applied in bilingual programs, in order to improve core vocabulary acquisition. Learning through tasks, students feel motivated to achieve the task goal, while they train their English and learn the subject contents.

Through careful choice of technical vocabulary in the texts and including core words in the designed tasks, students can gradually build up their proficiency.

The proposal includes a pre-task phase with starting points to introduce the topic and motivate the students, a task-cycle phase at which the students, working in groups, are encouraged to achieve a goal, working with the core words; and a report phase, at which the students have to write a report in order to explain the solution to the task. Consequently, the four language skills (speaking, writing, reading and listening) are involved in the same task. Students are using the second language with a purpose, the English language is the vehicle to achieve a goal, and using it they practise its formal aspects.

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