THE INTEGRATION OF AUDIOVISUAL TRANSLATION AND NEW TECHNOLOGIES IN PROJECT-BASED LEARNING: AN EXPERIMENTAL STUDY IN ESP FOR ENGINEERING AND ARCHITECTURE

LA INTEGRACIÓN DE LA TRADUCCIÓN AUDIOVISUAL Y LAS NUEVAS TECNOLOGÍAS EN EL APRENDIZAJE BASADO EN PROYECTOS: UN CASO EXPERIMENTAL EN IFE PARA INGENIERÍA Y ARQUITECTURA

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Abstract
Methodological approaches like project-based learning, the didactic use of audiovisual translation and the use of Information and Communication Technology (ICT) have attracted the attention of researchers in recent years. These are the three pillars on which the current article rests. It presents an experimental study within the context of project-based learning in which students of engineering and architecture undertake a project to build and sell a sustainable house. In order to succeed in the project, the students have to progress from one stage to the next by completing various tasks that require the didactic use of the audiovisual translation modes of dubbing and subtitling as well as the use of mobile applications and new technologies. This research aims to show how the implementation of the project can contribute to the development of productive and receptive linguistic skills and even be considered an option to provide the framework for the design of the whole syllabus in an English for Specific Purposes subject. The study was carried out in a transversal subject of technical English in which students from different degrees of engineering and architecture converge. As a pilot study, it was proposed to the students as an alternative to replace the part of the subject that focuses on written and oral production in English language. The results will reveal a high motivating component in the activities, achieving the consolidation of knowledge through meaningful learning and a lowering of the levels of anxiety in the affective filter.

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Resumen

Los enfoques metodológicos como el aprendizaje basado en proyectos, el uso didáctico de la traducción audiovisual y el uso de las Tecnologías de la Información y la Comunicación (TIC) han atraído la atención de los investigadores en los últimos años. Estos son los tres pilares sobre los que se sustenta esta investigación. El artículo presenta un estudio experimental en el contexto del aprendizaje basado en proyectos donde los estudiantes de ingeniería y arquitectura se enfrentan a un proyecto en el que tienen que diseñar la construcción y preparar la venta de una casa sostenible. Para ello tienen que superar progresivamente etapas completando diversas tareas que requieren el uso didáctico del doblaje y la subtitulación, así como el uso de las nuevas TIC. Se pretende mostrar cómo la puesta en práctica del proyecto puede contribuir al desarrollo de las competencias lingüísticas productivas y receptivas e incluso considerarse una opción para diseñar el programa completo de una asignatura de inglés con fines específicos. El estudio se llevó a cabo en una asignatura transversal de inglés técnico en la que confluyen estudiantes de distintas titulaciones de ingeniería y arquitectura. El estudio piloto, se propuso a los alumnos como alternativa para sustituir la parte de la asignatura centrada en la producción escrita y oral en lengua inglesa. Los resultados revelarán un alto componente motivador en las actividades consiguiendo que los conocimientos se consoliden mediante un aprendizaje significativo y una reducción de los niveles de ansiedad en el filtro afectivo.

1. INTRODUCTION

The implementation of the Bologna process implied an evolution in the European higher education area of the 21st Century. There is a shift in teaching methods away from the traditional model focused on the central role of lecturers and the learning outcomes to others focused on students and the learning competences (Valcárcel Cases, 2005). In this new model, lecturers must develop different types of knowledge instead of just limiting themselves to declarative knowledge –knowing about something. They have to develop procedural knowledge –knowing how to do something– and conditional knowledge –knowing when and why to do something– (Briggs, 2005).

When all these types of knowledge are developed, students achieve a meaningful learning in which they are able to relate previous knowledge to that newly acquired, relating knowledge to practice and thereby finding a motivation in learning. Lecturers must apply new strategies that make the student learn to learn. Weinstein (2002) proposes the following strategies: the importance of goals and self-reflection, increasing students' self-awareness, providing methods for checking understanding, using existing knowledge to learn things, teaching domain-specific and course-specific strategies and skill and will.

Regarding learning outcomes, the new system not only looks to acquire a particular knowledge, but also a series of abilities, skills and competences that allow the student to successfully develop their professional activities in their near future. This is achieved when the student is able to integrate contents and to relate those applicable to a specific work-situation. In other words, learning is achieved from practice to practice. In the particular case of English for Specific Purposes (ESP), lecturers have a great advantage in that respect, since students are conscious of the value of the language for their professional future. This implies a special interest from the beginning of the learning process as students realise there is a direct, real life application for that learning. Particularly in the case of engineering and architecture, where the industry requirements bring about the necessity of making students aware of the importance of the ability to communicate in English. This need compels lecturers to reconsider their approach to teaching. The recreation of realistic situations takes a central role and leads to the introduction of authentic materials in the classroom. In this scenario the possibility of being part of a project is an asset as it is a reflection of situations found in real professional environments.

2. LITERATURE REVIEW

2.1. Project-based learning and ICTs

Project-based-learning is an innovative approach to learning and a particularly successful strategy in engineering and architecture disciplines, as extensive research has demonstrated (Felder & Silverman, 1988; Perrenet, Bouhuijs, & Smits, 2000; Mills & Treagust, 2003; Estruch & Silva, 2006; Nasr & Ramadan, 2008; de Los Rios, Cazorla,

Díaz-Puente, & Yagüe, 2010; Litzinger, Lattuca, Hadgraft, & Newstetter, 2011; Jerez Naranjo & Garófalo Hernández, 2012; Fernández & Duarte, 2013; Parra Castrillón, Castro Castrol, & Amariles Camacho, 2014; Warren, 2016). The success of PBL in Science, Technology, Engineering, Maths (STEM) disciplines can rely on the parallels between the way of working in PBL and in the future jobs of STEM students. PBL consists of the implementation of a set of tasks whose accomplishment requires both the student's autonomous process of research and cooperation between the members of the group to achieve a final product. According to Skehan (1998, p. 95), the task is "an activity in which: meaning is primary; there is some communication problem to solve; there is some sort of relationship to comparable real-world activities; task completion has some priority; the assessment of the task is in terms of outcome". This association between problem solving and the nature of real-life activities is also found in the definition of task as "a goal-oriented activity in which learners use language to achieve a real outcome. In other words, learners use whatever target language resources they have in order to solve a problem, do a puzzle, play a game, or share and compare experiences" (Willis, 1996a, p. 53).

The task implies that the student performs language production and this is related to an oral or written text (Willis, 1996a, pp. 52–53). The task itself includes the two productive skills, writing and speaking, which are the product of the receptive skills, listening and reading. In PBL, the process begins with the introduction of the topic through a task, which is followed by a cycle of tasks, all related to the ultimate goal being pursued. According to Willis (1996b, pp. 35–36), PBL is characterized by:

1. giving learners confidence in trying out whatever language they know;
2. giving learners experience of spontaneous interaction;
3. giving learners the chance to benefit from noticing how others express similar meanings;
4. giving learners chances for negotiating turns to speak;
5. engaging learners in using language purposefully and cooperatively;
6. making learners participate in a complete interaction, not just one-off sentences;
7. giving learners chances to try out communication strategies; and
8. developing learners' confidence that they can achieve communicative goals.

There are three stages in PBL: pre-task, task cycle y focus on form (Willis, 1996a). In the pre-task stage, the topic of the project is presented and brainstorming activities are recommended; the activities in the task cycle involve collaboration among students who have to undertake communicative tasks based on oral and/or written texts. The last stage focuses on form and includes exercises similar to those from traditional teaching models. PBL has evolved, an example of this is Dudeney's (2000, p. 56) internet-based project work approach where PBL is combined with cooperative learning.

This online aspect in PBL becomes a valuable ally in scenarios of virtual classes or in those which combine online with in-class teaching. The introduction of new technologies in the teaching practice and the adaptation of lecturers is a must, if one takes into consideration the new profile of the students (Rodley, 2005). These students, named

digital natives (Prensky, 2001, p. 1), are used to absorbing information quickly, simultaneously and in a multimodal way, that is, through a combination of images, sound and texts.

The relationship between PBL and online learning, or e-learning (Colpaert, 2004, p. 43), is pointed out by Partlow and Gibbs (2003) who consider that e-learning courses must be interactive, project-based, collaborative and provide some control on learning. In e-learning, technology is integrated as a resource for education going from having a passive role to an active one. Technology Enriched Learning (TEL) is framed in this evolutionary process, becoming an invaluable asset by offering multiple opportunities to improve language learning (Grgurović, Chapelle, & Shelley, 2013). One of the main advantages of TEL is that it allows simulations of tasks such as those that students will have to carry out in their real life. This digital component together with accessing real materials to undertake the tasks also strengthens the students' motivation and contributes to the development of digital competences and the learners' autonomy.

Technology also implies a transition in teaching, from printed material to online material accessible through URL links and QR codes, and allows student access from any device with an Internet connection (Dudeney & Hockly, 2007; Pegrum, 2010; Hockly & Dudeney, 2014). This idea of mobility in technology, in learning and in the learner is the foundation of m-learning (El-Hussein, Osman & Cronje, 2010, pp. 17–19). M-learning can be applied in face-to-face, online or distance learning contexts. M-learning allows "more flexible, accessible and personalized learning activities. Such advantages are hoped to keep the learners engaged in ongoing learning activities and enhance their productivity and effectiveness" (Ting, 2005, p. 603); and it is precisely the immediacy and the easy access that make the use of new technologies attractive by satisfying the expectations of digital natives accustomed to immediate access to sources of information. The use of m-learning in language teaching has led to Mobile Assisted Language Learning (MALL). Its success has been proved in numerous studies (Thornton & Houser, 2005; Chinnery, 2006; Kukulska-Hulme & Shield, 2008; Baleghizadeh & Oladrostam, 2010; Godwin-Jones, 2011; Burston, 2015; Duman, Orhon, & Gedik, 2015), which cover different aspects ranging from grammar improvement, vocabulary acquisition and the development of oral and written skills.

2.2. Audiovisual translation (AVT) in language teaching

The role of translation within language teaching has flourished in recent times. It is not a return to the Grammar-Translation method but rather the application of translation in the teaching of foreign languages under the umbrella of the communicative approach (Zojer, 2009). Zojer (2009) claims that translation has numerous advantages since

- it is a cognitive tool for contrastive analysis between L1 and L2, which can prevent interferences;
- it is also an integrative activity where the use of the language is similar to that of daily life. In this way, it differs from activities based on pre-designed texts which concentrate on specific aspects of the language;

- it involves the development of reading and comprehension strategies; and
- through translation, syntactic, semantic and textual comprehension can be assessed.

All these advantages are shared by AVT, which has found its own place in foreign language teaching thanks to the research studies carried out by Neves, 2004; Condinho Bravo, 2008; Díaz Cintas, 2008 & 2016; Talaván, 2011 & 2013; Talaván & Rodríguez-Arancón, 2014; Talaván, Ibáñez, & Bárcena, 2017; Sánchez-Requena, 2018; Lertola, 2019. One of the first studies on the use of dubbing for developing linguistic and paralinguistic features, in particular, pronunciation, rhythm and fluidity, was conducted by Kumai (1996). Burston (2005), on the other hand, goes a step further by organizing the dubbing tasks into different steps, so that they respond to the communicative principle and encompass the development of the production and reception of language in both oral and written forms. In this regard, Ghia and Pavesi (2016) state that dubbing can be used as a task not only to develop production and reception, but also interaction and mediation. More recently, Talaván and Costal (2017) evaluate the effectiveness of dubbing as an active activity in distance learning English. They introduce it as an assessment tool in distance learning and opt for intralinguistic dubbing instead of the conventional use of interlinguistic dubbing.

Another modality in AVT that stands out for its pedagogical use is subtitling. While standard interlinguistic subtitles have been recommended in the initial stages (Díaz Cintas, 2012, p. 100), their potential has subsequently been extended to the case of advanced level students (Talaván & Rodríguez-Arancón, 2015). This pedagogical use of subtitles in language teaching has been analysed through different lines of research that range from studies on the contribution in the case of early ages (Ghorbani, 2011) to those that focus on cases of high school teaching and modern language degrees like the research carried out by Talaván, Lertola and Costal (2016) and Talaván and Ávila-Cabrera (2021).

However, most of these studies revolve around the use of subtitles for teaching General English. Although it is true that the importance of subtitles has not gone unnoticed in the teaching of languages for specific purposes, as demonstrated by the studies on the use of subtitles to develop communication in business (Talaván, 2006), their use in tourism (Bárcena Madera, Martín Monje & Talaván Zanón, 2014) and in the military field (Fuentes-Luque & Campbell, 2020), the literature on the use of subtitles in technical English for engineering and architecture is still scarce.

3. CASE STUDY: METHODOLOGY AND PROJECT TASKS

It is within this educational context that this case study for ESP in engineering and architecture degrees occurs. The study is conducted in the subject of Technical English which is transversal and embraces students from all engineering degrees as well as architecture. Their level of English ranges from A2 to C1, which can make teaching complicated. In spite of the heterogeneity in terms of interests and language levels, all the students are in their final year which implies a certain maturity and awareness of the

requirements they will have to fulfill in order to enter the labour market. Although there is no prerequisite in the syllabus to enrol in the subject, a B1 level in written and spoken English is recommended as a starting point since at the end of the course a higher level will be required. In addition, this starting level is necessary so that students are able to interact in the class and to understand and analyse specialised texts.

Likewise, it is important to point out that there is a total of 50 students in the group, a high number, in particular, in the case of language teaching where the need to practice communicative skills is beyond question and this implies a high degree of active student participation. From the 50 students in the group, 30 are involved in this project and they replace the practical sessions, where attendance is compulsory, with this project. These 30 students are divided into 5 groups of 6 from different degrees which allows the exchange of different knowledge and approaches. Likewise, the heterogeneity of the group fosters discussions among the participants in which the specific knowledge of the subject has to be presented and explained to the rest of the group for the subsequent decision-making process.

An active learning approach is applied in this study, which "involves providing opportunities for students to meaningfully talk and listen, write, read, and reflect on the content, ideas, issues, and concerns of an academic subject" (Zayapragassarazan & Kumar, 2012, p. 3). This critical thinking is achieved by means of different learning strategies, which are grouped in four main categories: a) individual activities, b) activities in pairs, c) activities in small informal groups, and d) cooperative projects. The selection of these categories depends on the outcomes, the class size and the available time and space. Among the active learning activities, Zayapragassarazan and Kumar (2012, pp. 3-4) highlight the importance of conceptual maps, collaborative writing, brainstorming, collaborative learning, pair-learning, project based learning and role-plays. A combination of these is proposed to the students in a set of tasks that are established in the form of a project.

The project is introduced as a multidisciplinary unit of work where real situations are portrayed via the use of a combination of authentic materials and educational resources. The tasks that encompass design, problem-solving, decision-making and constructive investigation revolve around a driving question related to architecture, in this case the construction and sale of a sustainable house; however, in order to solve the problem, the intervention of engineering knowledge is required.

New technologies are used in order to facilitate both the cooperation and collaboration between the group members as well as the search for and acquisition of knowledge to enable them to complete the tasks proposed. The digital component is included from the very beginning of the project as it is presented in digital format by means of a hyperdoc, that is, a document conceived as a digital worksheet where critical thinking and problem-solving skills can be developed through linked tasks. This digital lesson incorporates interactive features and linked content involving the student through question-based learning. Four steps are followed to create the hyperdoc in this study:

1. Identification of the area of learning. ESP focusing on the field of architecture and, in particular, on buildings.

2. Choosing a learning structure. Three stages (design, presentation and sale) which are composed of activities and their assessment.
3. Incorporation of different types of content. Videos, forms (Google forms), power point presentations, Kahoot tests, etc.
4. Publishing the document. The link of the hyperdoc is distributed among the students so that they can access it. The results from the forms and tests embedded in it are collected and data can thus be analysed.

The hyperdoc for this study is presented in the form of a Google doc and is divided into four blocks: a warm-up section, and three further sections, which match the three stages of the process of the project: design, presentation and sale (Figure 1).

Figure 1

Overview of the hyperdoc. "Sustainable houses"

Do you dream of living in a sustainable house?

Engage and Explore
What do you understand by sustainable houses?
1. Type a response in this <u>Answer sheet</u>. Make sure your response is no longer than 32 words.
2. Watch a <u>video</u> about a sustainable house and answer the following questions in this <u>test</u>.

Task
Do you dream of living in a sustainable house?
You have to design your ideal sustainable house for your architectural firm. You have to place it on the market. In order to do that, each group has to undertake three main tasks: Design, Presentation and Sale.

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1. Design
a. Look at the following <u>word cloud</u>. What do these words mean to you?
b. Read the following <u>text</u> and take this <u>quiz</u>.
c. Look at the following <u>slideshow</u> about 11 green building materials that are way better than concrete. Watch the photos, read and scan the text next to them.
- Extract and write down the strengths and weaknesses of the 11 alternative materials.
- Take a look @ this <u>video</u> where you will find useful expressions to present advantages and disadvantages.   You can play it with English subtitles.
- After watching the video of useful expressions, please take the following <u>test</u> to check your understanding.
- Go back to the <u>slideshow</u> and:
  - describe the pictures
  - take a look to your notes about the strengths and weaknesses of the alternative materials. Now, it is your turn to choose the best type and materials to build your sustainable house and justify your choices to the group.
d. Read this <u>research article</u> and answer the following <u>test</u>.

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e. Assessment. Kahoot tests:
- Properties of materials.
- Architecture.

2. Presentation

a. You are going to listen to architect John Bulcock talking about a solar chimney house in Kuala Lumpur.
- To access the video go to https://goo.gl/Y6ZGmS or scan the QR code with your phone.
- Download the clip and save it as .mpg or .avi
- Create and edit the subtitles following the basic subtitle guidelines here included.
- For subtitling the clip use the software Aegisub. To download Aegisub go to: www.aegisub.org/
  - Save the subtitles as .srt and exchange your file with the other groups for peer-review.
  - For peer-assessment use the following rubric

b. Take the clip used as a model and re-voice it.
- Exchange your clips with the other groups for peer-review.
- For peer-assessment use the following rubric.

3. Sale

a. Watch the following business conversation. The context of the conversation is provided as well as the English subtitles.

b. Here you can find 10 useful business expressions.

c. At this stage you have to deal with a potential client in order to sell your own designed sustainable house. Use these cards to play your roles in this commercial transaction.

d. Assessment. Kahoot test:
- Expressions in business negotiations.

Team assessment

Assess the work of each of the members of the team filling this form.

The first block serves to introduce the topic and make the student look for information related to the driving question, building a sustainable house, before moving onto the other three blocks –design, presentation and sale– that correspond to the three stages of the project. The students are asked to summarise in a Google Form what they understand by sustainable house using a maximum of 32 words. After this, they have to watch a video about the sustainable green construction of a cob house. The video lasts four minutes matching the recommended duration of no longer than six minutes which, according to several scholars (Wagener, 2006; Rost, 2013; Talaván, 2013), is the amount of time students' attention can be maintained. This video is followed by a test created using Google Forms that consists of a multiple-choice questionnaire that checks the students' listening comprehension skills.

Once they are contextualized, the students have to design their ideal house for an architectural firm by undertaking four activities. To begin with, a word cloud which has

the shape of a house and is made of words related to sustainability such as "eco, straw, cob, clay, self-sufficient and bamboo". After the definition of key vocabulary, they are introduced to the text "Eco-communities" (https://www.englishclub.com/reading/environment/eco-community.htm), taken from a learning English website, which is accompanied by a reading comprehension test. The third activity is based on a slideshow presentation entitled "11 green building materials that are way better than concrete" (https://inhabitat.com/11-green-building-materials-that-are-way-better-than-concrete/) that combines pictures and text and belongs to the website "Inhabitat" (www.inhabitat.com), a green design and lifestyle website. The students scan the text and extract the most relevant information. They take note of the pros and cons of the eleven alternative materials to concrete. Then, students watch a video, with optional subtitles in English, from a learning English website about how to express advantages and disadvantages. After the video there is a test to check their understanding. Having been given the expressions, they come back to the slideshow to: describe the pictures and to choose the best materials to build "their sustainable house". They justify their choices to the other members of the group looking at their notes and using the expressions to talk about pros and cons. This activity is followed by a reading comprehension test of the research paper "Sustainable building materials or low-cost housing and the challenges facing their technological developments" (Bredenoord, 2017). A real research paper is chosen as these types of texts are what they will have to read when they are architects. The students have to answer the questions proposed in a Google Form which are designed with the intention of checking whether the students are able to read, understand and extract the most significant information. This stage concludes with two Kahoot tests, one taken from the bank of Kahoot tests and another designed for this project, which assess their knowledge about the properties of materials described throughout the unit and about types of architecture.

The second stage is the presentation of the building and is composed of four activities. The first activity consists of listening to an interview with an architect who talks about a sustainable house in Kuala Lumpur. Students can opt to scan a QR code or click on a shortened URL to access the video. Once they listen to the 2'30 video they download it and create and edit the subtitles. A basic set of guidelines designed for subtitling it is provided and accessible simply by clicking on a hyperlink. They are taught the principles for subtitling a clip and the basic rules that determine and condition the subtitle discourse. When they have the subtitle file, they exchange it with other classmates for peer-review. For the assessment, the lecturer gives the students a rubric that includes four parameters:

- Accuracy. The subtitles are grammatically correct (spelling, punctuation, grammar, syntax).
- Condensation. The number of words in subtitles does not exceed the limit of 42 characters per line.
- Segmentation. The text in the subtitle is appropriately segmented.
- Synchrony. There is synchrony between the duration of each subtitle and the duration of the actor's corresponding utterances.

This activity, which embraces the development of both listening and writing skills, is followed by another activity which includes writing and speaking skills. Students write their own script presenting their own house design. Then, they record themselves and dub the interview, imitating the pronunciation and intonation patterns and including technical vocabulary. Their recordings are exchanged as in the previous activity for peer-assessment. The assessment is done with a rubric that embraces: synchrony, pronunciation, intonation, creativity and vocabulary use.

The final stage is the sale of the sustainable house they have designed. To do this, students are asked to watch a video of six minutes where a business conversation takes place between two native speakers. The context before each of the conversations is provided as well as the possibility of including English subtitles, combining listening and reading. The video explains useful vocabulary that is expanded with another video (https://www.youtube.com/watch?app=desktop&v=PAUmGYm7IG0&pli=1) in which ten business expressions are introduced.

With this preparation, students cope with the final task, sell their product to potential clients. For this purpose, students rely on cards which lead their conversation in a role play where one is the architect in a firm and the other is the client. They act out a commercial transaction putting into practice trading-negotiation techniques, using business expressions and showing the advantages of the materials used in comparison with the disadvantages of using other materials. This stage also includes Kahoot quizzes with typical expressions that can be found in business negotiations.

4.   RESULTS AND DISCUSSION ANALYSIS

The pilot experiment has obtained positive results especially in terms of linguistic knowledge, digital competences, leadership and time-management skills and both autonomous and collaborative work. In comparison with those students who opted to take in person classes, it was observed that the students who opted for the project managed their time better with regard to the handing in of coursework as well as a significant improvement in teamwork. At the beginning of the course, a needs analysis questionnaire was distributed among the students involved in the project via Google forms. In addition to asking about their linguistic competences, students were also asked about their time-management and leadership skills as well as their ability to work both in teams and individually. At that time, 80% of the students admitted to having problems when meeting the deadlines for the handing in of tasks. Likewise, the majority of students (83.3%) admitted to preferring individual work, which could be explained by the high percentage of students (76.7%) who responded that they were not used to being evaluated through projects that required them to team up to complete work (Figure 2).

Figure 2

Summary of the pre-questionnaire's results: time-management and teamwork skills and familiarization with project-based evaluation
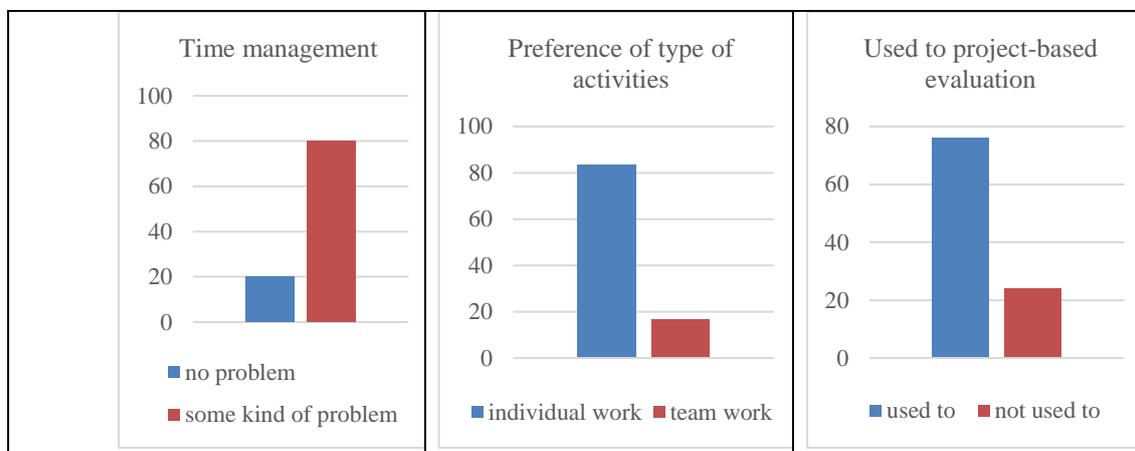
After finishing the project, the students had to evaluate their teammates' work in the project via a questionnaire. This encourages students to take an active role in the assessment of the learning process, penalises free-loaders and provides the lecturer with another source of assessment. The assessment covers: 1) participant's contribution (30%), 2) quality of work done within the group (30%), 3) time management (10%) and 4) problem solving (30%) (Figure 3). The results showed that the contribution of the team members was very useful and enriching in 30% of the cases, useful in 40% and of little or no use in 20% and 10% respectively. Regarding the quality of the work, in 15% of the cases it was given the highest rating, in 75% high, and only 10% were qualified as needing revision resulting in the process having to be stopped several times by the rest of the group. Time management was satisfactory in 90% of the cases, which represented a significant improvement compared to the results from the initial questionnaire in which only 20% confessed to having issues related to time-management, like meeting the deadlines for the handing in of tasks. Finally, the results in the fourth parameter in which the ability to solve problems was evaluated were also positive. 90% of the participants recognized an improvement in this respect.

Figure 3

Team members' assessment
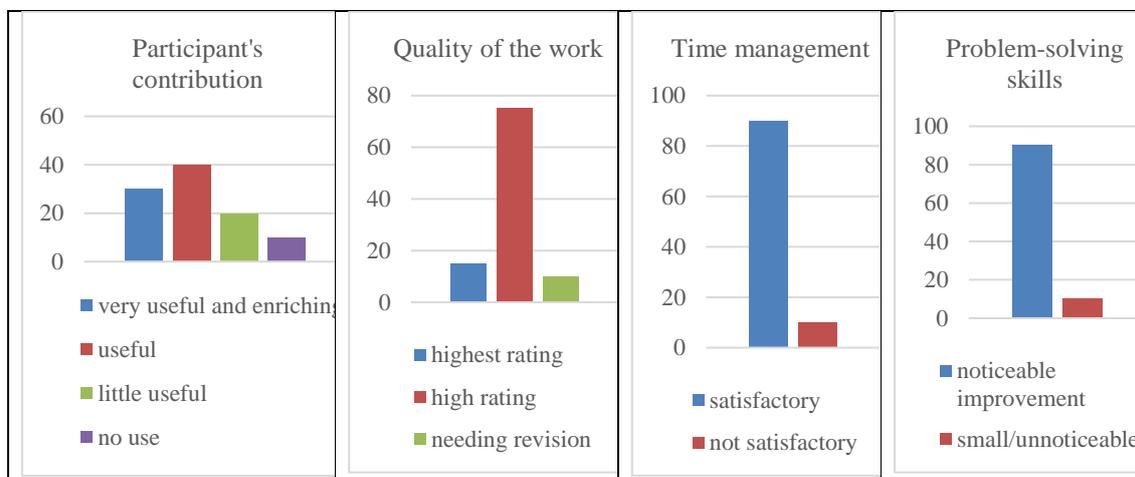
The feedback provided by the assessment of the team members was complemented by the results of the students in the project tasks, which were also positive. None of the students obtained a grade lower than 50% and in 80% of the cases the grades were higher than 70% in the final grade of the project Figure 4. By contrast, lower grades were observed in the results obtained by the other 20 students who opted to attend the practical sessions undertaking similar tasks in conventional formats: 20% got grades lower than 50%, 45% got grades between 50% and 70%, and 35% got grades higher than 70% (Figure 4).

Figure 4

Experimental and control group result
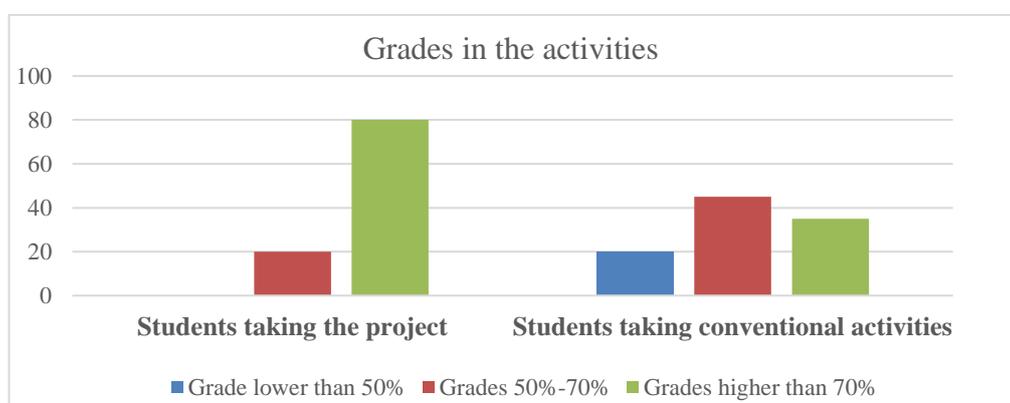
In addition to the feedback provided by the team members' assessment and the results in the project, students' feedback on their general impression of the project was collected. The students recognized that the proposed activities had been interesting for

their applicability to their working life as well as being attractive in their execution. The fact that the tasks were organized in stages where overcoming one led to them to progress to the next was very useful for them. It served as an organization of the work they had to carry out and having access to the overview of the project helped them to develop their organisational and time-management skills. 83.3% of the students expressed their complete satisfaction with the project, although a low percentage (16.7%, or 5 students) stated some kind of reluctance to project-based learning. Of these 5 students, 4 attributed their reluctance to the fact that they considered that the project represented a higher investment of time in comparison to the time they would spend by doing conventional activities and just 1 student to the difficulty of having to depend on other members of the team to complete the teamwork tasks.

5. CONCLUSIONS

The project hereby presented shows how theoretical concepts may go hand in hand with practical ones. The development of competences is not limited to learning isolated contents but rather seeks to establish a greater connection between contents and to incorporate those applicable to work-situations. In this sense, learning is bolstered by practice, for practice. By the end of this project students had developed not only linguistic skills such as professional language and communication skills (negotiation), but also teamwork and cooperative learning strategies, autonomy, time and resource management skills, reflection and maturity, decision making and problem-solving strategies, multitasking and digital skills. The students reflected in the team members' assessment being aware of a noticeable evolution in the déficits firstly noted in the pre-questionnaire about time management and problem-solving skills. Almost all of them (90%) showed a level of satisfaction with time management at the end of the study; and the same percentage of students acknowledged a noticeable improvement in their problem-solving skills.

While further research is necessary in the field of the pedagogical use of AVT in ESP, this study proves the validity of using the AVT modalities of dubbing and subtitling in a project aimed at architects and engineers and their value in motivating students due to their fresh appeal. The large percentage of students (80%) whose grades were higher than 70% in the experimental group contrasts with the low percentage of students (35%) who got the same results in the group that took conventional activities. Furthermore, these positive results obtained by the students who followed the project and their enthusiam for the methodology employed encourage additional research into exploiting the use of other AVT modalities, such as those related to accessibility: audio description and subtitling for the deaf and hard-of-hearing.

The project demonstrates how ICTs facilitate the assessment of the students, saving lecturers time and reducing the students' levels of anxiety. The digital format of the project and the possibility of presenting it in an online modality makes it a realistic alternative to in-class learning/teaching; and even more than that, the modification of the complexity of this proposal means it can be used as a substitute for the practical sessions

or, indeed, for the entire course. The project is in line with sustainability and allows the student and teacher to work on the move, requiring only an internet connection.

In summary, this study has shed light on the validity of incorporating AVT, dubbing and subtitling in particular, and ICTs in ESP teaching and opens the door to the possibility of using this project as a model in other disciplines of ESP with the possibility of incoorporating new AVT modalities that can enrich the experience while improving other aspects of the language skills.

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