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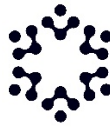RABIA Mª RABET TEMSAMANI
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PROJECT-BASED LEARNING IN THE ADVERTISING AND PUBLIC RELATIONS ESP CLASS. A LONGITUDINAL STUDY ON STUDENTS' MOTIVATION, ATTITUDES AND INTEREST

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1. INTRODUCTION

The teaching and learning of English for specific purposes (ESP) disciplines in higher education (HE) contexts is mainly characterised by instructing learners on the specific linguistic content and language skills along with the provision of specialised domain knowledge (Corda et al., 2020; Rugen, 2019). Given the nature of these types of courses, the project-based learning (PBL) educational approach has been considered as a suitable teaching and learning methodology when combined with other teaching approaches (Estruch & Silva, 2006; Kavlu, 2020). The core element in PBL is for teachers to design projects in which students, individually or in groups, have to reflect on and apply the knowledge acquired throughout the instructional treatment in conjunction with the expansion of their learning horizons by self-research and self-learning. In short, PBL has been identified as promoting motivation (Chiang & Lee, 2016) and aiding content-based instruction through learning-by-doing (Kavaliauskiene, 2004; Ngan, 2011) as it is based on constructivist and socio-constructivist learning theories (Admawati et al., 2018; Simpson, 2011).

Thus, students need to self-research and the social constructivism inherently linked to PBL has favoured HE teachers and researchers' interest in the multidisciplinary use and pedagogical applications of information and communication technologies (ICTs), Web 2.0

applications and a number of online technological resources. Such interest has given rise to a number of research projects and educational innovation initiatives promoted by the European Commission (n.d.) which highlight the applicability and usefulness of these technologies for teaching and learning purposes. The use of ICTs in EFL/ESL/ESP contexts has gained attention in recent years due to its positive effect on students' motivation when implemented within different instructional approaches (Rodríguez-Peñarroja, 2020; Tavakoli et al., 2019). Nonetheless, the assumption that digital learners are able to use technology with considerable ease (Gisbert & Esteve, 2016) does not always come to pass (O'Sullivan, 2018; Sommer, 2014; Valtonen et al., 2011). In other words, their digital literacy, which is mainly linked to social media and self-entertainment (Waycott et al., 2010), may not always be transferred to their learning needs.

Considering the overall positive outcomes reported on the use of ICTs, its effects on students' motivation and learning engagement (Dörnyei, 2001; Francis, 2017; Rodríguez-Peñarroja, in press), and motivation and language learning perception (Fernández-Fontecha & Canga Alonso, 2014, Hernández, 2006), its applicability to ESP disciplines (Anwar & Wardono, 2019; Muñoz-Luna & Taileffer, 2018, Rodríguez-Peñarroja, 202o), and the appropriateness of PBL for ESP teaching (Mettas & Constantinou, 2008), this chapter presents the curricular adaptation of the ESP course English for Communicators in the Bachelor's Degree in Advertising and Public Relations at Universitat Jaume I. The main research interests reside in the study of i) students' motivation (Gardner, 2004) towards PBL and ICT use in the ESP class, and ii) learners' attitude and interest towards the ESP class after the implementation of PBL and the use of ICTs (Uribe et al., 2008).

This chapter is structured as follows. The first section gives an overview of the main concepts as related to the study i.e. ESP, ICTs, motivation and PBL. The second section outlines the objectives of the study: i) to describe the proposal of the curricular adaptation of the ESP course to PBL based on the specific ESP field of expertise, and ii) to study the effects of the implementation of this instructional method on students' motivation, attitudes and interest towards the ESP class. The

methodology, which includes a description of the participants, the instruments for data collection and analysis, and a short description of the course adaptation is presented in the third section. The fourth section outlines the results from the diverse parametric statistical analyses. Last, Sections 5 and 6 are devoted to the discussion of the results and the conclusions that can be drawn from the study respectively.

1.1. ENGLISH FOR SPECIFIC PURPOSES

Sarre and White (2017), and Kirgöz and Diliktaş (2018) have recently described the field of English for specific purposes (ESP) as an English variety that covers a number of professional fields and specific knowledge domains. Therefore, ESP courses should meet specific students' needs (Anthony, 2015) and identify the essential linguistic and non-linguistic skills along with the required knowledge in the field of expertise (Işik-Taş & Kenny, 2020) due to the present high mobility and occupational goals and needs as a consequence of globalisation (Camicciottoli, 2010; Kennedy, 2012). Thus, needs analysis (Li, 2018) is crucial in the different ESP disciplines or knowledge domains to be taught in order to design teaching materials that comply with the educational curriculum and include the knowledge of "key terminology and concepts" (Stoller & Robinson, 2018:30) along with their practical application.

The teaching of ESP courses in HE study programmes involves students' transition from general English instruction taught in secondary education stages to a more specialised language use (Stoller & Robinson, 2018). Topic-based ESP coursebooks that comply with the course syllabus and curricular needs are commonly used for the teaching of linguistic contents i.e. grammar, specific vocabulary and practising the four skills. Despite their usefulness, these are sometimes outdated and the activities students are presented with may not always fit real contexts that suit learners' needs. Consequently, it is for ESP instructors to take responsibility for designing and incorporating materials that befit their future professional careers while fostering active learning and positive learning environments (Vora, 2020). Of paramount importance in teaching practices in general and ESP courses in particular is the

enhancement of students' digital competence through the purposeful use of ICTs and Web 2.0 applications, to meet today's technological and globalised world.

1.2. INFORMATION AND COMMUNICATION TECHNOLOGIES

The digital transition to a more technology-mediated education paradigm has been implemented in HE contexts in the last years, albeit the Covid-19 pandemic has accelerated this process due to constant lockdowns and mobility restrictions (Rodríguez-Peñarroja 2021a, 2021b). Thus, the integration of information and communication technologies (ICTs) and Web 2.0 technologies e.g. Moodle, education blogs and virtual worlds to mention but a few, has become the prevailing trend in teaching and learning practices. The necessity to avoid the digital divide goes without saying (Ali, 2020), to provide every student with the same opportunities to use ICTs in and out of the class.

Some of the beneficial factors identified for the use of such resources are i) their multidisciplinary scope and the use of authentic materials (Constantinou & Papadima-Sophocleous, 2020; Evans, 2009), ii) their positive effect in ESP teaching and learning practices (Işik-Taş & Kenny, 2020; Muñoz-Luna & Taileffer, 2018), iii) their adequacy to promote students' digital competence (Gisbert & Esteve, 2016), iv) their enhancement of motivation and task engagement (Francis, 2017; Kaharuddin, 2020; Tavakoli et al., 2019), v) and their potential to promote students autonomy (Azmi, 2017) and interaction (De Ramirez, 2009). Notwithstanding the advantages reported, the use of ICTs and Web 2.0 applications should entail conscientious planning and the set of plausible objectives (Azmi, 2017; Blake, 2013) on the part of instructors (Ali, 2020).

1.3. MOTIVATION

There has been a considerable amount of literature on motivation and motivation theories fundamental to second language learning (Deci & Ryan, 2012; Dörnyei, 2001, 2014; Dörnyei & Otto, 1998; Gardner, 2001, 2004). The theories and principles more widely applied are those signalled by or derived from Gardner's (2001) socio-psychological

model, and Deci and Ryan's (2012) self-determination theory. In short, the self-determination theory is concerned with individuals' self-regulation processes leading to "desired educational outcomes that help both individuals and society" (Deci et al., 1991: 342). The constructs of intrinsic and extrinsic motivation (Ryan & Deci, 2020), which are seen as a continuum and not mutually exclusive, and amotivation as its counterpart are explored as related to the individual self-determination towards the accomplishment of a given task. To study motivation from the self-determination theory perspective, the Intrinsic Motivation Inventory (IMI) was developed (SDT, n.d.). The questionnaire consists of different subscales that have been designed to measure intrinsic motivation e.g. interest/attitude subscale and other factors influencing it, e.g. perceived competence, effort/importance, pressure/tension, value/usefulness and relatedness subscales.

Focusing on Gardner's (2004) model, the author refers to integrative motivation as being "responsible for achievement in the second language" (p. 6) while integrativeness and the attitudes towards the learning situation are described as variables supporting integrative motivation. These three variables i.e. motivation, integrativeness and attitude towards the learning situation, compose the term integrative motivation which is defined as

> "A complex of attitudinal, goal-directed, and motivational variables (…) which assumes that a) second language acquisition refers to the development of near-native-like language skills, and this takes time, effort, and persistence, and b) such a level of language development requires identification with the second language community".

(Gardner, 2001: 1-2)

Gardner (2004) developed the attitude/motivation test battery (AMTB) in order to study the affective factors that entail second language learning[12]. In short, the AMTB includes a total of 104 items to be rated on a six-point Likert scale, which is divided into different constructs and

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[12] It was suggested that the distinction between second and foreign-language learning is "sometimes more imaginative than real" (Gardner, 2004: 16) which makes the applicability of the AMBT valid for foreign language learning contexts.

subtests i.e. integrativeness, attitudes towards the learning situation, motivation, instrumental orientation and language anxiety. For the purposes of this paper a selection of 11 motivation-construct items from the AMTB questionnaire (Gardner, 2004) has been administered to participants.

1.4. PROJECT-BASED LEARNING

Mamakou (2009: 464) defines project-based learning (PBL) as a "general term describing an instructional method that uses projects as the central focus of instruction in a variety of disciplines". Based on social-constructivist theories, this instructional method has also been reported as enhancing students' active participation (Kavlu, 2020) and motivation (Belagra & Draoui, 2018). Learners should take an active role and participate in their own learning process through learning-by-doing (Rugen, 2019). Several studies, for instance Ambrosio and Mosqueda (2018), Corda et al. (2020), and Estruch and Silva (2006) refer to the crucial importance of the following aspects for project design.

I. The contextualisation of the project considering its connection with the discipline of study: The design of a project and the expected outcome should be akin to students' future professional careers and combine both language and content knowledge needs as specified in the course syllabus or educational curriculum. Thus, it is essential that any project faces students' authentic needs.

II. The enhancement of multidisciplinary knowledge: Projects should be designed for students to combine different skills and knowledge areas, and integrate different approaches and problem-solving techniques.

III. The potential to stimulate research: Overcoming a project usually compels students to gather information from the resources available, which may result in broadening research skills and discipline knowledge. It may be assumed that learners' intellectual skills such as self-learning and self-criticism through processing-understanding-retaining / dismissing new

information can lead to the development of high-order intellectual skills and new ideas generation.

IV. The cooperative nature of projects: The workload of projects normally exceeds the individual capacities of a student working independently. Then, cooperative work is indispensable to succeed in the project and the group becomes the main work unit. Consequently, such workload should be divided into achievable standards that require every member's contribution to the group to achieve the project goals.

In short, the combination of PBL methodology in the language class has been reported as a positive and meaningful practice since it actively fosters students' content understanding and knowledge acquisition (Kavlu, 2015), their academic performance and positive attitudes towards the class (Baş, 2011) and the improvement in different language skills (Kavlu, 2016). Nevertheless, Baştürkmen and Bocanegra-Valle (2018) account for the need to research materials development and tasks design in the ESP teaching and learning contexts due to their scarcity.

2. OBJECTIVES

Due to the positive findings found when ICTs and PBL are part of the instructional paradigm in tertiary education contexts and the need to provide ESP materials and task description (Baştürkmen & Bocanegra-Valle, 2018), the objectives of this study are twofold. First, the implementation of the PBL approach in the ESP class that requires the design of meaningful projects and the use of different ICTs. Second, the study of the effects that this approach has had in students' motivation (Gardner, 2004) and attitude/interest towards the ESP class (Uribe et al., 2008). The following research questions and hypotheses are formulated:

RQ1: Do PBL and the use of ICTs to complete projects have a positive effect on ESP students' motivation?

H1: Participants will experience an increase in their motivation after the implementation of the PBL approach and the use of ICTs in the ESP class.

RQ2: Do ESP students' interest/attitude towards the English class improve when PBL and ICTs are implemented?

H2: Participants' interest/attitude towards the ESP course will be enhanced after implementing PBL and the use of ICTs.

RQ3: Is there a relation between students' motivation, attitude and interest, and their project results and academic performance?

H3: Motivation results are positively related to students' academic performance.

H4: Attitude/interest results are positively related to students' academic performance.

3. METHODOLOGY

The main aim of this pre- and post-test longitudinal research is to study students' motivation and attitude/interest towards the curricular adaptation of the ESP course English for Communicators in the Bachelor's Degree in Advertising and Public Relations at Universitat Jaume I. The instructional treatment and data collection period took place in the second semester of the 2019–2020 academic year. Participants took the pretest on motivation, attitudes and interest during the first week of class. They were told to answer the pretest questionnaire considering their previous EFL learning experiences at secondary school. The post-test was completed after the instructional treatment at the end of the semester.

3.1. PARTICIPANTS

The data for this longitudinal study was collected from twenty-five first-year undergraduate students (N = 25; 16 women and 9 men) enrolled in the course English for Communicators in the Bachelor's Degree in Advertising and Public Relations at Universitat Jaume I with a mean age of nineteen (M = 19.09). Their English proficiency level (M

= 33.20) was measured with the Quick Placement Test (UCLES, 2001), which establishes that values between thirty and thirty-nine correspond to a B1 proficiency (Council of Europe, 2018).

3.2. INSTRUMENTS FOR DATA COLLECTION AND ANALYSIS

To investigate students' motivation, attitudes and interest, a questionnaire which comprises a total of twenty-six items (N = 26) to be rated on a 1 to 5 Likert scale was designed. The first part of the questionnaire includes eleven items (N = 11) adapted from Gardner's (2004) socio-educational model of second language acquisition and integrative motivation AMBT. The second comprises fifteen items (N = 15) adapted from Uribe et al. (2008)'s questionnaire, which was aimed at researching EFL learning attitudes – in particular, the part of the questionnaire that delves into students' attitudes and interest towards the English class. The internal consistency of the resulting questionnaire of motivation and students' attitudes/interest towards PBL in the ESP class was measured by the Cronbach's alpha coefficient.

TABLE 1. *Cronbach's alpha results*

Subscale	Items	Cronbach α
Motivation	11	.821
Attitude/interest	15	.905
Total questionnaire	26	.925

Based on Taber's (2018) description of alpha values, the Cronbach α value for the subscale of motivation is interpreted as robust. The value obtained for the attitude/interest is reliable and the global questionnaire value is strong. Questionnaire results and students' course performance data have been compiled and analysed using Google Docs and the software SPSS v.26.

3.3. PBL COURSE ADAPTATION

The course Professional English for Communicators is framed within the core syllabus of the Bachelor's Degree in Advertising and Public Relations as a compulsory basic training subject for first-year students. Thus, the teaching and learning of English has been oriented towards the specific purposes of this degree. Considering the three main areas that the course covers: i) the uses of new media, ii) marketing and iii) advertising, the adaptation to PBL involved the design of two projects related to the contents and an extra individual project that entailed the writing of a research abstract[13]. The subject is divided into theory and practice, which made it possible to adapt the practice sessions to PBL while the original course syllabus was covered in the theory sessions to avoid curricular restrictions. Table 2 below presents the adaptation of the subject to PBL by outlining the projects carried out, the necessary sessions to develop the projects and the type of project, the instruction learners' received and the main ICTs used to complete the project.

TABLE 2. *Outline of project descriptions*

Project	Typology/sessions	Instruction	ICTs / Web 2.0
Corporate website design	In-group collaborative projects. Six sessions 90 min	Explicit-deductive Practice	WIX web editor PowerPoint Moodle
YouTube advertisement analysis			YouTube PowerPoint Moodle
Academic abstract writing	Individual Four sessions 90 min		Web 2.0 online tools: Grammarly, Proofreading Tool and ProWriting Aid

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[13] The academic writing individual project was included in the course as a part of the Educational Innovation project 'Hacia el TFG y más allá: Ilusión y coordinación docente en el Grado de Publicidad y RRPP'.

As outlined in Table 2, the curricular adaptation of the subject consisted of the implementation of three different projects. The instruction students received to complete the three projects is grounded in content-based learning and enhanced practice. The first project involved the design of a corporate website using the online website editor WIX and lasted six sessions of approximately 90 minutes each. The first session entailed the contextualisation of the project and the description of its assessment, followed by the reading of a short research article on corporate webpages design and content by Aktuglu et al. (2018) and short awareness-raising reading of comprehension questions. This article includes a taxonomy on the most common features and contents of corporate web pages which students updated with the aspects they considered important, but not present in the current taxonomy. The second session was devoted to the in-class analysis of international advertising agencies' corporate websites e.g. www.mccannworldgroup.com and www.leoburnett.com in which students applied the taxonomy and assessed the webpages' design and contents. In session three the teacher instructed students on how to use the WIX web editor which prepared the way for their in-group design of fictitious advertising agencies. The design and content of their webpages was negotiated and limited by the teacher and students. Sessions four and five were dedicated to the design of the websites and the teacher solved the students' doubts and problems related to their website design. The last session comprised students' ten-minute oral presentations of the websites to their classmates.

The second project required students to analyse a YouTube advertisement. The first session was aimed at the description and assessment of the project together with explicit instruction and YouTube audiovisual exemplification of different types of adverts e.g. product/service and brand adverts, and factual and storytelling adverts. Then students were told to read two research articles on storytelling advertising by Zambrano (2018) and Lundqvist et al. (2013) at home. The second and third sessions were devoted to the students answering questions collaboratively following their reading at home, to increase their understanding and awareness of storytelling adverts and their intended impact on

customers. Then, students were presented with a number of visual and persuasion techniques using YouTube advertisements as examples and engaged in team-work to analyse a series of advertisements. In the fourth session, they were told to identify visual and persuasion techniques in addition to companies' brand core values from their own selection of YouTube ads. Their answers were discussed collaboratively in class. At the end of the class, the teams had to agree on a YouTube advertisement to analyse in groups. The last two sessions were devoted to the in-class analysis of the advertisement and the oral presentations of their results.

The last project objective was for students to write an academic research abstract. Students were first given a seminar on writing academic abstracts in which some basic aspects and conventions of this writing genre were presented together with examples from research papers. Based on the previous projects and the research articles read, students were told to think of a study they would like to carry out and start writing an initial abstract draft of 200–250 words at home. The second session was devoted to finishing the abstract with the teachers' guidance in class. Once their initial drafts were written, the third session entailed students' self-revision of their abstracts. The teacher provided students with a checklist that included aspects such as the use of contractions and the parts of a research abstract. Having made their own corrections, students were instructed on the use of online automated writing evaluation tools i.e. Grammarly, ProWritingAid and Proofreading Tool, and copy-pasted their revised drafts on these apps to obtain machine-generated feedback. In the fourth session, students were told to apply the corrections they considered necessary to get a final version of their abstracts to be uploaded on Moodle and corrected by the teacher.

4. RESULTS

The results section has been structured around the three RQs and subsequent hypotheses. The interpretation of the mean score results from participants' answers to the questionnaire follow the parameters established in Table 3 below.

TABLE 3. *Mean range scores and motivation degree*

Mean range	Motivation degree
1.00–1.80	Lower
1.81–2.60	Low
2.61–3.40	Moderate
3.41–4.20	High
4.21–5.00	Higher

Our first and second research questions consider whether the teaching methodology put into practice involving PBL and the use of ICTs has had a positive effect on ESP students' motivation towards the teaching methodology, their interest and attitude. The hypotheses proposed here are that (H1) ESP students will experience an increase in motivation after the implementation of PBL and the use of ICTs, and (H2) their interest and attitude towards the ESP class will be enhanced after the instructional treatment. Paired samples statistics for the pre- and post-tests are presented in Table 4.

TABLE 4. *Paired samples results*

		Mean	N	SD	SE
Pair 1	Pretest	3.96	25	.59	.11
Motivation	Post-test	4.37	25	.56	.11
Pair 2	Pretest	3.49	25	.80	.16
Interest/Attitude	Post-test	4.05	25	.71	.14

As seen in Table 4, participants' motivation in the pretest was already high (M = 3.96, SD = .59) but it increased when compared to the post-test (M = 4.37, SD = .56). Similarly, participants' interest and attitude towards the ESP class have been enhanced from the pretest (M = 3.49, SD = .80) to the post-test (M = 4.05, SD = .71) both representing high values. The next step is to analyse whether the differences in means are

statistically significant. To do so, a paired samples *t*-test was run between the pretest and post-test scores. Previous to that, the Shapiro–Wilk normality test was performed to check for the normal distribution of data. Normality test results are presented in Table 5.

TABLE 5. *Shapiro–Wilk Normality test results*

		Statistic	df	Sig.
Pair 1	Pretest	.948	25	.232
Motivation	Post-test	.957	25	.352
Pair 2	Pretest	.957	25	.351
Interest/Attitude	Post-test	.953	25	.298

Normality test results for motivation and interest/attitude pre- and post-test show that their values are not statistically significantly different from a normal distribution (p >.05). Therefore, the null hypotheses may be accepted and the paired samples *t*-test can be computed as the pre- and post-test results are normally distributed. In addition, Cohen's *d* for the paired *t*-tests was calculated to know the effect size or magnitude of the difference between pre- and post-tests. Results from the paired samples *t*-test for motivation and interest/attitude towards the ESP class are presented in Table 6.

TABLE 6. *Paired samples t-test results*

		M	SD	SE	95% confidence interval of the difference		t	df	Sig.[1]	d[2]
					Lower	Upper				
Pair 1	Pretest Post-test	-.41	.60	.12	-.66	-.16	-3.395	24	.002	.67
Pair 2	Pretest Post-test	-.56	.81	.16	-.89	-.22	-3.343	24	.002	.68

[1]Sig. (2-tailed)
[2]Cohen's d
Note: Pair 1 corresponds to motivation while pair 2 corresponds to interest/attitude.

Results from the test revealed that there are statistically significant differences between the pre-instructional period motivation (M = 3.96, SD = .59) when compared to the post-instructional period (M = 4.37, SD = .56, t (24) = − 3.395, p < .05, d = .67) and the effect size (d = .67) is medium. It can be assumed that the instructional approach put into practice and the use of ICTs has had a moderate effect on students' motivation. As regards participants' attitude/interest towards the ESP class, results have likewise shown statistically significant differences from the pretest (M = 3.49, SD = .80) to post-test (M = 4.05, SD = .71, t (24) = − 3.430, p < .05, d = .68). The effect size is medium, and hence the effects of the instructional treatment on students' attitudes and interest towards the class has been moderate.

The third research question addressed the relation between participants' motivation, attitude/interest towards the ESP class and their performance on the course. The following hypotheses were established: (H3) motivation results are positively related to students' academic performance; (H4) attitude/interest results are positively related to students' academic performance. To determine these relations, the Pearson product-moment correlation (r) was the inferential statistic used. The correlated variables are those of students' performance i.e. continuous assessment, exam mark and final performance mark, and post-test results of motivation and attitude/interest. Results are presented in Table 7 below.

TABLE 7. *Correlation matrix results*

		1	2	3	4	5
1. Continuous assessment	Pearson correlation	1	.537**	.746**	.313	.502*
	Sig. (2-tailed)		.006	.000	.128	.011
2. Exam mark	Pearson correlation	.537**	1	.962**	.419*	.538**
	Sig. (2-tailed)	.006		.000	.037	.006
3. Final mark	Pearson correlation	.746**	.962**	1	.431**	.586**
	Sig. (2-tailed)	.000	.000		.031	.002
4. Post-test motivation	Pearson correlation	.313	.419*	.431*	1	.537**
	Sig. (2-tailed)	.128	.037	.031		.006
5. Post-test attitude/interest	Pearson correlation	.502*	.538**	.586**	.537**	1
	Sig. (2-tailed)	.011	.006	.002	.006	

**. Correlation is significant at the 0.01 level (2-tailed)
*. Correlation is significant at the 0.05 level (2-tailed)

Results from the correlation matrix analysis indicate that statistically significant positive correlations have been found between students' post-test motivation results, their exam marks ($r = .419$, $p < .05$), and final marks ($r = .431$, $p < .05$). Nonetheless, no significant positive relation has been observed between motivation and participants' continuous assessment performance ($r = .128$, $p > .05$). As regards participants' attitude/interest, significant correlations have been identified for their continuous assessment ($r = .502$, $p < .05$), exam marks ($r = .538$, $p < .01$) and final marks ($r = .586$, $p < .01$). Unexpectedly, the correlation between participants' motivation and their attitude has been significant as well ($r = .537$, $p < .01$).

5. DISCUSSION

The first research question and hypothesis were directed at the study of motivation by analysing pre- and post-test instruction mean scores. Results from the paired samples *t*-test show that there has been a

statistically significant increase in students' motivation when comparing the results from the pre- and post-instructional period. Thus, our findings would seem to support that the combination of a PBL approach and ICT use has increased ESP students' motivation. This is in good agreement with previous studies that highlighted the role of PBL as increasing students' motivation due to its experiential nature (Chiang & Lee, 2016), its students centredness dimension (Mettas & Constantinou, 2008) and the use of technology in learning English (Kaharuddin, 2020; Fathali & Okada, 2016; Tavakoli et al., 2019).

Even the fact that the size effect of the instructional approach put into practice has been medium, we believe that the combination of PBL and the use of ICTs as a tool to complete projects could well be responsible for this increase in motivation. When compared to more traditional teaching approaches, in-group projects grounded in social-constructivist theories seem to be more motivating and appealing to students since they need to apply the knowledge acquired in class along with their own analysis and problem-solving techniques to complete the project.

For the second research question and hypothesis, which were aimed at investigating the effects of PBL and the use of ICTs in relation to students' attitudes and interest towards the ESP class, results obtained from the comparison of students pre- and post-test indicate a statistically significant improvement. It would appear that students' positive attitudes and interest are the consequence of the transition from general English teaching contexts to a more discipline-specific knowledge domain. As Kavlu (2015, 2020) suggests, students' active participation in their learning process promoted with PBL in addition to the specificity of the ESP course-contents (Anthony, 2015; Işik-Taş & Kenny, 2020) may have resulted in an increased interest and positive attitudes towards the ESP course. Since it meets students' future career needs, the instruction and training on the multidisciplinary use of ICTs are of crucial importance for developing their digital competence and that fact may have also promoted positive attitudes and interest towards the class in line with the assumptions of Baş (2011), and Gisbert and Esteve (2016).

The third research question was aimed at unveiling the relation between students' motivation, attitude and interest, and their academic

performance. Results from the correlation matrix are consistent with our third and fourth hypotheses that predicted a positive relation between students' outcomes and their motivation, interest and attitude. Our results corroborate Fernández-Fontecha and Canga-Alonso (2014) and Hernández (2006)'s inferences on motivation and language learning perceptions if students' demands and learning interests are met. As a result of the specific knowledge domain of the projects' design for the ESP class, a more positive attitude and considerable interest towards the class may have arisen. Needless to say, students' active role and their cooperative and problem-solving work (Mettas & Constantinou; 2008) may have promoted experiential self-learning which has been considered much more rewarding than other types of learning styles (Corda et al., 2020).

6. CONCLUSION

Motivation together with positive attitudes and interest towards the learning experience have been generally agreed to be of paramount importance to enhance students' learning, especially in second- and foreign-language learning contexts. Results from our study, which was aimed at merging PBL and ICTs in the ESP teaching and learning context, seem to provide evidence for the possible transferable effects of the benefits of the PBL approach when combined with the use of ICTs in the ESP class. Taken together, the combination of content-based instruction and learning-by-doing are likely to confirm students' progress throughout the course as presented in the correlation matrix results.

The current study was limited by the specificity of the ESP field of instruction, the small sample size and the lack of a control group. Despite these limitations results so far have been encouraging, which could eventually lead to further research on the implementation of the aforementioned methodology in other ESP courses. It should be mentioned that ESP instructors may not be experts in the field and that fact requires a deep needs analysis to adapt the content and project design in collaboration with degree instructors. Needless to say, projects are time-consuming and there is a need for careful planning. We hope that our

research will be valuable in solving the difficulty of promoting ESP learning by encouraging instructors to design discipline-related and meaningful projects that require the use of ICTs.

7. ACKNOWLEDGEMENTS

8. REFERENCES

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