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TEACHERS' AND STUDENTS' PERCEPTIONS ON THE ACQUISITION OF COMPETENCES THROUGH PROJECT-BASED LEARNING (PBL) IN BILINGUAL EDUCATION

ROSA SÁNCHEZ GARCÍA
Universidad Loyola
rsanchez@uloyola.es

ABSTRACT. Project Based Learning (PBL) has recently acquired a paramount role in education with a new respectability and a burgeoning number of proponents. Its envisaging as an instructional approach that embraces the basic concepts of research, reflection, production, complexity and rigor when dealing with relevant issues for students and society has led to PBL being heralded as a transformational educative strategy and a catalyst of competences. However, there is scanty research on students and teachers' perceptions of Project-Based instruction and Content and Language Integrated Learning (CLIL) run in parallel. This article aims to report the findings of a research study conducted in three primary and secondary schools in Seville (Spain) to investigate the level of competence development achieved by students when working through a project in a bilingual learning context. The study has been conducted in a hybrid way with quantitative and qualitative method following an exploratory survey-type methodology for which two ad hoc questionnaires have been designed, addressed and adapted to the two sample units selected for our study: teachers and students. The results of this study suggest that project work activates a range of skills that can be transferred to real-life situations, enabling students to become socially and academically competent, being likewise a promising activity to socialize and promote language learning.

Keywords: project-based learning, competences, 21st century skills, bilingual education, CLIL, communication.

PERCEPCIONES DE PROFESORES Y ALUMNOS SOBRE LA ADQUISICIÓN DE COMPETENCIAS MEDIANTE EL APRENDIZAJE BASADO EN PROYECTOS (ABP) EN LA ENSEÑANZA BILINGÜE

RESUMEN. El Aprendizaje Basado en Proyectos (ABP) ha adquirido recientemente un papel primordial en la educación con una nueva respetabilidad y un creciente número de defensores. Su concepción como un enfoque pedagógico que abarca los conceptos básicos de investigación, reflexión, producción, complejidad y rigor a la hora de abordar cuestiones relevantes para los estudiantes y la sociedad ha llevado a considerar al ABP como una estrategia educativa transformadora y un catalizador de competencias. Sin embargo, son escasas las investigaciones sobre las percepciones de estudiantes y profesores acerca del ABP y el Aprendizaje Integrado de Contenidos y Lenguas Extranjeras (AICLE) implementados en paralelo. Este artículo pretende dar a conocer los resultados de un estudio de investigación llevado a cabo en tres centros de primaria y secundaria de Sevilla (España) para investigar el nivel de desarrollo competencial alcanzado por los alumnos cuando trabajan por proyectos en un contexto de aprendizaje bilingüe. El estudio se ha realizado de forma híbrida con método cuantitativo y cualitativo siguiendo una metodología exploratoria tipo encuesta para la que se han diseñado dos cuestionarios ad hoc, dirigidos y adaptados a las dos unidades muestrales seleccionadas para nuestro estudio: profesores y alumnos. Los resultados de este estudio sugieren que el trabajo por proyectos activa una serie de habilidades que pueden transferirse a situaciones de la vida real, permitiendo a los estudiantes ser social y académicamente competentes, siendo asimismo una actividad prometedora para socializar y promover el aprendizaje de idiomas.

Palabras clave: Aprendizaje-basado en proyectos, competencias, habilidades del siglo XXI, educación bilingüe, AICLE, comunicación.

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1. INTRODUCTION

The competence-based approach to education stems from a worldwide trend of educational overhauls in favour of quality instruction. Groundbreaking as it may sound, this instructional approach is used to seek solutions to one of the oldest and most complex educational challenges: *educating for life*.

As recent as it may seem in the field of education, the term 'competence' meets the requirements of a sector of society that places the emphasis on encouraging formal education to offer tangible results, which conveys the development of certain skills to effectively join the world of work (Díaz-Barriga 2011), and to prepare students for a role as "agents of change" in order to transform our current society into a more sustainable one (UNESCO 2016). This new pedagogical current is aimed at changing the vision of traditional education to give a more active and social sense to learning, being the student the centre of the learning process and avoiding rote learning in favour of learners' autonomy and independence (Fried-Booth 2002),

while fostering collaboration, creativity, responsibility (Hedge 2000) or critical thinking (Labrador and Andreu 2008). In the development of life-long learning skills, essential part of competence-based learning (CBL), an active contextual construction of knowledge and understanding is stimulated. The learning environment resulting from CBL, which combines actual practice and explicit reflection on what and how to learn from that experience, triggers critical thinking and creativity, as the learners are constructing their knowledge while trying to solve a real-world problem (Larmer *et al.* 2015). Similarly, being the task to be performed open ended and the active integration of different parts a prerequisite for problem solving, collaboration and creativity become part and parcel in the whole process, which, in the meanwhile, will foster students' responsibility for the quality and timeliness of their own work (Berger 2003; Hallermann *et al.* 2011).

Accordingly, over the course of the past two decades, experts have been acclaiming the need to incorporate this progressive and innovative pedagogical strategy into educational centres based on active methodologies which adapt to the new profile of 21st century students (Hernández Gómez 2015; Pérez Gómez 2007). These pedagogies are based on cooperation, integrated knowledge and the development of student competences with the aim of linking learning with the real world.

Universal institutions are not strangers to this necessary educational transformation. In 1996, UNESCO heralded the principles for the application of teaching based on the development of competences when it identified the concepts of "learning to know", "learning to do", "learning to be" and "learning to live together" as the basic pillars of lifelong education. By the same token, the Organisation for Economic Co-operation and Development (OECD) launched the DeSeCo (Definition and Selection of Competences) project with the purpose of developing a conceptual framework that defines and selects the competences needed to lead a personally and socially valuable life in modern democratic states (OECD 2005).

Within this social and educational backdrop and taking into account the needs it generates, the European Union echoes the need for citizens to acquire key competences as an indispensable condition for individuals to achieve full personal, social and professional development that meets the demands of a globalised world and makes possible economic development linked to knowledge (BOE 2015). Accordingly, in Spain, the Organic Law for the Improvement of the Quality of Education (LOMCE 2013) includes the term "competence" in the regulations by emphasising a "competence-based curriculum" model characterised by transversality, dynamism and an integral nature, which has been lately endorsed by the LOMLOE (2020). It suggests therefore choosing active learning methodologies (task and project-based learning) either in the student's mother tongue, in an additional language or in a foreign language, as opposed to more traditional methodological options.

PBL or "learning through the process of producing and completing a Project" (Gras-Velázquez 2020: 1), meets these requirements, as it involves not only the acquisition of knowledge, but its application and transfer to other contexts while developing skills and competences which will later be used by students in their personal and professional lives.

Over and above the competences, the communicative skill has exceeded in a globalised society as a way to adapt to the new social and communication environments that affect all spheres of life. This backdrop justifies and greatly encourages our research in a bilingual context, as CLIL does not only include this new discourse on competences in its foundations, but also responds to the profile required to satisfy the current educational recommendations and the demands of a globalised, modernised and interconnected society that promotes the acquisition of skills for a sustainable lifestyle, global citizenship and appreciation to cultural diversity, as shown in the results outcoming from the projects carried out in this research.

Therefore, the main focus of the analytical aspect in our study is the process of developing a project in a bilingual teaching context under the methodological proposals of PBL and CLIL, thus allowing us to determine the value of their educational action in the acquisition of competences, to seek solutions to specific problems that may arise in the process and to enrich the action strategies for subsequent implementation.

Most of the existing studies on the acquisition of competences through project work have been conducted in the students' mother tongue (Fried-Booth 2002; Hallerman *et al.* 2011) or in EFL contexts (Beckett 2005; Gras-Velázquez 2020). However, Project Based Learning literature shows a gap in its goal for a content learning and the development of competences in bilingual settings under CLIL approach. This study tries to bridge this gap by presenting the findings of an investigation conducted in three primary and secondary bilingual schools in Seville (Spain), since not only does meaning construction depend on the language use when acquiring content matter, as stated by Dalton-Puffer (2011), but also the acquisition of competences rests, to a considerable degree, on the students being able to handle a foreign language (Sánchez-García 2022).

Once acknowledged the need for competence-based learning, there is a twofold objective ahead: to identify the key competences required for 21st century society and their level of development in students when working through a project, on the one hand; and to analyse their conceptual content and the learning and assessment strategies most in line with this perspective, which may stand for new educational interests, on the other.

2. THEORETICAL FRAMEWORK

2.1. COMPETENCE-BASED APPROACH

Competence-Based Learning (CBL) consists of developing the generic or transversal competences (instrumental, interpersonal and systemic) and the specific professional competences in order to train people in both, scientific and technical knowledge, and in their ability to apply it in diverse and complex contexts, so as to integrate them with their own attitudes and values in a personal and professional way of acting (Villa and Villa 2007).

In addition to the work-related and pedagogical-didactic approaches, it is based on a solid socio-constructivist approach of learning by doing (Dewey, 1938), insofar as the importance of school work is to bring about learning contexts that allow students to build their own knowledge based on their approach to cognitive objects (Díaz Barriga 2011). The concept of "meaningful learning" is thus established by linking new learning to a previously established cognitive structure, hinged on the assumption that people bring forth information from what they already know (Jonnaert 2001). This approach also underlines the need to acknowledge the importance of the learning context, as it is through the involvement of students in discursive and disciplinary tasks when meaningful learning experiences happen (Almulla 2020). However, the reality that is presented as authentic learning contexts arises from specific and unpredictable events, so we would be faced with the dilemma between two different logics: (i) on the one hand the school, where the situation is familiar to the student; and (ii) on the other, the real world, which demands thinking in authentic situations of everyday life and from which the concepts are articulated (Díaz-Barriga 2011).

PBL goes beyond solving this quandary when it presents learners with authentic learning situations so that they can conceptually process them (Boss and Larmer 2013; Gras-Velázquez 2020). In the process of solving the challenge stated in the project, students, like in real life, need to analyse issues, evaluate sources of information, share the information with their peers and teachers, make decisions and take action, to finally present their results in public. It also implies a radical change in the learning process by restoring the natural order of learning, "challenges tend to come first; then we learn how to meet them" (Lenz *et al.* 2015: 91). Essentially, PBL starts by dishing out the challenge before the instructions are given by the teacher, so that the learning that follows has a purpose (Lenz *et al.* 2015).

But what are the competences demanded by 21st century society? After the DeSeCo definition of competence as complex sets of knowledge, skills, attitudes, values, emotions and motivations that each individual or group puts into action in a particular context to deal with the particular demands of each situation, the "key competences" would point to the fundamental expertise that every human being would need to cope with the demands of the different contexts of his or her life (Pérez Gómez 2007).

Over the past two decades, numerous public and private institutions have developed their own framework of skills and competences for 21st century citizens (Salas-Piko 2013). Communication, collaboration, digital literacies, creativity, critical thinking, sociocultural awareness or leadership are the most frequently mentioned competences in these frameworks. All of them are aligned with the characteristics that competence-based learning must have in order to achieve what is known as "21st century skills, cross-curricular skills, soft skills, interdisciplinary skills, habits of mind and work, deeper learning, and college- and career- readiness skills… success skills" (Larmer *et al.* 2015: 6).

In a nutshell, students need much more than knowledge of atomized disciplinary content to be socially and personally competent. The development of competences must involve complex mental procedures, supported by thinking schemes, which make it possible to determine and effectively carry out an action that is relatively adapted to a given situation (Perrenoud 2004). In this sense, as many experts state, PBL is a desirable approach for the development of competences as it provides appropriate situations, similar to those they may encounter in real life, that favour the continuous growth of the characteristics underlying their competences, thus fostering the psycho-affective development of the student and, consequently, an integral learning (Álvarez *et al.* 2010; Lenz *et al.* 2015; Wurdinger 2016). Another characteristic of competence-based learning met by PBL is its organisational flexibility for generating creative learning contexts, characterised by the exchange of information and experiences through peer cooperation and collaboration (Pérez Gómez 2007). These contexts should provide a safe environment for students by accepting error as part of the process (Berger 2003) and providing spaces for critique and reflection through formative assessment that includes self- and peer-evaluation (Larmer *et al.* 2015).

2.2. PBL AND THE DEVELOPMENT OF COMPETENCES

The discourse of 21st century competences entails a series of pedagogical implications that require the use of active methodologies, cross-cutting contents and competencies and the creation of real learning situations (Esteve *et al.* 2013). Project-Based Learning meets this profile, being an approach that teaches a multitude of strategies critical for success in the twenty-first century: "from gleaning new, viable technology skills, to becoming proficient communicators and advanced problem solver, students benefit from this approach to instruction" (Bell 2010: 39).

The project authenticity, resulting from its connection to the real world, gives rise to learning contexts for students to develop their competences, ending up in more meaningful learning (Bell 2010). The need to respond to a highly significant question, challenge or problem forces students to design their own research, to organise the resulting data, observations and conclusions, and to implement a range of learning strategies that foster critical and lateral thinking and creativity (Bell 2010; Hallermann *et al.* 2011). In addition, solution-finding promotes collaboration among peers and with the teacher and/or experts (Warren 2016), which enables students

to approach their tasks with responsibility due to the expectation that each student contributes equally to the project and eventually fostering positive interdependence (Johnson, Johnson and Holubec 1999).

PBL also promotes social learning. Collaboration forces students to develop communication skills. Active listening, respect for the opinions of others, teamwork and the production of individual and group ideas that lead to the collective solution of the problem or challenge are all skills that spring up when negotiating for decision-making (Du Toit *et al.* 2016). Collaborative work thus promotes the development of students' inter and intrapersonal competences. That is, focusing on students' attitudes towards what and how they learn (Hernández-Ramos and De La Paz 2009) on the one hand, and towards their peers, on the other (Cheng *et al.* 2008).

Students' voice and choice in the project leads to intrinsic motivation that is crucial for their academic and professional success. It also favours the development of their own interests in the process of acquiring content and allows students to progress and learn at their own pace (Bell 2010). According to Doppelt, "motivation to learn their discipline and their willingness to work on their projects for longer hours indicate that they behave... like high achievers" (2003: 264), developing self-directed learning and achieving better results in general assessment tests than students taught with traditional methodologies (Doppelt 2003). This is also true for students with learning difficulties or at risk of social exclusion (Halvorsen *et al.* 2014), which ultimately leads to a reduction in truancy and dropout rates (Larmer *et al.* 2015).

Digital competence is another demand of 21st century society. Technology as a means and not as an end in itself allows learners to conduct deeper research on the topic they are working on in the project (Chu *et al.* 2011). Information literacy is essential for students to browse the net critically, discriminating the unreliable information that may not be useful for their study (Bell 2010). This technology literacy promotes creativity and out-of-the-box thinking, skills that are in high demand in professional sectors, according to the research carried out by Hart Research Associates in 2013.

However, the development of this range of competences will only be possible when teachers are able to negotiate and collaboratively develop a common educational project that challenges students, while putting forward situations that allow them to design and carry out actions that serve for more than just interpreting the environment. The aim, therefore, is for the student to be able to take action in the environment, transforming and improving it.

2.3. MEASURING COMPETENCES IN PBL

Many of the competences mentioned above are not measurable from traditional assessment tools based mainly on tests completion, so a change is needed not only in the assessment instruments but also in the agents involved in the process (Bell 2010).

In teaching models focused on the development of competences such as PBL, which seeks to give value to both content and competences (Vergara 2015), we must consider what De Miguel (2005: 20) calls "constructive alignment" of content and competences. In other words, teaching methods and assessment systems must be outlined in a parallel and integrated way as regards the competences to be achieved, providing it with practical and concrete applicability. More specifically, the approach given should be achievement-levelled and defined *a priori* rather than selective and measured *a posteriori* as traditional assessment does (Vergara 2015).

Assessment in PBL is not a casual, minor or partial action, but a planned and comprehensive process aligned with the competences to be achieved in order to respond to the needs demanded by 21st century society. This movement known as "authentic assessment" (De Miguel 2005: 44) considers that genuine assessment should propose real-life tasks or challenges to students, so that, in order to solve them, they must deploy an integrated set of knowledge, skills and attitudes. This means fleeing from analytical assessment that requires the performance of a single skill or knowledge, towards a more holistic assessment.

Under this new perspective, the teacher does not have a sole and privileged assessment function, but gives the student an active and responsible role, blurring thus the boundaries between the learning and the assessment activity. Self-assessment, peer assessment and even co-assessment become essential as long as students take responsibility for their achievements, become self-motivated and autonomous (De Miguel 2005).

In this sense, both rubrics and portfolios have been proved to be appropriate assessment tools for competence-based learning. These twofold-aimed documents demonstrate the level of achievement attained, on the one hand, and promote reflection on the learning process, on the other (Rué 2008).

A review of recent literature bespeaks that evaluation should be understood as a collective process through which students are provided with criteria and instruments that allow them to understand their mistakes, overcome them, and finally acknowledge their success (Berger 2003; Sanmartí 2007).

2.4. CLIL AND PBL LINK-UP

The ample literature that has emerged in the last two decades on CLIL, its characteristics, its potential and the possible difficulties of implementation and development, have raised interest in establishing other methodological lines that maximize the use of the language within the classroom and, if possible, also outside it, while promoting the acquisition of content, skills and competencies (Sánchez-García 2022). Specifically, PBL has not only been advocated as the main framework through which collaboration, communication, creativity, critical thinking, problem solving, time management or digital competences are acquired (Berger 2003; Boss and Larmer 2013; Salas-Pilko 2013), but also as "an effective means for promoting

purposeful language learning" (Stoller and Myers 2020: 6), which makes it a potentially applicable proposal in bilingual contexts with CLIL implementation.

Being socio-constructivism the source of both proposals, the students acquire an active role providing them with learning environments rich in educational resources in which they can develop projects and tasks while discovering, acquiring, and applying knowledge to real situations in a foreign language, thus favouring communication, collaboration and cooperation (Pavón and Ellison 2013).

Recent neuroscience studies show that the quality of the actions involved in our personal and academic experiences will determine the type of neural relationships that generate the quality of mental representations and the activity of each person (Davidson 2011). In this sense, CLIL and PBL are presented as powerful proposals that promote critical thinking, as projects and tasks are generated from authentic topics that lead to deep reflection, through a selection of tasks carefully scaffolded by the teacher and aimed at promoting the development of tools and strategies for reflective thinking. A direct consequence of the need to make decisions when carrying out tasks or projects is the development of critical thinking, problem solving, and a creative attitude (Vergara 2015). Consequently, it seems to be pointed out that when a project is implemented in a bilingual teaching environment with CLIL methodology, both approaches merge in a synergy that contributes to the strengthening of the teaching and learning process through the development of competences.

3. RESEARCH METHOD

3.1. OBJECTIVES

The main objective of this study is to analyse the perceptions of teachers and students on the students' acquisition of competences when using Project-Based Learning (PBL) in a Content and Language Integrated Learning (CLIL) context. More precisely, the following specific objectives have been set:

1. To identify the type of competences acquired by students when learning through a project in a bilingual learning context.
2. To analyse students' and teachers' perceptions on the level of competence development achieved by students when working through a project.
3. To analyse to what extent the use of L2 affects the development of competences when working in a project.
4. To analyse the effectiveness of the evaluation criteria and instruments used to measure the acquisition of competences in PBL.

3.2. CONTEXT AND PARTICIPANTS

The study was conducted in a private and two state-funded schools in Seville (Spain). The selection of the participating samples was carried out following a purposive sampling, in which the researcher identified and selected information-rich samples related to the phenomenon of interest (Bustamante 2011) in accordance with four fundamental selection criteria which resulted in the choice of three primary and secondary bilingual schools familiar with CLIL and PBL approaches. A total of 157 students and 50 teachers participated in the study. These agents have been active recipients of bilingual education policies and are characterised by their receptiveness to endeavours aimed at implementing project-based learning in their classrooms. For the sake of an ethical study, full consent was obtained from all subjects involved in the study, who were previously informed of the anonymity of data processing.

The students participating in our study are aged between 10 and 17 years with a fairly even gender distribution, 43.3% male and 56.7% female. This same equal proportion shows up with respect to the educational level of the students, 43% enrolled in primary education (5th year) and 57% in compulsory secondary education (4th year). Their nationality is mainly Spanish (94%) with ethnic minorities from other countries (6%). As for their knowledge of English, according to the CEFRL, only 39% have certified their level, with A1 being the most frequent level (46.5%), followed by B2 (20.4%), A2 (19.7%), B1 (10,2%), C1 (1.9%) and C2 (1.3%). The remaining 61% showed an average level of A1 in Primary Education and B1 in Secondary Education according to the diagnostic tests carried out by the teachers at the beginning of the academic year. Tests that were revised by the researcher for the sake of greater reliability. Regarding their experience in bilingual teaching programmes, 20% have more than 10 years of experience, 36% between 6 and 10 years, 31% between 1 and 5 years, and 13% less than 1 year.

As for the teachers, the gender distribution is less equal than that of the students' body, being 62.5% female and 37.5% male. However, parity does exist in the educational stages in which they teach, 50% in both primary and secondary education, being the majority of Spanish nationality (87.5%) and only 12,5% British. In terms of knowledge of English, according to the levels established by the CEFRL, 75% of the teachers have certified English level of B2 or higher (B2 25%, C1 12,5%, and C2, 37,5%). The remaining 25% are distributed between B1 and A2 (12,5% each). Though not belonging to the bilingual program, these teachers have been interdisciplinarily involved in the projects.

3.3. INSTRUMENTS

The study has been conducted in a hybrid way with quantitative and qualitative method (Creswell and Plano Clark 2007), following an exploratory survey-type methodology. Two *ad hoc* questionnaires have been designed, applied and validated, based on the dimensions proposed by Pérez-Cañado (2016) and the

theoretical framework mentioned above. The questionnaires were addressed to and adapted for the two sample units selected for our study (teachers and students) and belong to a broader scope study on PBL and CLIL. In terms of structure, they consist of a first part designed to gather information on sociological data, and a second part divided into 8 scales (7 Likert-type scales with answers ranging from 1 to 4, and a final scale of open questions on general perceptions of project work).

Specifically, in order to get data for our study, we have taken into account 5 of the 8 scales that make reference to the development of competences in the students' questionnaire, and 4 in the teachers' one (See Appendix 1). On the one hand, a quantitative approach is used, with a descriptive comparative survey-type design on a selection of items form scale 1, 2 and 4. For the statistical treatment of the data collected by this study, the quantitative analysis software IBM SPSS Statistics (v. 24) has been used. On the other hand, some of the open questions in scale 8, have allowed us to carry out a qualitative analysis of the perceptions of the two sample units from a more reflective point of view, from which the most repeated quotations were selected in order to prioritize brevity and precision in the presentation of the insights.

3.4. PROCEDURE

A total number of six projects were developed in 2019-2020 and 2020-2021 academic years, having all of them a social dimension and a commitment to the environment, so that students understand reality, what they are learning, and how they can act on the environment to change and improve it. In one of the projects, for instance, students had to investigate the concepts and interrelation between speed, displacement and time to subsequently apply them to a well-known real-life situation such as the impact of distractions caused by the use of mobile phones while driving. In order to raise awareness about how to drive judiciously and act accordingly, the student shot a video showing the results and conclusions and sent it to the police authorities in charge of traffic control (DGT).

Prior to the project implementation, two semi-structured meetings were scheduled with teachers who were provided with a project model (blueprint) and three types of rubrics to assess the project, the competences and teamwork. In a second phase of implementation and presentation of projects, two on-site visits were also scheduled to monitor the project development and create a more relaxed and trustful atmosphere for both, teachers and students. These visits were aimed at giving effective feedback to both teachers and students so that the projects did not lead to undesirable results. Finally, online questionnaires were given to teachers and students and, after data gathering, the researcher held an interview with the teachers to socialize and analyse the experience, so that approaches could be strengthened and new ones welcomed in order to upgrade future project experiences.

3.5. RESULTS AND DISCUSSION

Based on the method described in the previous section, the results are presented below. They have been categorised according to the type of research conducted (quantitative and qualitative) and then analysed individually. For the qualitative sections, quotes from learners and teachers have been used to demonstrate how the findings and interpretations have emerged from the data. The quotations have been selected and labelled according to this categorisation of codes (table *x*, quotation *y*), where *x* and *y* are the number corresponding to the order of table and quotation within the document respectively.

3.5.1. Types of competences and level of competence development

Tables 1 and 2 feature the results from the students' questionnaire on a selection of items regarding the competences developed by students when using PBL in a bilingual context. Likewise, Figure 1 and Table 3 show the results from the teachers' questionnaire on the same issue. Finally, Figure 2 presents teachers' and students' perceptions on the level of competence development students acquire when working through projects in a bilingual context with CLIL implementation.

Table 1. Average values and statistics dispersion of the results of the items on the level of competence achieved by the pupils (students' body)

	Mín.	Máx.		Σ	S^2
1. My knowledge of the contents of the subjects taught in English has improved due to my participation in the project	1	4	3,11	,859	,738
2. My English level has improved due to my participation in a project	1	4	3,09	,809	,671
3. My Spanish has improved due to my participation in a project	1	4	2,73	1,00	1,00
4. I have been able to understand, analyse and evaluate the contents in my project	1	4	3,28	,706	,498
5. I have been able to develop my creativity in a project	1	4	3,3	,720	000
6. The knowledge gained in the project is the result of my research	1	4	3,23	,859	,738
7. The project has allowed me to interact more with my classmates and teachers	1	4	3,30	,695	,483

8. The project has enabled me to acquire emotional and social skills	1	4	3,21	,706	,498
9. I have more self-confidence when I work in a group	1	4	3,07	,812	,666
10. I have actively collaborated in the project	1	4	3,40	,608	,333
12. I have learned to be more autonomous in the project	1	4	3,16	,778	,605
14. I have appropriate listening and speaking skills in English to carry out the project	1	4	3,17	,933	,870
15. I have appropriate writing and reading skills in English to carry out the project	1	4	3,08	,891	,794
16. I have appropriate knowledge of the digital tools to carry out the project	1	4	3,46	,625	,333
23. I have developed decision-making skills in the project	1	4	3,17	,700	000
24. I reflect on the project on a regular basis	1	4	2,88	,787	1,00
63. I have acquired skills and competences due to my participation in a project	1	4	3,16	,730	,333

Table 2. Perceptions of the type of competences acquired by students (students' body)

Quote 42: "Digital competence, autonomy in study, social competence, communication and cooperation, critical thinking"
Quote 43: "Social competence, learning to listen, critical thinking, group leadership, respecting the opinions of others"
Quote 45: "Working in groups, organising, long term planning"
Quote 46: "Editing and creating videos and audio-visual communication skills"
Quote 47: "You need to research and help the group, so you develop new skills like research"
Quote 48: "It helps you to research, to be creative, more independent, to work with more people, to identify reliable information etc..."
Quote 49: "Teamwork, reflection on information and research"

Data obtained in table 1 reveal students' firm belief that learning through a project enables them to develop a range of skills and competences, as shown in item 63 (3,16). Collaboration (item 10) and digital literacies (item 6) stand out among the competences that the project allows students to develop more readily, having obtained medium-high average results (3,40 and 3,46 respectively). More specifically, as observed in table 2, when asked about the type of competences they consider to have acquired in the project, they bring up those related to collaboration and social and communicative nature together with skills related to critical thinking, respect for others and digital literacy (quotes 42 and 43). It seems that the interaction resulting from collaboration promotes social learning and citizenship since they become more proficient with negotiation, communication and collaboration, as seen in the results in item 7 (3,30). Additionally, the use of active listening skills and productive communication when negotiating and generating ideas together enhances the collaborative ability, item 14 (3,17). Apart from the exchange of ideas, collaborative work also nourishes time and resources management and helps students to organise, analyse and present the information acquired, thus fostering critical and reflective thinking, which will eventually make them become better researchers, problem solvers and higher order thinkers, as also pointed out by Gultekin (2005). Students frequently emphasize the practical aspect of the instruction received by their teachers, valuing its usefulness and productivity, as well as the benefits this type of work has had on their work planning process (quote 45).

Also, when asked directly about the skills they think they benefit most from project work, the responses are unanimous in stating that the most developed skills are those related to research and information seeking, reflection and teamwork (quote 49), all three archetypical elements of PBL that will hone the essential competences necessary for the 21st century. In line with Edelson *et al.* (1999), results attest that involving students in the use of inquiry and research to solve a real problem or challenge provides them with opportunities to develop reasoning skills and thus enhance meaningful learning, mainly due to the possibility offered by the project to build on the knowledge they already possessed and to fill in their knowledge gaps as the project unfolds.

Likewise, reflection (item 24) and students' voice and choice within the project (item 23), with medium to medium-high results on average (3,17 and 2,88), encourage critical thinking, problem-solving and decision-making skills, as well as a greater possibility for the development of creativity, innovation and leadership in the students. Considering alternatives, recognising and even evaluating the quality of the information acquired for the resolution of the challenge or question within the project has favoured the development of their creativity and problem-solving competences, thus developing what cognitive scientists call "usable knowledge" (Bransford *et al.* 2000), a must-have in 21st century society (Larmer *et al.* 2015). Although reflection on the project has displayed less favourable results (2,88), it still provides the learner with the possibility of making stops in the process to assess their development, while fostering the students' metacognition, as also shown in quote 49.

Regarding the use of ICTs (item 16), the systematic use of digital resources generates a perception in the students of an increase in their digital competence. The authentic use of technology taps into their fluency with computers (3,46). Beyond the fun dimension and socializing aspect that the use of digital tools may imply, the judicious use of the internet when searching for information does not only cater for instruction to the student by evidencing new and innovative usage of a wide array of applications, but it also helps them identify the trustworthy sources of information provided by the web, as shown in quotes 47 and 48. We can therefore state that PBL is an instructional proposal that contributes to the development of the digital competence, insofar as it allows students to develop a didactic project that favours more meaningful learning, easily transferable to authentic situations.

As for the impact of the use of L2 on the acquisition of competences by students, data show that most students consider the project has given them the opportunity to improve their communicative competence in L2 and L1, items 2 and 3 (3,09 and 2,73 respectively), due to the interaction bred by cooperative work, as shown in item 7 (3,30). This difference in results between L1 and L2 stands for a greater use of English in the projects. Likewise, the majority of the students responded positively when asked about their listening and speaking skills in English to carry out the project (3,17). A result that, though not being negative, slightly declines when touching upon their reading and writing skills in L2 (3,08). This evinces again the spontaneous oral and reading/written interaction that the project fosters, being the former a little bit more straightforward approach than the later. These outputs are also consistent with the fact that PBL goes along with the opportunities to focus explicitly on form and other aspects of language that are more easily distinguished at three stages as the project unfolds: information gathering, information processing, and presentation of results, as also reported by Alan and Stoller (2005). In these phases the teacher is responsible for providing strategies and methodological resources through appropriate scaffolding to overcome students' possible struggles for expressing ideas and concepts arising from impaired competence in the L2, which may hinder learning and the achievement of the academic objectives (Pavón 2014).

In other words, the better the ability to understand and express themselves orally and in writing in L1 and L2, the greater the possibility of acquiring content knowledge and competences when searching for information, delving into it, analysing, evaluating, applying and reflecting on it within the project.

Given the projects social dimension and commitment to the environment, students were able to develop sociocultural sensitivity. For instance, in one of the projects, students had to create an infographic that could be easily transmitted via WhatsApp or social networks, clearly explaining the ways of preventing the spread of the COVID-19 disease. To our minds, it is also a competence related to social variability and awareness, and personal growth that emerge as a result of the possibility to find out different solutions to social or environmental issues.

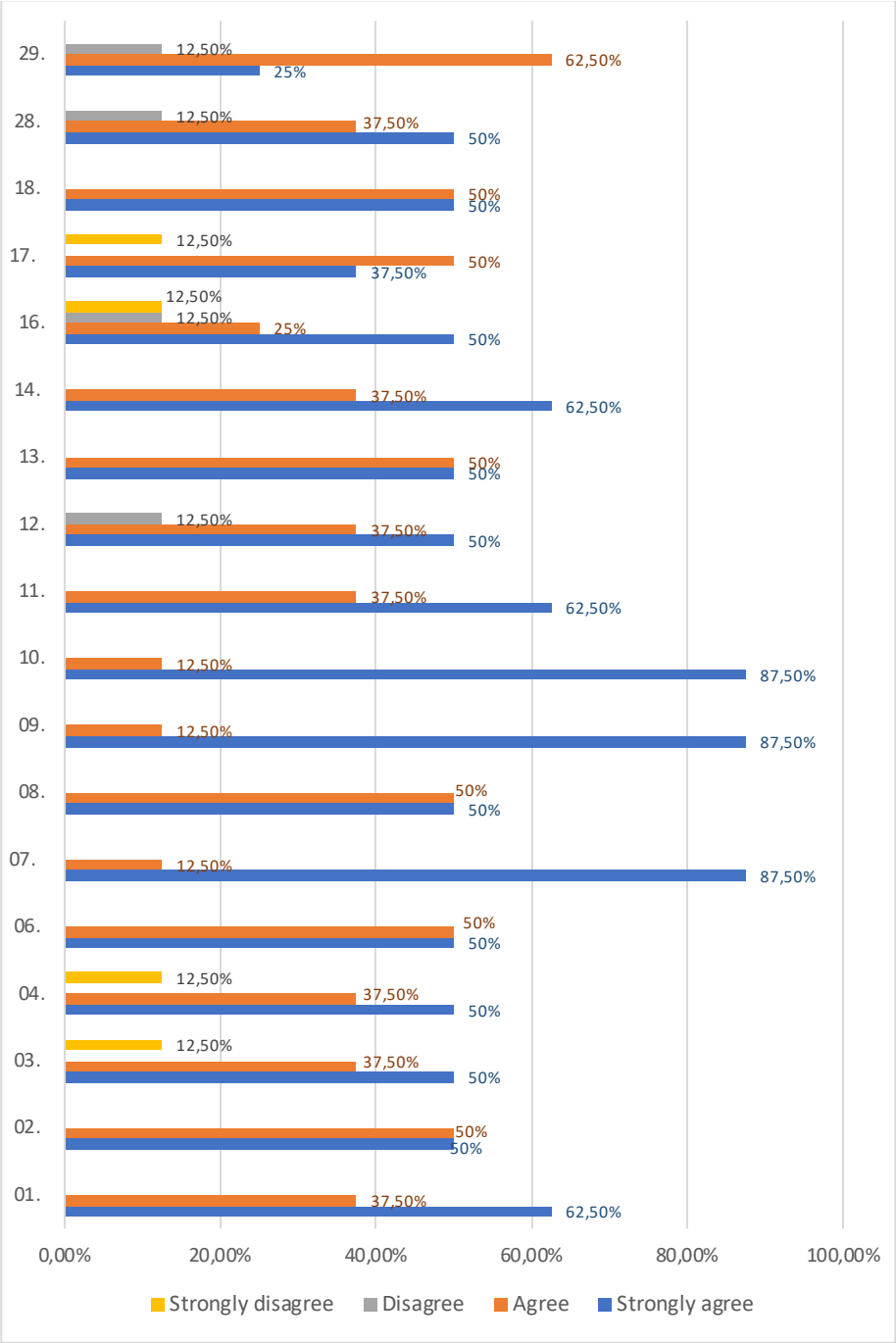

Figure 1. Results of teachers' responses to the items on the competences achieved by students in project work.

Table 3. Teachers' perception of the type of competences acquired by students in PBL

Quote 1: "We have worked with an active methodology in which students have faced a real-life situation posed as a challenge. The aim has been to guarantee theoretical and competence learning ending up with the design and presentation of a product with social validity"
Quote 2: "During the project, students researched the topic using online materials and resources. The oral presentations of their final product have been based on multimedia resources and the portfolios have been collected through digital platforms"
Quote 3: "They have used critical, analytical and creative thinking while working collaboratively and cooperatively to improve the teaching-learning process"
Quote 4: "As it is an active methodology for students, they become more involved in the project, it increases their level of reflection and decision making and allows them to further develop their creativity"
Quote 5: "PBL improves my students' communicative competence in L1 and L2"
Quote 6: "In PBL students investigate, share, interact, plan, make decisions and evaluate"
Quote 7: "The students work better when research and practice are merged in the same activities"
Quote 8: "The level of competence acquisition in project work is very high. The path students have to follow is so marked that you can steadily check what they are acquiring. You do not just focus on the result but you assess a process continuously evolving"
Quote 10: "PBL is as good as the traditional method in terms of content acquisition although it is more fixed in time and the development of competences is immensely greater with PBL than with the traditional one"
Quote 11: "It is a methodology based on students' own enquiry thus encouraging independence, autonomy and self-management. It has been shown that they develop skills that can only be developed in this way and learning is totally meaningful"
Quote 12: "Project work facilitates students' work development"
Quote 13: "It can be adapted to students' interests, needs and abilities"
Quote 14: "Greater students' involvement. It embeds critical reflection. Greater possibility for the development of students' organizational and decision-making skills. Development of creativity. It allows peer evaluation"
Quote 50: "It gives them a lot of opportunities to reflect on their own learning"
Quote 51: "It is a method that helps you to cover not only the content that learners need to acquire. Skills and decision making are also developed from the beginning, without leaving aside personal and individual development"
Quote 52: "We encourage the acquisition of competences and skills, connecting the content with authentic experiences"

As seen in figure 1, teachers take a more positive stand than students when it comes to their view on the acquisition of competences in project-based learning. More specifically, when asked about the development of creativity in the project (item 7), active collaboration (item 13) or appropriate knowledge of the use of digital tools (item 18), teachers unanimously show their strong agreement with the possibility the project gives to students to acquire these competences.

According to the teachers' perception, the development of critical thinking and decision-making is determined by the students' ability to reflect and make decisions in order to undertake the project (items 28 and 29), given the high percentage of favourable responses in this respect, 87.5% in both cases.

The increased involvement of students in the learning process is largely due to the possibility the project gives them to collaborate, investigate and reflect on it (table 3, quotes 4, 14). When students are confronted with a research process, they must process the information from an active and critical stance, for which they need to understand the message, its intention and what is implicit in it. These learning experiences demonstrate PBL inherent qualities of authenticity, applicability and versatility, being able to meet the students' demands in terms of interest and abilities, without leaving those with special needs unattended (table 3, quote 13).

Concerning the effect of the use of L2 on the acquisition of competences by students, data show again more positive results than the students' on all items related to the linguistic performance of project work (item 2), where 100% of teachers agree or strongly agree on the improvement of their students' English level due to their taking part in the project. It is clear that the possibility of adding language objectives to the content objectives in the project, with due balance between attention to form and content in an attempt to link cognition and language (Dalton-Puffer 2007), makes PBL and CLIL highly adaptable when implemented together. As a result, this greater capacity in oral and written comprehension and expression in English has enabled them to better understand and deepen their content knowledge, which makes project work being considered "the quintessential experiential language learning approach" (Eyring 2001: 336).

However, along the process, and bearing in mind the bilingual setting, language mixtures like code-switching and translanguaging can be considered a legitimate linguistic possibility to make communication as effective as possible, which, far from being considered a deficiency, is an expression of bilingual competence, in line with Coperías-Aguilar (2020). In this vein, they are becoming more competent in both L1 and L2 (table 3, quote 5) not only in the linguistic side of communicative competence, but also in its sociocultural and pragmatic prospects. The interaction resulting from collaborating in a bilingual context (item 9) stands out as a standardized procedure in project work with 87,5% of strong agreement among teachers. This seems to accomplish a double purpose: an improvement in classroom relationships due to working closely with students, on the one hand, and the development of students' linguistic competence, on the other.

Regarding digital literacy, though being aware of its convenience (quote 2), teachers give less prominence to the use of digital media than students, as they focus more on the bounteous possibilities for research and reflection that these media provide than on the mere use of them (quotes 1, 4 and 50).

In a nutshell, they show their strong believe that students work better when research and practice are merged in the same activities (quote 7), and take a stand for active approaches such as PBL and CLIL in terms of content learning, its long-term fixation and the development of competences (quotes 8 and 10), while undermining the plausibility of traditional methods of achieving these outcomes (quote 10).

As illustrated in Figure 2, regarding the level of competence acquisition, teachers have a more positive view than students in almost all the competences, except for critical thinking and linguistic competence where students show slightly better results. Though being all of them between medium and medium-high level, in teachers' view, communication, creativity and autonomy stand out as the competences that PBL makes students nurture academic, social and personal competences. While in the students' view, collaboration and digital literacies are the ones that emerge easily on a high level. It seems that, when well-designed, project ability to foster the acquisition of competences is organic and not forced.

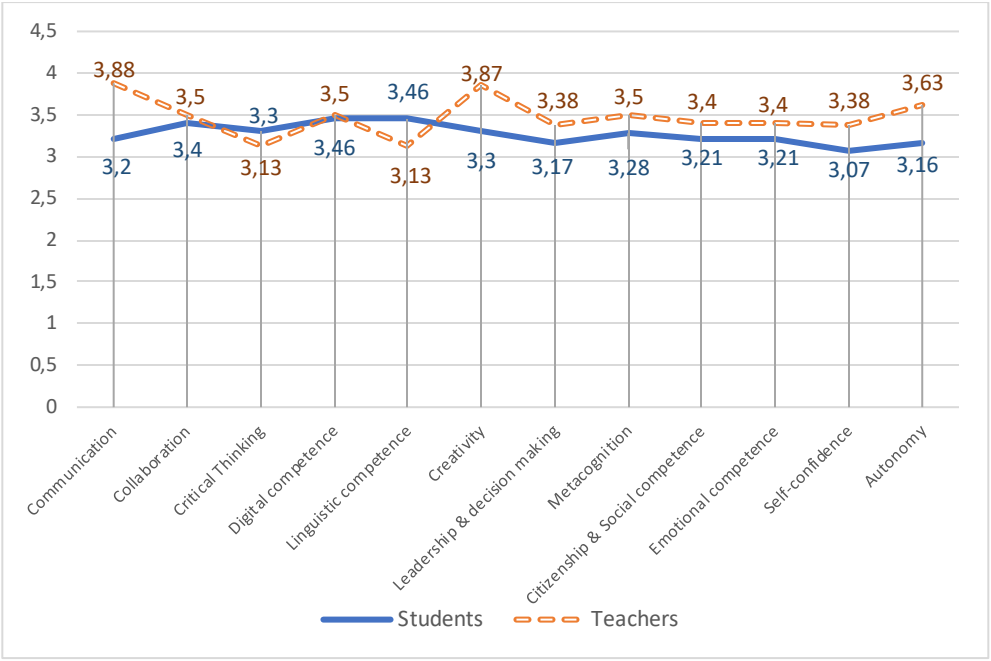

Figure 2. Teachers' and students' perception on the level of competences attained by students.

3.5.2. Measuring Effectiveness of Competence Acquisition in PBL

Table 4 and figure 3 feature the results from the students and teachers' questionnaires on assessment.

Table 4. Average values and statistics dispersion of the results of assessment scale (students' instrument).

	Mín.	Máx.		Σ	S^2
40. All contents taught in the bilingual programme are assessed	1	4	3,29	,743	,552
41. I use rubrics to assess my own work and my classmates'	1	4	3,02	,957	,916
42. Teachers use rubrics to assess my work and the work of my classmates	1	4	3,45	,720	,518
43. Formative and summative assessment is practised	1	4	3,46	,635	,404
44. The portfolio is used as an assessment tool	1	4	2,51	1,096	,1200

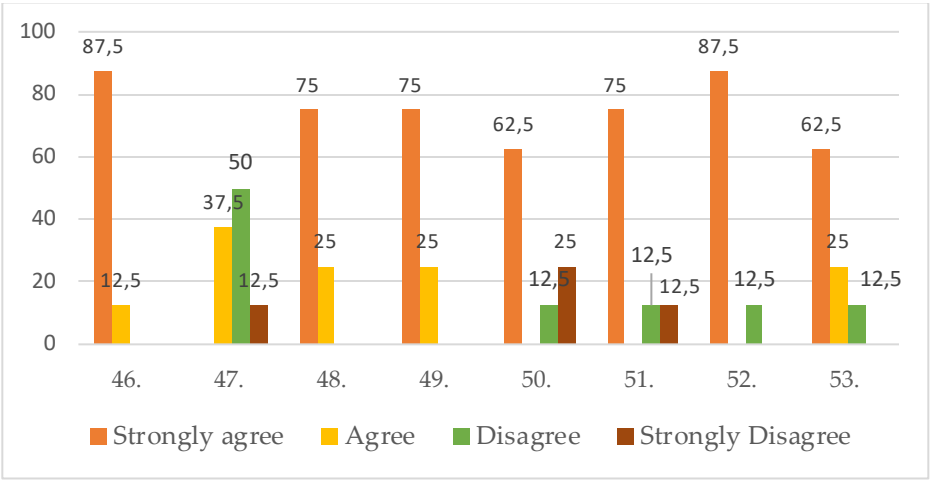

Figure 3. Teachers' response on the 'Assessment' scale in percentages.

As shown in table 4, the average scores are all in the upper and upper-middle range of the scale. These positive results show that students have a hand in the assessment process and place major value on it. Thus, data obtained in item 43 (3,46) unveil the students' awareness and contentment with the type of assessment being carried out. In this respect, the students perceive how the project allows teachers' monitoring and recording of their performance, which provides them with authentic feedback on the quality of their work at different points in the project.

The possibility of reviewing and improving their project leads to greater autonomy, self-confidence and motivation of the learner, ultimately favouring metacognition and confirming the mainstream conviction of formative assessment as one of the most powerful influences on learning (Hattie 2012).

Similarly, in table 4, items 41 and 42, referred to the use of rubrics, show the wider presence of this tool when assessing a project. Although the use of rubrics by teachers (3,45) outweighs the students' (3,02), they still prove a more active role for learners in the assessment process within the project than in traditional assessment. However, given the less positive data on item 44 related to the use of portfolios (2,51), we are invited to question the appropriate current use of this tool for formative assessment, and led to suggest a greater level of depth in the use of more reflection devices during and after the project, so that students can get authentic feedback on the project implementation on a regular basis.

Data obtained in figure 3 show teachers' contentment with the type of evaluation brought off and the variety of tools used for this purpose since all items have been highly rated.

Significantly, around 87% of teachers strongly agree that all the contents of the bilingual programme are assessed in the project (item 46), as well as competences and skills (100% between agree and strongly agree). This standards-aligned performance assessment system has allowed teachers to evaluate what their students were doing by observing them doing it, getting proven outcomes of their students' competences development. Teachers' being able to monitor and record the work done by the student during the project (item 49) makes possible to bolster the success and withdraw the downsides while equally providing the opportunity to meet the students' special needs.

Data are also consistent with the type of assessment carried out (item 52), where 87% of teachers state that the assessment has been diversified, formative and summative (item 52). A reported benefit of focusing on the process, the effort and the strategies used is increasing students' motivation and accomplishment and the improvement of their academic results (Sukandari 2013).

Regarding the assessment tools, around 87% of teachers acknowledge the systematic use of rubrics to assess their students' work (item 51). However, though being positive, only 62.5% of teachers admit to the use of rubrics by students to assess their own work and that of their peers (item 50). These data will allow us to reconsider teachers' awareness of the full active students' role in the assessment process or whether, on the contrary, they assume the responsibility is still in their hands. Concerning the use of the portfolio, they have shown more favourable results than students in this respect since around 87% of teachers state the use of this tool for both, reflection and assessment. The different results in both questionnaires may be on account of the students' perception of a lack of feedback and assessment guidelines by their teachers which, otherwise, could have affected more positively in their self-regulation of learning, self-efficacy and emotional excitement and motivation.

4. CONCLUSION

The present study drilled down into and yielded important information on one of the essential conditions for individuals to be able to achieve full personal, social and professional development: *the acquisition of competences*.

Therefore, taken jointly and in alignment with other studies (Sánchez-García and Pavón 2021), the results presented herein, and according to teachers' and students' perceptions, allow us to affirm that project-based learning is a catalyst of competences. Concerning the first objective, together with the awareness of a direct relationship between the use of PBL and the acquisition of surface competences such as communicative and linguistic competence in L1 and L2, collaboration, digital literacy or metacognitive competence, the agents surveyed report a high level of attainment of a series of underlying competences related to versatility, social variability and personal and cognitive development that emerge from the possibility offered by the project to interact with their classmates and teachers to identify troubling situations, find out appropriate solutions to social or environmental issues, manage and organize information and present and share results with different types of audiences. These competences involve a sense of initiative and entrepreneurship, responsibility for learning, critical, lateral and creative thinking, resilience or social and civic commitment, as well as increased self-confidence and self-esteem. It is undeniable, therefore, that PBL is a realistic path for their social competence and personal development, as also supported by Beckett (2005).

As for the second objective, it seems clear thus that the project solves the contingent dilemma of traditional teaching models by blurring the barriers between the classroom context and real life. The applicability of learning to real-life contexts provided by PBL, as referred to by respondents, seems to be the cornerstone in the achieving of high levels of competence development, which endows students with the necessary strategies to actively participate in democratic culture and intercultural dialogue (Barrett 2020).

Another relevant conclusion of this study that acknowledges the third objective is that L2 is not a hindrance to the students' acquisition of contents and competences when working in a project. Throughout the presentation of the results, we were able to highlight teachers and students' awareness of the increased possibilities for interaction when they have to work collaboratively in a bilingual project, which ultimately favours the acquisition of meaningful language, competences and content learning, while still developing the linguistic competence in L1. This is due to the fact that the use of language mixtures like code-switching and translanguaging is a rule and not an exception in bilingual learning contexts. This leads us to construe that there is a synergy between PBL and CLIL when it comes to the positive effect on learning English and the contents through a project, since it allows a shift in the educational experience of L2 and content learning from a classroom-focused one to a broader and more enriching one in scope, as already pointed out by Fitzgerald and Garrison (2016).

Regarding the effectiveness of the evaluation criteria and instruments in the last objective, they have addressed that learning through a project has turned into an element of reflection applied to real situations supported by holistic, diversified, formative and summative assessment. It is evident that the project requires the students to take responsibility not only for their own learning but also for the assessment process, which will benefit students' autonomy, self-confidence, motivation and growth. This performance assessment allows students to be aware of and hone their social readiness skills, being thus more competent in the 21st society.

Finally, when reflecting critically on this study, some limitations pop up regarding the assessment of the application of targeted skills. By definition, performance assessment in PBL must enact the skills you are intending to measure (Lenz *et al.* 2015). In our case, a greater refinement of the items in the evaluation scale could have provided more internal consistency and could have yielded data that more accurately assessed the level of competence achieved by the students when developing specific skills. Despite the constraints, we hope that the results of this research help maximize PBL potential to make students develop competences to succeed in 21th century society, and encourage us to extend our knowledge about its challenges and benefits in subsequent studies.

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