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EFFECT OF THE IMPLEMENTATION OF CLIL AND KNOWMAD COMPETENCES ON STUDENTS´ MOTIVATION IN HIGHER EDUCATION

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ABSTRACT. *The development of language skills in a second language as well as knowmad skills are key to the future employability of students. This research aims to analyze the impact of the introduction of a specific methodology involving the development of both types of skills on students' motivation and satisfaction in order to foster the development of a bilingual itinerary. The methodology is based on Content and Language Integrated Learning (CLIL) and the sample involved 227 students of the Degrees in Tourism of the University of Córdoba (Spain). Through a model of structural equations, the data analysis revealed that the development of language skills in L2 and the development of knowmad skills had a significant direct effect on the students' motivation towards learning a second language. The indirect effect of the development of these skills on the students' satisfaction with the teaching experience was also significant.*

Keywords: CLIL, knowmad, language skills, tourism, motivation, student´s satisfaction.

EFECTO DE LA IMPLEMENTACIÓN DE LAS COMPETENCIAS DE CLIL Y KNOWMAD EN LA MOTIVACIÓN DEL ESTUDIANTE EN LA EDUCACIÓN SUPERIOR

RESUMEN. *El desarrollo de habilidades lingüísticas en un segundo idioma, así como las habilidades knowmad, son clave para la futura empleabilidad de los estudiantes. El objetivo de esta investigación es analizar el impacto de la introducción de una metodología específica que implica el desarrollo de ambos tipos de habilidades en la motivación y la satisfacción del estudiante para fomentar el desarrollo de un itinerario bilingüe. La metodología se basa en el Aprendizaje Integrado de Contenido y Lengua (AICLE) y la muestra involucró a 227 estudiantes de los Grados en Turismo de la Universidad de Córdoba (España). A través de un modelo de ecuaciones estructurales, el análisis de datos reveló que el desarrollo de habilidades lingüísticas en una segunda lengua y el desarrollo de habilidades knowmad tuvieron un efecto directo en la motivación de los estudiantes para aprender un segundo idioma. El efecto indirecto del desarrollo de estas habilidades en la satisfacción de los estudiantes con la experiencia docente también fue significativo.*

Palabras clave: AICLE, *knowmad,* habilidades lingüísticas, turismo, motivación, satisfacción del estudiante.

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1. INTRODUCTION

The design of competences to be included in university education is essential in our globalized and hyperconnected world, where workers must be able to adapt to numerous, rapid changes in the fields of technology, means of communication and management styles. The need for multilingual citizens is becoming a reality in different social spheres, which not only affects the labour market, but also education and research. As a result of this global trend, second language learning is currently essential in numerous educational systems all around the world (Nunan 2003; Knell *et al.* 2007). These changes have also led universities to face a double challenge: i) to become international centers of excellence with teachers and students from all over the world (Graddol 2006), and ii) to prepare students for a multicultural, multilingual society.

One of the main objectives of the European Higher Education Area (EHEA), launched within the framework of the Bologna Process, has been the strengthening of the internationalization of higher education. Universities, to adapt to this new environment, must promote the implementation of programs taught in a second language –which, in most cases, tends to be English.

According to Altbach and Knight (2007) this is mostly developed by the adoption of different approaches such as English-medium Instruction (EMI) and CLIL (known in Spanish as Aprendizaje Integrado de Contenidos y Lenguas Extranjeras - AICLE). This situation opens up a wide variety of research (Coyle 2007), as it is based on the use of the second language as the language of instruction.

CLIL methodology refers to any learning context in which content and language are connected to address a specific training situation. This educational model was developed within a European initiative to use second languages as languages of instruction. The popularity of this methodology began with the publication in 1995 of the *White Paper* by the European Commission, which set the fourth general objective - "to speak three languages". After this milestone, numerous studies have analyzed and aimed to systematize the competences needed for the correct implementation of CLIL.

The language learning process must pay special attention to how to objectively define the competences acquired, not with the implementation of rigid principles, but adapting to the circumstances of the academic context (Álvarez *et al.* 2009). In the same way, there is extensive literature that highlights the importance of professional versatility in changing environments, where autonomy in decision-making processes and the capacity to adapt to technological, social and organizational changes have a direct influence on people's employability.

Regarding competences, since the OECD launched the Programme for International Student Assessment (PISA) in 1997, there have been numerous efforts to define the concept and the importance of the different elements affecting the learning process. In 2005, the OECD broadened the definition of competences, and released the first report of the project Definition and Selection of Competences (DeSeCo), in which competences were defined holistically. DeSeCo also highlighted a series of basic or essential competences, named *key competences*, which should include the following characteristics:

- To contribute to valued outcomes for societies and individuals.
- To help individuals meet important demands in a wide variety of contexts.
- To be important not just for specialists but for all individuals.

In line with the above and to strengthen the aforementioned characteristics, we turn to the concept of knowmad. The term knowmad, coined by Moravec (2013), is a neologism created from the words 'know' and 'nomad'. It is used to make reference to the set of abilities and knowledge that today's society requires

for employment, and that allows workers to move from one job to another thanks to their versatile training. Moravec (2013) coined the term knowmad to make reference to the professional profile in the new context of Society 3.0, which is characterized by:

- Accelerated social and technological change.
- Constant globalization, and horizontal redistribution of knowledge and relationships.
- Information society driven by *knowmads*.

The formal principles established in the Bologna Process, which support students' autonomy and their leading role in the teaching-learning process, require teachers to make an extra effort to develop activities, methodologies and tools, taking ICT into account. Nevertheless, there is a paradox: despite general awareness of this necessity, some studies carried out on teacher training related to ICT show undesired findings. This happens even though Administrations are making significant efforts to provide teachers with these tools (Píriz 2015).

ICT enables constructivist learning, where students have at their disposal numerous tools (e.g. wikis, podcasts, repositories of thematic information, fora, blogs) that help them to build up their own knowledge (Hernández 2008). Here it is important to mention Web 2.0, a term first used by Dale Dougherty, member of O'Reilly Media, which was subsequently defined by Tim O'Reilly. From this concept, we would like to highlight the idea of 'participation architecture', where every user becomes both an information consumer and provider, thus enriching the contents (O'Reilly 2005). Although this author suggested some years ago that this stage had been overcome in favor of higher mobility and the prevalent use of cloud services (O'Reilly 2011), this concept is still valid. This is especially true in this context, as the most frequently used tools in CLIL are mainly based on ICT resources, which enable information exchange and participative building of knowledge, including a playful component. The use of students' natural means of communication helps them to have a better learning experience.

The role of the team of teachers involved in a plurilingual project of this nature does not only require adequate command of both the content of the subject and the foreign language, but also of the technology necessary to support their contents and activities. Teachers' work, as opposed to traditional lectures, would enrich the contents, which would be available to students through the use of tools such as Moodle, teaching repositories (which can also be shared with other teachers), and in some cases even being incorporated into MOOCs (Massive Online Open Courses).

Nevertheless, experience shows that the use of ICT is not as widespread as it should be in learning-teaching processes. There are numerous reasons that try to justify this situation, including organizational culture, teacher training, facilities and infrastructure, and even the relevance given to these tools by the teachers themselves (Ballestero *et al.* 2010). Despite this situation, most teachers claim that they are aware of the importance of ICT in their research, and they consider this is more important than using ICT for their lessons (Balanskat *et al.* 2006).

This paper aims to analyze whether the development of both language skills in a second language and of knowmad competences, through the use of CLIL in an ICT context, has a positive influence on students' motivation towards second language learning, and consequently on their satisfaction with the learning experience.

2. CLIL METHODOLOGY

In an emergent globalized world, the current system of higher education has experienced increasing diversity and interconnectivity providing students with multilingual and multicultural competences. As a consequence of the focus on internationalization, we are witnessing today a need to introduce one or more foreign languages, especially English, in all disciplines of university classrooms. (Sánchez and Salaberri 2017). The predominant approaches in these teaching contexts in which English is used as the vehicular or instructional language are EMI (English-Medium Instruction) and CLIL (Content and Language Integrated Learning). Dearden (2016) states that:

> There appears to be a fast-moving worldwide shift, in non-anglophone countries, from English being taught as a foreign language (EFL) to English being the medium of instruction (EMI) for academic subjects such as science, mathematics, geography and medicine" (Dearden 2016: 4)

The implementation of EMI "produces more challenges than opportunities for Higher Education teachers and students" (Macaro *et al.* 2018: 68). While EMI makes learning academic content the absolute priority and relegates the learning of the language of instruction to second place, CLIL is characterized as "a dual-focused educational approach in which an additional language is used for the learning and teaching of both content and language" (Do Coyle *et al.* 2010: 1). According to Marsh and Langé (2000), CLIL is:

> a generic term and refers to any educational situation in which an additional language and therefore not the most widely used language of the environment is

> used for the teaching and learning of subjects other than the language itself. (Marsh and Langé 2000: iii)

Although EMI is the most widespread approach in Spanish universities, the CLIL approach holds immense potential on linguistic, pedagogical, psychological, and institutional levels, as witnessed by numerous studies (Lasagabaster and Ruiz de Zarobe 2010; Lorenzo, Casal and Moore 2010; Madrid and Hughes 2011). In this sense, Morgado and Coelho (2013) understand that CLIL is a much more effective and inclusive solution than EMI for both teachers and students, since it allows both to work at the same time on the different linguistic skills in the vehicular language and the assimilation of disciplinary contents in a balanced way. In CLIL methodology, language learning does not only take place when students focus consciously and intentionally on it. Invisible learning also occurs when learners' attention is not directly on the language, but on another topic. This is then what happens when the didactic approach aims at teaching curricular content by using a foreign language as the language of instruction. This methodology harmonizes the learning of curricular content with learning the language in an integrated way.

According to scientific literature, the CLIL approach provides numerous benefits (Navés and Muñoz 2000; Pavesi *et al.* 2001; Wolff 2007). The research available, albeit still limited, suggests that content and language are processed more deeply through CLIL. This is likely due to the higher cognitive effort that entails learning content using a second language, and mental schemes and concepts built during the learning process are more complex. Furthermore, most of the students show the same or higher performance regarding the content of the subjects than students taking the subjects following the traditional system. CLIL also fosters students' motivation, as they are 'challenged' and 'able' to solve problems and perform actions using the second language. This enables a spontaneous, natural use of the second language in real situations. CLIL seems to influence students' motivational levels as it provides them with situations in which the second language is used for communicative purposes.

This research was conducted on students of the bachelor's degree in Tourism in the academic year 2016/17. CLIL methodology had been implemented in Córdoba University in 2014 and the Tourism degree was one of the degree courses involved in the initial stage of the implementation of the CLIL approach. Córdoba University constituted, as a strategic action, the Plan for the Promotion of Multilingualism following the guidelines of the European Commission regarding language policies in the field of higher education.

3. KNOWMAD COMPETENCES

CLIL is not addressed by using a single, specific methodology. Similarly, there is not a uniform way to interpret this educational approach. According to Álvarez *et al*. (2009), bilingual education integrating language and contents has great potential, but it should not be limited with rigid dogmatic principles: the implementation of this method must be adapted to the context. Furthermore, CLIL fosters the use of active methodologies as well as cooperative and collaborative learning. CLIL can be implemented with methodologies that develop knowmad competences, such as the use of technology, creativity, teamwork and research capacity. The origins of the term *knowmad* are in the concept of *knowledge worker*, coined by Peter Drucker in his book *The Landmarks of Tomorrow* (1959). Forty years later, in 1999, this author defined the main features that distinguish these new *knowledge workers*, namely:

- Ability to assume responsibilities.
- Innovation in their field.
- Ability to act with a high level of autonomy.

Education is facing a paradigm shift. Students become knowmads. A Knowmad is a creative, imaginative and innovative person who can work with almost anybody, anytime, and anywhere. Universities face a very different climate than they did a generation ago. Globalization and the increasingly technology-centric economy has impacted the demand for highly skilled and highly knowledgeable professionals. Graduates need to meet the knowledge and skill requirements of the workplace (Harkema and Popescu 2018) and CLIL definitively helps to achieve this through the planning of different activities within the design of the experience, which has favoured the development of three basic Knowmad skills:

(KC1) The experience has improved your teamwork skills
(KC2) The experience has improved your creativity
(KC3) The experience has improved your research capacity

There are degrees in which the range of subjects is especially wide, as is the case of the Tourism Degree. This degree requires students to develop very diverse competences of a multidisciplinary nature (L'Espoir Decosta and Grunewald 2011), such as economics, statistics, sociology, geography, etc., where mastering other languages features prominently. Moreover, the sociodemographic profile of today's university students is permanently linked to technology in their interpersonal, academic and even professional relationships. Consequently, the relevance of ICT in university education is undeniable.

In a social context in which students are continuously exposed to digital stimuli, the work of the teacher to motivate and guide students in the teaching-learning process is becoming more and more complex. In the field of foreign language teaching, numerous studies –at different educational stages– have demonstrated that the use of ICT enables a better understanding of the subject among students (Molina and Sampietro 2015). ICT, such as audio-visual tools, may fill gaps in language learning, while at the same time enriching the contents by incorporating access to complementary tools such as dictionaries or grammar references, among other resources (Sharples *et al*. 2015) and are very useful for developing knowmad competences.

4. STUDENTS' MOTIVATION AND SATISFACTION

Motivation is a key element in significant learning, as it bears particular relevance to academic performance (Cardozo 2008). Nevertheless, motivation is a complex concept, whose definition is difficult to address, as shown in the extensive literature on this subject (intrinsic and extrinsic motivation, or motivation as a process versus motivation as a goal).

Tapia (1997) suggests that motivation has a direct influence on our way of thinking, and consequently on learning. From this perspective, it could be understood that different motivational orientations may have different consequences for learning.

Pintrich and Schunk (2002) define motivation as an active, sustained process of the behavior focused on a goal. In this way, motivation can be defined as a series of observable behaviors, indicative of lower or higher motivations.

Minera (2009) considers that motivation is an impulse that drives a person to set their objectives or goals, by establishing the beginning, continuation/maintenance, or end of the behavior.

Motivational processes have been studied from different methodologies and approaches, the most relevant being the following: i) correlational (Pintrich and de Groot, 1990), ii) experimental (Schunk 1982), and iii) qualitative-ethnographic (Meece 1991). Boza and Méndez (2013) carried out an exhaustive analysis of motivation in the academic context in Spain by structuring the different approaches and methodologies.

Learning a second language is a complex process, which requires significant effort, years of practice, and the ability to overcome the different stages of the learning process. There are numerous, diverse factors that may determine the learning process, and that may make aspects such as oral and written production,

interaction, and understanding the foreign language easy or difficult. Research on this field of study has devoted significant effort to finding a way to increase students' success in their learning process (Guillén *et al.* 2013). One of the key elements may be motivation.

The question is: how can we increase motivation towards second language learning? This paper suggests an approach of invisible learning by means of CLIL, based on a methodology that involves the use of ICT and the development of knowmad competences. It is termed invisible learning as both the development of language skills in a second language and knowmad competences take place unconsciously, as learning is focused on curricular content.

One of the objectives of this research is to analyze the relationship between students' motivation and students' satisfaction. Carratalá (2004) established the motivation-satisfaction relationship when explaining that being intrinsically motivated can be defined as the engagement in an activity for the pleasure and satisfaction that people experience while they learn or try to understand something new. Therefore, our working hypothesis is that the higher the motivation towards the second language, the higher the satisfaction with the learning experience.

5. RESEARCH METHOD

5.1. OBJECTIVES

The general aim of this research is to search for empirical evidence endorsing the hypothesis that the development of linguistic competences in a second language and the development of knowmad competences in the process of the implementation of CLIL methodology, affect the motivation of the students towards learning in a second language in a positive manner and, consequently their satisfaction towards the learning experience.

> Hypothesis 1: The development of linguistic competences increases motivation towards the learning of a second language.
>
> Hypothesis 2: The development of knowmad competences increases motivation towards the learning of a second language.
>
> Hypothesis 3: Students´ motivation to learn and work in a second language improves their satisfaction with the learning experience.

Figure 1. Research model. Source: own elaboration.

5.2. CONTEXT AND PARTICIPANTS

The research took place during the academic year 2016/17at all stages of the degree course. The aim of this study is to analyze the results of the implementation of CLIL in non-linguistic subjects, involving a total of 9 subjects representing 21.25% out of the 240 ECTS of the Degree in Tourism. The 9 subjects involved in this research belong to different areas of knowledge. The distribution was as follows: 4 subjects belong to the area of Business Organization, 3 subjects belong to the area of Economics, 1 subject belongs to the area of Accountancy and 1 subject belongs to the area of Art History. Most students participated in this project by means of subjects related to the area of Business Organization (59.92%), while 21.14%, 16.74%, and 2.2% participated by means of subjects related to Economics, Art History, and Accountancy, respectively (see Table 1).

Table 1. Subjects and students.

Subject	**Year**	**Area of knowledge**	**No. of students**	**%**
Subject 1	Year 1	Accountancy	5	2.20
Subject 2	Year 1	Economics	20	8.81
Subject 3	Year 2	Economics	5	2.20
Subject 4	Year 2	Art History	38	16.74
Subject 5	Year 2	Business Organization	19	8.37
Subject 6	Year 2	Business Organization	31	13.66
Subject 7	Year 2	Business Organization	52	22.91
Subject 8	Year 3	Economics	23	10.13
Subject 9	Year 3 and Year 4	Business Organization	34	14.98
Total			227	100

The sample involved a total number of 227 students of the Degrees in Tourism of the University of Córdoba (Spain). A brief sociodemographic description of the participants in this study was carried out (see Table 2). A total of 66.5% of the sample were women, while 33.5% were men. The age of most of the participants ranged from 18 to 21 years old (77.97%). Regarding the participation of the different years of the Degree, the year with the highest representation was Year 2 (60.79% of the participants), followed by Year 3 (19.38%), Year 1 (13.22%), and Year 4 (6.61%). Almost half of the students had a B1 level of English (49.34%). However, 21.14% of the students had a level of English lower than B1 (A1 or A2), while 29.51% had a level of English higher than B1 (B2, C1 or C2).

Table 2. Socio-demographic profile of the students.

Variable		**Students**	**%**
Gender	Female	151	66.52
	Male	76	33.48
Age	18-19	85	37.44
	20-21	92	40.53
	22-23	25	11.01
	≥24	25	11.01
Current year	Year 1	30	13.22
	Year 2	138	60.79
	Year 3	44	19.38
	Year 4	15	6.61
Level of English (ESL)	A1	9	3.96
	A2	39	17.18
	B1	112	49.34
	B2	61	26.87
	C1	5	2.20
	C2	1	0.44

5.3. PROCEDURE

Stipek (1996) stated that an adequate design of materials has a direct influence on student's motivation. According to the model proposed by Debnath (2005), the structural elements used by the teacher in the lessons (e.g. variety of activities, value of the activities, identity of the activities, autonomy, assessment, feedback) are essential for motivation.

Following these premises, in the design of our study CLIL had to be implemented in each subject involving a minimum of 2 and a maximum of 5 sessions. In order to carry out the research, 11 teachers and 2 language assistants participated in the project creating didactic materials. In these sessions, teachers had to carry out at least one of the following activities:

> - Activity 1. TELL ME: students recorded podcasts or similar files on a key area of the subject, which would later be listened to and discussed by the students.
>
> This activity improved linguistic competences such as the production of dialogues or monologues. In addition, the students improved knowmad competences such as creativity or teamwork.
>
> - Activity 2. LESSONS IN POCKETS: students created videos in English by using contents studied in the lessons; then they developed traditional class notes on different topics but by using a different layout and type of file.
>
> This activity improved linguistic competences related to speaking and writing. Furthermore, the students improved knowmad competences such as research capacity, creativity and teamwork.
>
> - Activity 3. TELL ME ABOUT…: students prepared short presentations (maximum 10 minutes) in English.
>
> This activity improved linguistic competences related to speaking and writing and knowmad competences such as creativity.
>
> - Activity 4. LET'S READ TO THE WORLD: students read different documents in English related to one of the areas of the subject, and then they answered a series of questions about these documents.
>
> This activity improved linguistic competences related to reading and writing. Likewise, the students improved knowmad competences such as research capacity and teamwork.

All these activities were designed for working in groups of 4 or 5 students. Moreover, teachers had to prepare the activities so that students improved the competences related to creativity, innovation and other skills such as the use of information technologies or the ability to assume responsibilities and act with a high level of autonomy.

5.4. DATA- GATHERING INSTRUMENTS

The data for this research was obtained by means of a questionnaire. The survey used in this study is based on previous research (Tatzl 2011). From the initial survey, and by means of subsequent improvements (including a 15-survey

pre-test), the final layout was achieved. The final version of the questionnaire aimed at obtaining the optimum clarity of the questions, the highest adjustment of the answers in order to achieve the goals of the research, and the highest specificity possible to each of the questions.

The questionnaire assessed the development of language competences (5 items) and the development of knowmad competences (3 items), as well as motivation (3 items) and students' satisfaction (2 items). All the items were measured by using a 5-point Likert scale. Other studies on students' motivation have also used the same scale (Cardozo, 2008, Boza and Méndez, 2013, Gutiérrez and Del Barrio, 2014).

The questionnaires were completed online by the students of the 9 subjects involved in the project. A total of 250 responses were obtained, of which 227 were valid, during the academic year 2016/17 (more specifically, from October 2016 to April 2017).

The structural model was analyzed by using the partial least squares (PLS) approach, instead of the approach based on covariance (CB), for several reasons. Firstly, our conceptual model has exploratory characteristics. Secondly, our sample size was not very large (n = 227), but it was considered a good sample size for PLS-SEM. Finally, the use of PLS-SEM was due to the small number of items (2) in students' satisfaction with the teaching experience (Hair, Hult, Ringle and Sarstedt, 2014).

6. RESULTS

In order to address the hypothesis formulated in this study, we will present the obtained results.

6.1. EVALUATION OF THE MEASUREMENT MODEL

In order to evaluate the reflective measurement model, the indicators reliability, the reliability of the internal consistency, and the convergent and discriminant validity are considered (Hair *et al.* 2011).

In this study, the analysis of indicators reliability showed that all indicators have loadings over 0.7, the threshold set for this test (Hair *et al.* 2011). The indicators of individual reliability are thus positive, as loadings above 0.70 indicate that the construct explains over 50% of the indicator's variance (see Table 3).

Table 3. Assessment of the measurement model.

	Mean	Standard deviation	Loading	T-test	Composite reliability	AVE
Language competences (LC)					**0,9341**	**0,7396**
(LC1) The experience has improved your linguistic competence related to *speaking* (dialogue)	2.8973	1.1917	0.8958	37.9852		
(LC2) The experience has improved your linguistic competence related to *speaking* (monologue)	2.9823	1.2085	0.8975	43.8073		
(LC3) The experience has improved your linguistic competence related to *listening*	2.9159	1.2742	0.8675	29.4298		
(LC4) The experience has improved your linguistic competence related to *writing*	2.9244	1.1567	0.8119	19.0085		
(LC5) The experience has improved your linguistic competence related to *reading*	2.9558	1.0705	0.8236	18.6640		
Knowmad Competences (KC)					**0.9094**	**0.7691**
(KC1) The experience has improved your teamwork skills	3.4868	1.1813	0.8550	31.0090		
(KC2) The experience has improved your creativity	3.3465	1.0947	0.8815	30.1814		
(KC3) The experience has improved your research capacity	3.2544	1.0779	0.8941	28.8676		
Motivation (MT)					**0.9137**	**0.7779**
(MT1) The experience has increased your motivation towards learning the language	3.4561	1.2590	0.9050	45.7503		
(MT2) The experience has increased your self-confidence to work academically in a foreign language	3.4342	1.2087	0.9330	66.2958		

(MT3) This experience would help you to participate in an academic program with 30 ECTS taught in English	3.5263	1.3430	0.8026	15.7128		
Global Satisfaction (ST)					**0.8858**	**0.7916**
(ST1) Assessment of the materials used in this experience	3.6667	0.9783	0.8549	14.0066		
(ST2) Overall assessment of the experience	3.3026	0.9927	0.9232	44.0719		

The analysis of the internal consistency for each construct showed that all values of composite reliability were over 0.85, which are over the critical values set for this type of assessment (Nunnally and Bernstein 1994).

To test convergent validity, the average variance extracted (AVE) values were considered. An acceptable AVE is 0.50 or higher, as it indicates that on average the construct explains over 50% of the variance of its items (Hair *et al.* 2011). In our case, all the constructs studied obtained AVE values over 0.7.

Discriminant validity was assessed using two criteria. First, the Fornell-Larcker criterion was met; the correlations between constructs are lower than the square root of AVE. The square root of AVE is shown in bold in the diagonal of Table 4. Discriminant validity is confirmed since the values in the diagonal are higher than the correlation between any construct and the rest of the constructs of the model.

Table 4. Correlations between constructs and square root of AVE.

AVE		LC	KC	MT	ST
0.7396	LC	**0.8600**			
0.7691	KC	0.7156	**0.8770**		
0.7779	MT	0.7343	0.6172	**0.8820**	
0.7916	ST	0.6253	0.6421	0.6044	**0.8897**

Another method to assess discriminant validity consists of examining cross loadings. The most recommended process for this approach is that an indicator variable should show a higher loading on its own construct than on any other construct included in the structural model (Hair *et al.* 2014). If the loadings of the indicators are consistently higher on the construct with which they are associated,

then the construct shows discriminant validity. The results are shown in Table 5 below, and all of them are positive.

Table 5. Correlations between manifest and latent variables.

	CL	CK	MT	SG
(LC1) The experience has improved your linguistic competence related to *speaking* (dialogue)	**0.8958**	0.6481	0.6479	0.5460
(LC2) The experience has improved your linguistic competence related to *speaking* (monologue)	**0.8975**	0.6204	0.6333	0.5607
(LC3) The experience has improved your linguistic competence related to *listening*	**0.8675**	0.6325	0.6143	0.5458
(LC4) The experience has improved your linguistic competence related to *writing*	**0.8119**	0.6067	0.6065	0.5136
(LC5) The experience has improved your linguistic competence related to *reading*	**0.8236**	0.5687	0.6515	0.5208
(KC1) The experience has improved your teamwork skills	0.6647	**0.8550**	0.5670	0.5707
(KC2) The experience has improved your creativity	0.6277	**0.8815**	0.5699	0.5804
(KC3) The experience has improved your research capacity	0.5803	**0.8941**	0.4734	0.5306
(MT1) The experience has increased your motivation towards learning the language	0.7333	0.5810	**0.9050**	0.5841
(MT2) The experience has increased your self-confidence to work academically in a foreign language	0.6776	0.6106	**0.9330**	0.5773
(MT3) This experience would help you to participate in an academic program with 30 ECTS taught in English	0.5017	0.4144	**0.8026**	0.4133
(ST1) Assessment of the materials used in this experience	0.5121	0.5030	0.4500	**0.8549**
(ST2) Overall assessment of the experience	0.5939	0.6268	0.6074	**0.9232**

Once the reliability and validity of this measurement model has been validated, the structural model can also be assessed in order to test the relationship among constructs.

6.2. EVALUATION OF THE STRUCTURAL MODEL

The structural model was evaluated by using the determination coefficient (R^2) of each dependent construct and the significance of the paths (Hair *et al.* 2011). Table 6 shows the R^2 values of the endogenous variables considered in the structural model, with their respective strength specified in accordance with Hair *et al.*'s (2011) considerations.

Motivation presents a moderate R^2 value, as 55.64% of this construct's variance is explained by the model; while the R^2 value for satisfaction is weak-moderate, as it explains 36.53% of the construct's variance. The analysis was completed with the evaluation of the explained variance of the endogenous constructs by means of the latent variables. This test was carried out by multiplying the coefficient path by the corresponding correlation coefficient for both variables, and then obtaining the absolute value of the result (Falk and Miller 1992). The analysis showed that the main antecedent of motivation is the development of language competences, followed by the development of knowmad competences.

Table 6 Effects on endogenous variables.

	R^2	**Direct effect (beta)**	**Correlation**	**Explained variance**
Motivation	**0.5564 (moderate)**	-	-	**55.64%**
H1(+): LC → MT	-	0.5999	0.7343	0.4405
H2(+): KC → MT	-	0.1879	0.6172	0.1159
Overall satisfaction	**0.3653 (weak-moderate)**	-	-	**36.53%**
H3(+): MT → ST	-	0.6044	0.6044	0.3653

An additional analysis of the significance of the paths (Hair *et al.* 2011) showed that the three hypotheses are statistically significant. Consequently, they all have empirical support from the results of this study (see Table 7). The final results of the evaluation of the model are shown below (see Figure 2).

Table 7. Results of the structural model.

Hypotheses	**Path coefficient**	**T-value**	**Support**
H1(+): LC → MT	0.5999	9.2035***	Yes
H2(+): KC → MT	0.1879	2.8821**	Yes
H3(+): MT → ST	0.6044	11.1237***	Yes

*Notes: critical t values: * p <0.05; ** p < 0.01; *** p < 0.001.*

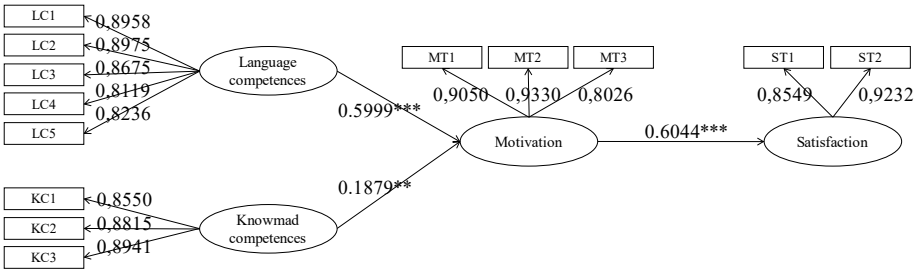

Figure 2. Results of the PLS analysis. Source: own elaboration.

6.3. DISCUSSION OF THE RESULTS

The general objective of this research is to analyze the development of CLIL in higher instructional settings and its influence on students' motivation towards second language learning. This paper suggests an approach of invisible learning by means of CLIL, based on a methodology that involves the use of ICT and the development of knowmad competences. It is termed invisible learning as the development of both language skills in a second language and of knowmad competences takes place unconsciously, as learning is focused on curricular content.

Our results show that the implementation of CLIL methodology increases linguistic competences. We found evidence that the students' skills of writing, speaking, listening and writing had improved in the areas of business organization, economics, accountancy, and history of art because of this experience. We also found evidence that the development of CLIL increases knowmad competences. The data show that students improved their teamwork skills, creativity and research capacity in the aforementioned content areas, thus linguistic competence is the first antecedent of motivation to work by using CLIL (see Table 3).

Our first working hypothesis is that the better the development of the language competences, the higher the motivation to continue learning and working in a second language. In this light, Pintrich and de Groot (1990) conducted research that established the relationship between cognitive and motivational variables, and results in academic performance. In their conclusions, they highlighted the positive correlation between the different learning and motivational strategies. These are key elements in explaining good academic performance as well as setting new learning goals. The data of the relationship between the improvement of language

competences and the motivation towards a second language presents empirical support in the context of the Degree in Tourism (see Table 7 and Figure 2).

With regard to our second hypothesis concerning the relationship between knowmad competences and motivation towards learning a second language, the study also presents empirical support for this relationship. The development of knowmad competences has a significant and direct influence on the motivation to work in a second language. Competences regarding the use of ICT, language skills in a second language, and knowmad competences are key elements in students' future and potential employability (see Table 7 and Figure 2).

Finally, this study also found empirical support for the relationship between motivation and satisfaction as is shown in Table 7 and Figure 2. Students' motivation is one of the most relevant concepts in an educational context, and several studies have found a certain relationship between motivation and academic performance in a foreign language (Lozano *et al.* 2000; Gardner 2007; Bernaus and Gardner 2008).

7. CONCLUSIONS

Motivation has been widely studied in the context of education, as well as in the field of foreign language learning. Nevertheless, the number of studies carried out in a context with the specific characteristics of this research is more limited. This particular study involves the use of the CLIL approach by using activities based on ICT which entail the development of knowmad competences in a Spanish university. As a consequence, the results obtained in most previous studies on motivation in foreign language learning (Tremblay and Gardner 1995; Bernaus, Moore and Cordeiro Azevedo 2007; Bernaus and Gardner 2008) cannot easily be extrapolated to this context, although they can be used as a reference. Moreover, there are few studies on knowmad competences in the educational field, and there are no previous studies conducted in the specific field of foreign language learning. Currently, we are not aware of any study addressing together the development of language competences, the development of knowmad competences and the motivation towards second language learning.

Considering all the evidence provided by previous studies on the role of language competences in a foreign language, the role of knowmad competences, and the key role of students' motivation towards second language learning, the authors suggested the design of a study involving all these constructs. Moreover, the authors aimed to explore to what extent the development of a CLIL approach based on a methodology which entails the development of knowmad competences may increase students' motivation to learn and be taught

in English as a Foreign Language, and consequently increase their satisfaction with the teaching experience.

By using partial least–squares structural equation modeling (PLS-SEM), the data analysis shows that, under a CLIL approach, both the development of language competences in a second language and the development of knowmad competences had a significant direct effect on students' motivation towards second language learning. In this context, the development of language competences in a second language was the component with a higher impact on students' motivation. Moreover, the indirect effect of the development of both competences on students' satisfaction with the learning experience mediated by motivation was also significant.

As practical implications, this study concludes that higher education institutions could use the CLIL approach by using methodologies with ICT tools, that involve the development of knowmad competences as an experience prior to the implementation of a bilingual module, with the aim of increasing students' motivation to take these bilingual modules in the subsequent years of their Degrees.

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