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**SOCIAL SCIENCE LEARNING AND GENDER-BASED  
DIFFERENCES IN CLIL. A PRELIMINARY STUDY**

**EL APRENDIZAJE DE LAS CIENCIAS SOCIALES Y LAS  
DIFERENCIAS BASADAS EN EL GÉNERO EN AICLE. UN  
ESTUDIO PRELIMINAR**

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*This article shows the preliminary results of a longitudinal study that aims to (i) determine the impact of bilingual education on the acquisition of contents related to social sciences, and (ii) its effect on the reduction of gender-based achievement differences. To this end, the results of students in the 4<sup>th</sup> year of primary education (n = 119) of one bilingual and one non-bilingual school located in an urban area were compared. It was guaranteed that the groups were homogeneous in terms of socio-economic level, that they had received a similar teaching methodology and same amount of social science teaching hours (3 hours a week). The results showed (i) the students who received the subject of social sciences in English had acquired knowledge in a similar manner to those who had received it in their mother*

tongue and (ii) the bilingual education levelled the gender differences observed in the non-bilingual school in favour of males.

**Key words:** CLIL, bilingual education, primary education, social science, gender

*En este artículo se muestran los resultados preliminares de un estudio longitudinal que se dirige a (i) determinar el impacto de la enseñanza bilingüe en la adquisición de los contenidos relativos a las ciencias sociales, y (ii) su efecto en la reducción de las diferencias de logro basadas en el género. Para ello se compararon los resultados de alumnos de 4º de educación primaria (n=119) de una escuela bilingüe y otra no bilingüe situadas en una zona urbana. Se garantizó que los grupos eran homogéneos en términos de nivel socio-económico, que habían recibido una metodología docente similar y el mismo número de horas de ciencias sociales (3 horas semanales). Los resultados mostraron (i) los alumnos que recibieron la asignatura de ciencias sociales en inglés habían adquirido conocimientos similares a los que la habían recibido en su lengua materna y (ii) la enseñanza bilingüe niveló las diferencias de género observadas en la escuela no bilingüe en favor de los varones.*

**Palabras clave:** AICLE, educación bilingüe, educación primaria, ciencias sociales, género

## 1. Introduction

CLIL (Content and language integrated learning), the European label to bilingual education, has rapidly disseminated throughout the continent, where CLIL provision has become mainstream for most countries (Eurydice, 2006; Lasagabaster & Doiz, 2015; Lyster & Ballinger, 2011). In Spain, 25% of students are learning subjects through a foreign language, according to a recent MECD report (2018), and in the autonomous community of Castilla-La Mancha, a monolingual region located in central Spain, where this study is set, more than 600 linguistic programmes are currently running at primary and secondary schools.

Underpinned by international institutions, such as the EU, and strengthened by earlier research results, CLIL has firmly emerged in the

language learning scenario, being considered to be “the potential lynchpin to counter Europe’s deficient language standards” (Pérez Cañado & Ráez Padilla, 2015, p. 1), “the ultimate opportunity to practice and improve a foreign language” (Pérez-Vidal, 2013, p. 59) and “an advantageous setting for intense cognitive activity” (Rumlich, 2017, p. 111). CLIL provides increased exposure to a second language in more communicative meaningful learning environments, and is connected to additional benefits such as development of problem solving strategies, cultural awareness, global citizenship (Coyle, 2007; Coyle, Hood & Marsh, 2010) and increased motivation (Lasagabaster & Doiz, 2015; García Fernández, Nieto Moreno de Diezmas & Ruiz-Gallardo, 2017), and all this, within school hours.

However, after an initial moment in which CLIL researchers nearly exclusively focused on highlighting its beneficial effects, in recent times, more critical views have appeared in the CLIL research arena (Bruton, 2011a, 2011b, 2013, 2015; 2017; Cenoz, Genesee, & Gorter, 2013; Paran, 2013). This trend has been identified as “a pendulum effect” in CLIL research (Pérez Cañado 2016a, 2016b) described as a shift from a “celebratory rhetoric” (Paran, 2013, p. 334) to “a dismal, pessimistic outlook on the feasibility of CLIL implementation” and “the validity of the research conducted” (Pérez Cañado, 2016b, p. 2). The debate about CLIL and the focus on the problematic issues of bilingual education, as it has been lately spurred by the media, has become viral among families and schools, turning it into “a love-it-or-hate-it topic” (San Isidro, 2018, p. 3) not only amongst academics, but also for society as a whole.

Results seem to indicate that CLIL may not be panacea for language and content learning we had thought, but to adopt a dismissive stance on this educational innovation may be not fair either. It is necessary, as Pérez Cañado points out (2016a, 2016b), to find the balance between “Pollyannas (harboring an exclusively positive outlook on CLIL)” and “Scrooges (maintaining an overly pessimistic view of the future of CLIL)” (Pérez Cañado, 2016b, p. 15), and to do this more research is needed, and particularly, more empirical studies would help clarify this panorama.

In addition to this, most of the research has tapped into the effect of CLIL on language learning, possibly, given the fact that “many of the researchers involved in CLIL studies have been applied linguists” (Merino & Lasagabaster 2018, p. 2), and also that “the main rationale behind CLIL

provisions is the improvement of second language learning” (Nieto Moreno de Diezmas, 2019a, p. 74). Therefore, research literature has identified several areas of CLIL implementation which deserve further scrutiny. This is the case of the acquisition of the mother tongue (Nieto Moreno de Diezmas, 2018a); Pérez Cañado, 2018; San Isidro & Lasagabaster, 2018); the effect on development of key competences (Nieto Moreno de Diezmas, 2018b); the impact on motivation and affective factors (Lasagabaster & Doiz, 2015), the assimilation of content (Dallinger, Jonkmann, Hollm, & Fiege, 2016; Fernández-Sanjurjo, Fernández-Costales & Arias Blanco, 2017; Pérez Cañado, 2018), and the impact of CLIL on gender-related differences.

The preliminary analysis of an ongoing longitudinal study shown in this paper will try to fill the aforementioned gaps by comparing 9 to 10 year-old CLIL and non-CLIL students (n=119) regarding their social science knowledge, and examines the effect of CLIL on gender-based differences in content learning.

This paper is organized as follows. After framing the topic against the backdrop of prior research on CLIL and content learning, and CLIL and gender, the article goes on to describe the research methodology. The next sections will be devoted to presenting and discussing the results, while the last section will be focused on stating the main conclusions to be drawn from the investigation carried out.

## **2. Literature Review**

### **2.1. Content Learning in CLIL Settings**

The analysis of the research on the effects of CLIL on content learning confirms the so-called “pendulum effect” described by Pérez Cañado (2016b). Thus, the main conclusion derived from the earlier studies conducted in the field is that CLIL does not negatively affect subject matter acquisition, whereas, in contrast, recent investigations offer a critical perspective on the assimilation of content in CLIL settings. Finally, a couple of fairly recent studies on content acquisition seem to “redress the balance” and show CLIL does not hinder the assimilation of the subjects taught through a second language.

Among the first group of investigations, it is worth mentioning Admiraal, Westhoff and de Bot's (2006) longitudinal study set in The Netherlands in which no negative effects were found in the results of CLIL students in their school leaving exams at the end of secondary education for the subjects which had been taught through English. In turn, Jäppinen (2005) carried out a longitudinal study in Finland with 669 learners from the age of 7 to 15 and concluded that, except for younger CLIL students showing some cognitive difficulties when dealing with abstract scientific concepts, the evolution of CLIL and non-CLIL learners regarding their acquisition of mathematics and science content was similar. Parallel results were found in Switzerland by means of the qualitative research conducted by Stohler (2006). The author examined several schools in which German or French were used for the instruction of content subjects, and after asking in interviews CLIL and non-CLIL students to demonstrate their knowledge about the conceptual fields taught in class, concluded that "the teaching of non-linguistic topics in a second language (L2) does not impair the acquisition of knowledge" (Stohler, 2006, p. 41). In Cyprus, Xanthou's (2011) reported on two experiments with 6<sup>th</sup> graders which compared the acquisition of vocabulary and content related to the subject of science conveyed in the mother tongue and in a second language (English). The author concluded that "findings seem to provide support for the positive impact of CLIL on content and L2 vocabulary development", although it is acknowledged that "linguistic interaction carried out exclusively in L1 can allow more opportunities for interaction than in L2" (Xanthou, 2011, p. 124).

Other studies revealed even more optimistic results. For example, Wode (1999) in Germany, after comparing CLIL and non-CLIL students enrolled in secondary education, observed that the former outperformed the latter in history and geography learning. Some years later, another investigation (Madrid, 2011), carried out in Andalusia (Spain) on social science competence of primary school students, unveiled that CLIL students enrolled in bilingual private and public schools did it better than students in monolingual public schools in a social science test designed *ad hoc*, and differences were significant in favour of the bilingual private stream. The author claimed that CLIL students "can perform at the same level or higher than those who take it in the mother language" (Madrid, 2011, p. 211). In the same vein, and this time at the end of secondary school, Bergroth (2006) looked into the results in the general studies test of

the matriculation examination in Finland and concluded that “immersion students as a group perform as well as or even better than their peers in regular programs” (Bergroth, 2006, p. 132). Similarly, in Switzerland, Serra (2007) detected that primary school students in CLIL outstripped non-CLIL learners in mathematics. The same subject was under scrutiny in Surmont, Struys, Van Den Noort, and Van De Craen’s (2016) study conducted in Flanders (Belgium). Monolingual students and CLIL learners were tested before entering the bilingual French programme in the first year of secondary school by means of a mathematical test and no differences in mathematical knowledge were found. However, after ten months, CLIL learners’ progress in mathematics was significantly better than the progress of the mainstream branch, and differences in favour of the CLIL group were already visible after a very short period of time of three months.

On the downside, some of the aforementioned studies detected some flaws in CLIL implementations. For example, Madrid (2011) revealed that while at primary school, CLIL methodology was more effective for social science learning than regular programmes, at secondary school, the tables were turned, and the semi-private monolingual school provided a significantly better development of geography and history competence than the public and the private bilingual schools where the sample of the study was collected. In turn, Bergroth (2006) ascertained that none of the CLIL students got the highest grade in the matriculation exam of mathematics, although, in return, none of them had failed the test either. The potential of CLIL to promote the gathering of students in intermediate bands of achievement and the reduction of very low levels of proficiency among CLIL groups, has been confirmed in subsequent research conducted at university level (Hernandez-Nanclares & Jimenez-Muñoz, 2017) and with primary school learners in Spain (Nieto Moreno de Diezmas, 2019a) and Finland (Seikkula-Leino, 2007). However, in all the studies mentioned, the proportion of CLIL student in the excellence level of performance was also lower than in the non-CLIL group.

In recent times, the idea supported by the aforementioned research literature that, in general terms, CLIL is not detrimental for the acquisition of content has been contested in three studies. Anghel, Cabrales, and Carro (2016) compared the performance of CLIL and non-CLIL students enrolled in primary schools of Madrid in three standardized test conducted in Spanish (the mother tongue): Spanish, mathematics and science. Results

showed that no differences were found in the acquisition of Spanish and mathematics, which were taught in Spanish, but for science, which was taught in English, the bilingual programme had a significant negative effect over the score, particularly for children whose parents had less than upper-secondary education. However, the authors acknowledge that the fact that the tests were in Spanish could have affected the results: “there is a confound, because it is possible that the students do not know less, but simply they do not know how to express it in Spanish” (Anghel, Cabrales & Carro, 2016, p. 1204).

Similarly, Fernández-Sanjurjo, Fernández-Costales and Arias Blanco (2017) in a study based in the region of Asturias (Spain) with a sample of 709 6<sup>th</sup> year of primary education students evinced that students enrolled in non-CLIL schools clearly obtained better results in a natural science *ad hoc* test, than their bilingual partners. In addition, results suggest that CLIL was particularly detrimental for students with low socioeconomic status (henceforth SES).

In Germany, Dallinger et al. (2016) examined history learning at the end of primary education, and concluded that “CLIL-classrooms need to invest substantially more time to achieve comparable learning outcomes” (Dallinger, 2016, p. 23), since, although no differences were detected between CLIL and non-CLIL learners, the former had received three hours of instruction a week instead of two, and therefore “a negative CLIL effect might be found if both student groups are given the same number of History lessons” (2016, p. 30).

Two recent studies seem to “redress the balance” and offer a more positive outlook on the effect of CLIL on content learning. In the first place, the study of Pérez Cañado (2018) represents a valuable contribution to the investigation on natural science acquisition in CLIL, on several grounds. It worked with a substantial sample of 2024 students from twelve monolingual provinces in Spain; it examined natural science knowledge of primary and secondary education learners; it guaranteed the homogeneity of CLIL and non-CLIL groups in terms of motivation, verbal intelligence, and English level; and it considered the type of school, setting, and SES as intervening variables. Results revealed that at the end of primary education no differences were detected in the score of CLIL and non-CLIL groups in the natural science test, while at the end of secondary education CLIL

students did it better than their non-bilingual counterparts and differences were significant, which suggests that in the long term, CLIL is beneficial for the assimilation of subject matter.

Despite working with a considerable lower sample (n=44), San Isidro and Lasagabaster's (2018) findings are similar. This two-year longitudinal study, based in rural Galicia (Spain), guaranteed the homogeneity of the CLIL and non-CLIL samples before the implementation of the CLIL programme and showed that after two years, CLIL students at the end of secondary education outperformed the non-CLIL group regarding their social science knowledge.

## **2.2. Gender and Content Learning in CLIL**

When it comes to examining the impact of gender on language learning, second language research has revealed that “gender differences showed enhanced performance of women on verbal tasks” (Maccoby & Jacklin, 1979). Girls are more intrinsically motivated, whereas males express more extrinsic reasons for language learning (Schmidt, Boraie & Kassagby, 1996), and the former are more positively inclined to language learning than the latter (Kobayashi, 2002; Lasagabaster & Sierra, 2009), thereby outperforming their male counterparts (Pavlenko & Piller, 2008; Sunderland, 2000). However, boys seem to have more interest in studying science than girls (Clark, 1972), and find it easier to learn science content than their female partners (Keeves and Kotte, 1992).

The fact that females outperform males in language learning, but they are left behind in science content learning could affect performance inside a bilingual programme such as CLIL, in which language and content learning are integrated and combined. Therefore, CLIL methodology might contribute to levelling gender differences both in language and in content learning.

The modicum of studies tapping into gender and learning outcomes in CLIL has exclusively focused on language learning. For example, Merisuo-Storm (2007) looked into development of boys' and girls' learning attitudes in CLIL, and concluded that, after four years of implementation, there was a significant difference in the attitudes of the boys and the girls



in the monolingual classes towards reading and writing. However, this was not the case in the CLIL classes, in which boys were as motivated as girls for language learning. Thus, CLIL seems to be effective to encourage motivation of males, thereby levelling gender-based differences, as it was confirmed in subsequent studies (Fernández Fontecha & Canga Alonso, 2014; Heras & Lasagabaster, 2015).

Continuing to focus on language learning outcomes, it is worth mentioning Lasagabaster's (2008) attempt to check if CLIL helps to diminish the differences observed in favour of girls in language learning. Results were mixed, since no significant differences were detected in overall English competence and in oral production between males and females enrolled in CLIL programmes in secondary education, but, contrary to the author's expectations, female students still significantly outperformed their male counterparts in writing, listening and grammar. Similarly, in the study conducted by Roquet, Llopis, and Pérez-Vidal (2016), it was observed that 12 to 14-year-old female students enrolled in CLIL programmes, still outperformed their male peers in productive and receptive skills. However, no gender-related differences were observed regarding amount of compensatory strategies 5<sup>th</sup> and 6<sup>th</sup> graders used, although there were differences in the type of strategies boys and girls preferred (Basterrechea, Martínez-Adrián and Gallardo-del-Puerto, 2017)

All in all, although CLIL seems to contribute to levelling gender-based differences related to motivation and affective factors, this vanishing effect of CLIL on gender-related difference regarding language learning outcomes has not been largely confirmed yet. In addition to this, the impact of CLIL on gender-based variations regarding content learning has been so far neglected in CLIL research and still remains uncharted territory.

Against this backdrop, this study is of interest because (i) it deals with content acquisition of CLIL primary students younger than in the research conducted so far (9 to 10-year-olds); (ii) it provides evidence on CLIL effect on gender-based differences in content learning, and (iii) it is based in Castilla-La Mancha, a monolingual Spanish region in which few investigations on the impact of CLIL have been conducted so far.

### **3. Research Questions**

Taking into account the research literature that maintains that there is a “paucity of research into content outcomes” (Paran, 2013, p. 318), and having in mind the lack of studies on gender-based differences related to content learning in CLIL, this study aims at answering the following research questions:

- RQ 1. How does CLIL affect the acquisition of social science content of primary school learners (9 to 10-year-olds)?
- RQ 2. How does CLIL impact gender-related differences in terms of academic performance in the social science subject?

### **4. Methodology**

#### **4.1 The Context**

This study is based in Castilla-La Mancha, a monolingual autonomous community in central Spain with a population of little over 2 million and a total area of 79,409 km<sup>2</sup>. In Castilla-La Mancha, bilingual programmes were first introduced in 1996 by means of agreements between the British Council and the Ministry of Education, Culture and Sports. Due to the decentralization of the Spanish educational system, legislative powers for education provision lie within each autonomous community, and in 2005 Castilla-La Mancha launched its own bilingual programme (Order 28/02/2006). After different amendments, the regulation in force at the time the present study was conducted, was Order 16/06/2014 which establishes three different levels of Linguistic programmes (LP): Introduction programmes (1 non-Linguistic subject taught in L2), Development programmes (2 non-Linguistic subjects taught in L2) and Excellence programmes (3 non-Linguistic subjects in L2). To ensure a sufficient level of English, teachers in Linguistic programmes are required to possess at least a language certificate corresponding to B2 level in the Common European Framework of Reference, and in Excellence programmes, at least one of teachers has to possess C1 level. According to the aforementioned act, the foreign language has to be used 100% of the time during all the school hours devoted to bilingual subjects.

Since its inception, and particularly with the system of levels established in 2014, the bilingual programme has progressively gained popularity and nowadays there are more than 500 primary and secondary schools implementing CLIL. Although, in general terms, the evaluation of these programmes received by the different stakeholders involved in its implementation is positive (Nieto Moreno de Diezmas, 2019b), this exponential growth of bilingual education in Castilla-La Mancha is not exempt from areas of improvement, such as teachers training and provision of personal and material resources, among others (Nieto Moreno de Diezmas & Ruiz Cordero, 2018).

## **4.2. Participants**

The sample was formed by 119 learners between the ages of 9 and 10 enrolled in 4<sup>th</sup> year of primary education, coming from 5 intact groups of two public primary education schools: one bilingual (n=45), and one Non-bilingual school (n=74), located in an urban area. The bilingual school is located in the outskirts of the city. This school is involved in a Bilingual Project originally introduced by the British Council, and currently is developing an Excellence linguistic programme, according to the classification established by Order 16/06/2014, since, in addition to the subject of English as a foreign language (EFL), 3 non-linguistic subjects are taught through English: natural science, social science and Arts and Crafts. Besides, three teachers possess C1 or C2 level in English. As a part of the agreement with the British Council, the school is provided with a native Language Assistant trained by the British Council with a vast experience in teaching, who imparted one of the three hours a week devoted to the social science subject. The referent for the social science subject is Decree 54/2014, which establishes the curriculum in all primary schools in Castilla-La Mancha. In turn, the non-bilingual school also follows Decree 54/2014, and the social science subject is also imparted for three hours a week, but this time, the subject is taught in Spanish, the students' mother tongue.

Before choosing the participating schools, classroom observations and interviews to teachers were carried out, in order to check if in both settings teaching methodologies were similar, since different methodologies might alter student's performance. In both groups, teaching methodology

was textbook-centred. Both teachers use the suggested lesson plans from the recommended textbook, and add some extra material. Both groups follow the book's units, reading them in class accompanied by teacher's clarifying explanations. At the end of each unit, both groups create mind maps, to help students acquire the most relevant contents from the unit and establish connections between them, and after each unit students from both cohorts are tested with a written test to check if the contents have been understood and assimilated.

All in all, both groups' classroom methodology is executed in the same manner; the difference between both groups is, obviously, that the bilingual learners have their lessons in English, they carry out tasks in English, and the test at the end of each unit is also in English. Bilingual classes are taught 95% of the time in the targeted language, English, with the teacher explaining contents and using specific language and everyday language also in English. Students are also asked to interact using the FL. The only instance when the mother tongue is used, is when there is a specific word of vocabulary a student does not understand. After several explanations, synonyms and even gestures, the teacher translates the word into Spanish. In the non-bilingual group, contents are taught and assessed completely in the mother tongue.

Given that previous studies have shown that parents' socio-economic status is strongly associated with students' academic performance (Bornstein & Bradley, 2003; Sirin, 2005), the SES of both groups of students was measured by combining parents' educational level and occupational status (Jeynes 2002). Four categories were established: low, lower-mid, higher-mid and higher SES. The Mann–Whitney U ( $p= 0.483$ ) showed that the groups were homogeneous in terms of SES, and this way, this confounding variable that could affect the results was controlled.

All in all, the participating schools were chosen because they were very similar in terms of location, number of hours devoted to the social science subject, teaching methodology and sociocultural level. This way differences in social science learning of the groups can be connected to the implementation of CLIL in the bilingual group.

The sample of 119 participants was divided into two groups: the bilingual group, made up of 45 students: 25 males and 20 females; and the

non-bilingual group, formed by 74 students: 33 males and 41 females. In total, the sample included 58 males and 61 females.

### 4.3. Instruments

To check if the research questions we have posed are confirmed or not, and given that there are no validated tests to assess students' performance in social science in 4<sup>th</sup> year of primary education, a questionnaire has been designed *ad hoc* taking into account both the current curriculum for Castilla-La Mancha Decree 54/2014, as well as the different syllabi and textbooks of the schools where the test would be carried out. This was done to only include the contents that the students from both cohorts had already studied and to avoid contents that had not been taught yet. That way both groups of students were under the same conditions, thus controlling a possible confounding variable that could affect the overall results.

The questionnaire consisted of 10 questions related to social science contents, and included the following types of questions: 6 multiple choice, 1 true or false and 3 short answer questions. The questionnaire was submitted to expert validation to a group of 10 primary education teachers who were familiar with the subject of social science for 4<sup>th</sup> year of primary education in both bilingual and non-bilingual programmes, and 5 university lecturers of the Faculty of Education. Most experts agreed that the majority of the questions were valid, as students would understand them, they appeared in the curriculum, and they were expressed in a comprehensible way. However, in the observations box, some experts also agreed that there were some questions that they thought could be expressed in an easier way. So, after the first validation, the necessary modifications were made to the tests and they were validated again using the same validation method with the questions that had been changed. After the second validation, no further changes were necessary, so the tests were applied. In addition, Cronbach's alpha (0.678) showed that internal consistency and reliability were acceptable.

At the end of the questionnaire, information about the participants' Socio-economic Status (parents' educational level and occupation) was gathered, in order to check if both groups were homogenous in terms of SES.

#### 4.4. Procedure and Data Analysis

The test was entirely in the student's mother tongue (Spanish), and participants had 20 minutes to complete it on computers sourced by the school in the presence of one of the researchers.

The data were analysed through the IBM Statistical Package SPSS (Statistical Package for Social Science) version 20. Two Independent Sample T-tests were performed to answer our two research questions, by checking if there were any significant differences between both groups' means in the social science test, and also checking for differences regarding gender.

### 5. Results and Discussion

#### 5.1. RQ 1. How does CLIL Affect the Acquisition of Social Science Content by Primary School Learners (9 to 10 year-olds)?”

Results of the t-test evinced that there were no significant differences ( $p$  value=0.182) between the performance of bilingual and non-bilingual students in the social science test, even if the former learnt the content through a second language (English), and the latter did it in the mother tongue (Spanish). Nevertheless, the non-bilingual group achieved a slightly higher mark on average (Table 1).

Social science marks				
Group	N	Mean	Std. Deviation	Std. Error Mean
Non-Bilingual Group	74	5,22	2,049	,238
Bilingual Group	45	4,71	1,890	,282

Table 1. Social science average score by groups.

Analysing the individual questions, the non-bilingual group performed better in 5 questions out of 10, but only 2 of the differences were significant. In turn, the bilingual group outstripped their peers in 4 questions, with 1 of these being significant; and also, there was 1 question with an equal mean, which revealed both cohorts were quite levelled. (Table 2).

<b>Social science</b>					
	<b>Group</b>	<b>N</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Std. Error Mean</b>
1. The movement of the Earth around its own axis is called...	Non-Bilingual Group	74	,96	,199	,023
	Bilingual Group	45	,96	,208	,031
2. Which planet is located between Jupiter and Uranus?	Non-Bilingual Group	74	,39	,492	,057
	Bilingual Group*	45	,69	,468	,070
3. The atmosphere has different layers:	Non-Bilingual Group	74	,62	,488	,057
	Bilingual Group	45	,53	,505	,075
4. Both the weather and the climate can vary a lot from one day to another.	Non-Bilingual Group	74	,22	,414	,048
	Bilingual Group	45	,29	,458	,068
5. In the water cycle, the process where water goes from a liquid state to a gas state is called...	Non-Bilingual Group*	74	,36	,485	,056
	Bilingual Group	45	0,00	0,000	0,000
6. The Core of the Earth...	Non-Bilingual Group	74	,64	,485	,056
	Bilingual Group	45	,47	,505	,075
7. Júcar, Ebro and Segura are all rivers that belong to the...	Non-Bilingual Group*	74	,57	,499	,058
	Bilingual Group	45	,31	,468	,070
8. One or more provinces form a...	Non-Bilingual Group	74	,70	,460	,053
	Bilingual Group	45	,60	,495	,074
9. Emigrants are...	Non-Bilingual Group	74	,50	,503	,059
	Bilingual Group	45	,51	,506	,075
10. What is an anemometer for?	Non-Bilingual Group	74	,26	,440	,051
	Bilingual Group	45	,36	,484	,072
*Differences are significant					

Table 2. Social science individual question scores by groups.

These results support the idea that CLIL methodology did not hinder the acquisition of content compared to when it is taught in the mother tongue, even if CLIL students have to face to double cognitive effort made when learning new concepts through a new language. This extra requirement seems to have a positive effect on the understanding and mental integration of content (Halbach, 2009), so that “rather than being a hindrance, L2 processing actually has a strong potential for the learning of subject-specific concepts” (Dalton-Puffer, 2008, p. 143). This way, our results suggest CLIL students would have become more efficient learners (de Jabrun, 1997), and developed more cognitive and learning strategies (Nieto Moreno de Diezmas, 2016).

Findings revealed in this study go in line with previous studies that looked into the acquisition of social or natural science in primary education settings, in similar sociolinguistic contexts and similar CLIL programmes. For example, our results are in keeping with the studies conducted in some Spanish monolingual autonomous communities (as it is the case of Castilla-La Mancha), such as Madrid’s (2011) and Pérez Cañado (2018) investigations. Madrid (2011) evaluated the assimilation of social science contents in Andalusia, and the analysis of data collected from primary education learners evinced that public bilingual schools were as effective as non-bilingual ones for guaranteeing the acquisition of contents, and even bilingual students from private schools significantly outperformed the public monolingual learners. Pérez Cañado (2018), in turn, analysed data coming from three monolingual regions: Andalusia, Extremadura and The Canary Islands regarding natural science performance, and results from primary education learners confirmed CLIL did not hinder content learning. Similarly, our findings are also congruent with San Isidro and Lasagabaster’s (2018) study with secondary education learners in Galicia, a bilingual Spanish autonomous community.

However, our results diverge from two studies also conducted in Spain and set in primary education: Anghel, Cabrales, and Carro’s (2016) and, Fernández-Sanjurjo, Fernández-Costales and Arias Blanco’s (2017) investigations in Madrid and Asturias respectively, since in both cases a detrimental effect of CLIL for content learning was detected. Similarly, our outcomes are not in line with the findings of Dallinger et al. (2016) in Germany, since CLIL learners under scrutiny in their study received more teaching time to be able to catch up with non-bilingual learners.



At the other extreme, our results also run counter to studies which detected that CLIL significantly benefitted the acquisition of content, such as Wode's (1999) investigation in Germany, or Berghoth's (2006) findings in Finland, both of these conducted in secondary education. Our study is more congruent with Stohler's (2006) and Xanthou (2011) investigations, in the sense that no negative nor positive effects were observed in the acquisition of social science related knowledge whether conveyed in the mother tongue or in a second language.

## 5.2. RQ 2. How does CLIL Impact Gender Related Differences in Terms of Academic Performance in the Social Science Subject?

In the non-bilingual group, males scored significantly higher ( $p$  value=0,016) than females in the social science test. However, in the bilingual group although males still slightly outperformed their female peers, differences were not significant ( $p=0,849$ ), which suggests CLIL methodology helped level out the variations found in mainstream education between male and female learners' achievement in social science (Table 3).

Social science marks					
Group		N	Mean	Std. Deviation	Std. Error Mean
Non-Bilingual Group	Boy	33	5,85	2,123	,370
	Girl	41	4,71	1,861	,291
Bilingual Group	Boy	25	4,76	2,087	,417
	Girl	20	4,65	1,663	,372

Table 3. Average social science marks by gender

Analysing individual questions, boys from the non-bilingual group outperformed their female partners in 9 questions, 1 of them significantly ( $p=0,014$ ), whereas girls only performed superiorly in 1 question, not showing significant differences. Meanwhile, in the bilingual group, results were a lot more homogeneous, boys performing better than girls in 4 questions, girls outperforming their peers in 4 questions, and both genders performed equally in 2 questions. None of these differences were significant (Table 4).

Q	Non-Bilingual Group					Bilingual Group			
		N	Mean	Std. Dev	Std. Error Mean	N	Mean	Std. Dev	Std. Error Mean
1.	Boy	33	,94	,242	,042	25	,92	,277	,055
	Girl	41	,98	,156	,024	20	1,00	0,00	0,000
2.	Boy	33	,42	,502	,087	25	,64	,490	,098
	Girl	41	,37	,488	,076	20	,75	,444	,099
3.	Boy	33	,67	,479	,083	25	,52	,510	,102
	Girl	41	,59	,499	,078	20	,55	,510	,114
4.	Boy	33	,27	,452	,079	25	,40	,500	,100
	Girl	41	,17	,381	,059	20	,15	,366	,082
5.	Boy	33	,45	,506	,088	25	0,00	,000	0,000
	Girl	41	,29	,461	,072	20	0,00	,000	0,000
6.	Boy	33	,79*	,415	,072	25	,48	,510	,102
	Girl	41	,51	,506	,079	20	,45	,510	,114
7.	Boy	33	,64	,489	,085	25	,28	,458	,092
	Girl	41	,51	,506	,079	20	,35	,489	,109
8.	Boy	33	,76	,435	,076	25	,60	,500	,100
	Girl	41	,66	,480	,075	20	,60	,503	,112
9.	Boy	33	,55	,506	,088	25	,52	,510	,102
	Girl	41	,46	,505	,079	20	,50	,513	,115
10.	Boy	33	,36	,489	,085	25	,40	,500	,100
	Girl	41	,17	,381	,059	20	,30	,470	,105

\*Differences are significant.

**Table 4.** Social science individual question scores by gender in non-bilingual group

The results verified that male students in mainstream education performed significantly better in social science, which is in line with previous studies in the field (Clark, 1972; Keeves and Kotte, 1992). However, in CLIL settings female learners acquired social science content to the same extent than boys did, thereby evincing the potential CLIL had for vanishing gender-based differences in learning. CLIL, being this dual-focused approach, may carry over females' better performance (Pavlenko & Piller, 2008; Sunderland, 2000) and their higher interest in foreign language learning (Kobayashi, 2002; Lasagabaster & Sierra, 2009; Merisuo-Storm, 2007) to content subjects, such social science, which were taught by means of a second language, helping them catch up to the differences between boys and girls detected in mainstream education.

Although the leveller effect of CLIL on gender-related unbalance in content learning had already been put forward by authors such as Coyle (2007), this assertion has not been empirically confirmed so far. The main reason behind this, is that the few studies which tap into this issue are focused on the impact of CLIL on improving male students' foreign language competence to catch up with their female peers, area where findings are inconclusive (Lasagabaster, 2008; Roquet, Llopis & Pérez-Vidal, 2016). In contrast, our study looked into an area which had been greatly neglected by researchers: the effect of CLIL on encouraging female content learning, thereby shrinking gender-based differences in social science acquisition. Interestingly, while the leveller effect of CLIL on language learning in favour of male students has not been confirmed, our findings have revealed that CLIL did exert this effect on content learning in favour of female learners.

## **6. Conclusion**

The preliminary analysis of data gathered for a two-year longitudinal study presented in this paper aimed to provide empirical evidence on two fundamental issues in the implementation of CLIL: the acquisition of content, and the effect on gender-based learning differences.

Data regarding social science learning in bilingual and non-bilingual students enrolled in the 4<sup>th</sup> year of primary education was

collected and compared, and no significant differences were found between both groups' performance. The homogeneity of both groups in terms of SES was guaranteed, bearing in mind the well-documented connections between school achievement and SES. The fact that both cohorts received the same amount of social science hours at school, that teaching methodology was similar in both settings and that both schools were located in an urban area was also controlled. These results are focused on a critical aspect of CLIL programmes, in line with San Isidro and Lasagabaster (2018, p. 4), who state "the effective learning of the content subject taught through CLIL is a key feature of any successful CLIL implementation". In addition, our investigation contributes to provide information about the effectiveness of CLIL programmes in Castilla-La Mancha, a Spanish region in which there are no empirical studies tapping into content learning, and every context requires specific research, since in bilingual education "generalizability from one situation to another is (...) limited" (Pérez Cañado, 2012, p. 318).

Secondly, the present study explores a new area within CLIL research, which is the impact of the integrated curriculum in gender-related differences in social science content learning. While there are very few investigations that focus on the impact of CLIL on shrinking gender-based differences on language learning, to our knowledge, there are no studies on gender-related variations in content assimilation. Against this backdrop, the present investigation concludes that CLIL did exert a positive effect on levelling male and female performance in social science, since in mainstream education it was detected male learners significantly outperformed their female peers, while no significant differences were observed between males and females in the bilingual cohort. These findings suggest CLIL promotes equal opportunity and gender equality to a greater extent than regular education programmes.

These findings have to be taken with caution, mainly because of the size of the sample, and more quantitative and qualitative research is needed to better understand the acquisition of content in bilingual settings. Particularly the new line of research this study opens related to CLIL and gender deserves further scrutiny.

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