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Teachers' Efficiency of CLIL Implementation to Reach Bilingualism in Primary Education

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Abstract

The pivotal objective of this research is to investigate the degree of knowledge and the teachers' capacity to implement CLIL methodology, as a tool to reach bilingualism in Primary Education in Madrid Community. To this aim, questionnaires were administered to 75 Primary school teachers of Natural and/or Social Sciences to perform a quattitative correlational analysis to determine the degree of CLIL implementation in relation to the teachers' being bilingual. After basing the topic on previous investigations delving into the phenomenon of bilingualism and the theory of CLIL, this article presents the research design and data analysis; and outlines its main findings in relation to teachers' self-identification with being bilingual and the implementation of the four principles of CLIL in the classroom, and the use of didactic resources. The findings of this research point to the necessity of teacher-training programmes in CLIL methodology to improve the teachers' understanding and implementation of this method to ensure better students' academic performance in bilingual programmes.

Key words: teachers; bilingualism; CLIL; Primary education; Madrid Community.

[en] Eficacia del profesorado en la implementación de CLIL para enriquecer el bilingüismo en la educación primaria

Resumen:

El objetivo general de esta investigación es conocer el grado de conocimiento y la capacidad de los profesores para implementar la metodología CLIL, como herramienta para el enriquecimiento del bilingüismo en la enseñanza Primaria en la Comunidad de Madrid. Se administró un cuestionario a 75 profesores de Natural y/o Social Science en esta etapa, para realizar posteriormente un análisis cuantitativo correlacional. Después de contrastar el tema con las investigaciones previas respecto al bilingüismo y la teoría de la metodología CLIL, este artículo expone el análisis de datos y muestra los resultados relacionando los profesores que se identifican como bilingües con el modo de implementar los cuatro principios metodológicos de CLIL y la utilización de los recursos didácticos. De las conclusiones se deduce la necesidad de una mayor formación del profesorado para lograr un mejor grado de conocimiento y capacitación de los docentes para obtener una mejora del éxito en los resultados académicos que se esperan de este tipo de metodologías.

Palabras clave: profesores; bilingüismo; CLIL; Educación Primaria; Comunidad de Madrid.

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1. Introduction

Bilingualism has become a trendy phenomenon on the Education market as the major demand of living in a global world is to speak one common language. Therefore, one of the pivotal objectives of education is to achieve multilingualism and introduce foreign language learning at an early age (European Commission, 2004, 2005). To achieve a bilingual education, it is no longer believed that foreign language learning is enough, consequently, other subjects within the school curricula were proposed to be taught in a vehicular language providing authenticity to the learning process. Content Language Integrated Learning (hereinafter CLIL), the term coined by Marsh in 1994, was suggested as the leading methodology to meet the objective of bilingualism by European Union in 2001 (European Commission & Eurydice, 2012).

CLIL programme was launched in Spain in 2004, and since then the number of bilingual schools has been on the increase. Coyle et al. state that "Spain is rapidly becoming one of the European leaders in CLIL practice and research" (Coyle, Lasagabaster et al. eds, 2010, p.viii).

Madrid Community was a pioneer in starting bilingual programme in 2004-2005 academic year, initially implementing it in 26 state schools. Nowadays there are more than 330 bilingual schools, which means that more 43% of schools in Madrid Community are bilingual (Manzano Vazquez, 2015). With the growing number of bilingual schools, the teachers of CLIL are a precious commodity on the educational market. And since "[t]here is now a consensus that the quality of education educational systems depends, to a large extent, on their teachers" (Callealta et al., 2020, p.84), it is our strong belief that correct implementation of CLIL leads to a success of our students becoming bilingual. Laarsen-Freeman states that "[i]t is not the methods, but how they are used that is at issue" (2012, p.xi). Likewise, Callealta et al. and Bertaux et al. (2008) in the scientific discussion of teachers' competences outline the importance of not only the knowledge of methodologies, but also their correct implementation.

Nowadays to give subjects of Natural and Social Sciences in English in Primary education, the teachers should be in possession of *habilitacion linguistica* (BOCM, num. 89, 2014; num. 93, 2015),

which means to certify at least C1 level within CEFR or to sit for an exam in the English language which consists of two phases (written, and oral interview). Focussing on teacher's linguistic skills, this exam does not evaluate the teachers' knowledge of CLIL and its implementation in a Primary classroom.

1.1. The Complexity of Defining Bilingualism

There has been an on-going debate about the phenomenon of bilingualism. The general definition of bilingualism as "the ability to speak two languages" (Merriam-Webster, 2012) is too broad and poses certain questions in relation to the degree of proficiency, function, mental organization, and extralinguistic factors in L1 and L2 acquisition.

One of the most complete ways to encompass the broad concept of bilingualism is through the proposal developed by Cruz (2008, p.24). She differentiates four main traits that define bilingualism, which are the level of *degree* of the speakers; the *function* of the languages, the *alternation* between the two or more languages of the speaker; and the *interference* of the mother tongue. Hereinafter, each facet is tackled to delve into the phenomenon of bilingualism.

Regarding the level of *degree*, there is a dispute between those authors, who believe that the level of proficiency of a bilingual is the same as a native speaker (Bloomfield, 1933; Christopherson, 1948; Oestreicher, 1974; Skutnabb-Kangas, 1984), while other linguists (Macnamara, 1967; Fishman, 1971; Baetens-Beardsmore, 1982; Okurinmeta, 2013) reject this idea. Bloomfield understands bilingualism as the "native-like control of two languages" (1933, p.56), which is a rather ambiguous definition *per se*. Likewise, Christopherson agrees that both languages have almost "the same degree of perfection as unilingual speakers" (1948, p.3). Instead of defining a bilingual person, these authors tend to treat bilinguals as a sum of two monolingual persons. Furthermore, Weinreich (1968) poses a very important question regarding the degree of dominance of a language, putting in doubt whether it is possible for any bilingual person to have an absolute dominium of any language. To define the degree of control over L1 and L2, Appel & Muysken attempt to tackle which linguistic competences should be taken into consideration, as well as which linguistic criteria (vocabulary, pronunciation, syntaxis, pragmatics) are to be used to denominate a bilingual (1987, p.11). It was Macnamara (1967) who introduced certain modifications to the degree of control of both languages, defining "a bilingual [as] anyone who possesses a minimal competence in only one of the four language skills [...], in a language other than his mother tongue" (qtd in Hamers & Blanc, 2000, p.6). Similarly, Okurinmeta relates bilingualism to "an individual function, in varying degrees of competence" (2013, p.117). This last perspective ensures the various levels of development of the four major language skills and discards complete mastery of a second language.

According to the conception of the *function* of the language, some linguists support the constant use of both languages (Weinreich, 1968; Appel & Muysken, 1987; Siguan, 2001; Romaine, 2004; Bee and Wigglesworth, 2007), while some of the above-mentioned authors disagree with this aspect, as a bilingual speaker may use more frequently one of their languages depending on the social environment. Therefore, the *alternation* facet is related to the form of the message that a bilingual speaker uses. Weinreich (1968) in the discussion of function highlights the ability of a bilingual person to alternate between the two languages without their fusion in regard to an interlocutor, topic, conversational environment, and register.

The concept of fusion of L1 and L2 leads us into the field of *interference* (Cruz, 2008, p.24), which can be linked to the mental organization of languages in the brain of a bilingual (Weinreich, 1968), and is the domain of psychological dimension of language acquisition. Weinreich distinguishes three types of bilinguals in relation to linguistic sign and semantic meaning: Type A (the individual combines a sign from each language with a separate unit of content); Type B (the subject identifies the two signs but combines them with a single signifier); and Type C (when an individual learns another language with the help of his mother tongue, thus relying on translation). Furthermore, Wölk (1984) affirms that the processes of mental transfer and linguistic behaviour can be influenced by sociolinguistic factors, introducing the variable of community and cultural identification in the phenomenon of bilingualism, which was later developed by Skutnabb-Kangas, who proposes that a bilingual speaker is able to function in both languages in both communities "in accordance with the

sociocultural demands made of an individual's communicative and cognitive competences by these communities or by the individual herself... [and] to identify with both (or all) language groups (and cultures) or parts of them" (1984, p.90). Moreover, Mohanty (1994) limits the definition of bilingualism only to the socio-cultural aspect, stating that a bilingual individual should meet the communicative demands of a society. In the same vein Alarcon (1998) points out that a bilingual person needs to feel identified with cultural patterns of both languages.

Since bilingualism can be viewed as a language learning process (Sanchez-Casas, 1999), the knowledge of L1 and L2 is not a stable variable, hence order and consequence (Diebold, 1961; Baetens Beardsmore, 1982; Lambert, 1974) become other factors to be considered. Therefore, bilingualism becomes a multidimensional continuum, which englobes not only linguistic dimension, but socio-cultural and psychological domains.

1.2. CLIL Methodology

CLIL was a tool proposed by European Community to reach the final goal of bilingualism, and certain characteristics of bilingualism are incorporated into this methodology to reach this final objective: early age of introduction of second language learning, authentic context, cognitive and creative thinking, communicative competence development, which encompasses not only the four linguistic skills but also socio-cultural parameters.

The definition of this method was provided by Coyle et al.: "an educational approach in which various language-supportive methodologies are used which lead to a dual-focused form of instruction where attention is given both to the language and the content" (2010, p.3). Thus, the language is conceived in CLIL as a tool, which mediates between a foreign language acquisition and the curricular content. Regarding language, Mehisto et al. (2008) and Coyle et al. (2010) distinguish between the language used by the students and the language used by the teacher. The latter is of special importance since one of the major problems the students face in Natural and Social Sciences is comprehension of the content in a second language. Mehisto et al. state the following characteristics of the teacher's input: comprehensible but with an additional element to be learnt, meaningful and authentic with the alternation of different functions of the language. One of the pedagogic recommendations of Madrid Community for CLIL teachers is their consistent and systematic use of the English language in classes (Consejería de Educación, Dirección General de Ordenación Académica, Comunidad de Madrid, 2012).

Furthermore, considering the growing demand for life-long learning in the period of globalization, learning skills become the focus of CLIL. These learning skills stimulate the thinking abilities, for instance, the development of creative and critical thinking, as well as promoting social skills through cooperation and teambuilding (Coyle et al., 2010; Mehisto et al., 2008). As content and language learning is considered a social process, the groupings proposed are pairs and teams. While working in teams the students have an opportunity to build their knowledge in cooperation with other peers, as well as face challenging tasks together as a team. Thus, the development of cognitive skills plays a pivotal role in CLIL classes. Fostering creative and critical thinking has become the educational demand, therefore all the activities which are addressed to the students' own discovery of meaning should be incorporated in CLIL classes (Bialystok, 2005; Cook, 1997; Jäppinen, 2005; Van de Craen, et al. 2007). One of the examples of such activities can be a scientific experiment in Natural Science classes (Tibaldi, 2012; Nikula, 2015). A scientific experiment as such can be viewed in the light of Kolb's learning styles theory (1984), as it caters for all the four stages of the experiential learning cycle. In the recent research carried out by Carranza-Marchena (2019), the author demonstrated that the implementation of the strategies based on Kolb's learning styles (1984) improves communicative competence as far as oral expression is concerned. Thus, a scientific experiment not only boosts critical thinking but also contributed to the increase of students' talking time (hereinafter STT) and its quality.

And, finally, culture gains importance in CLIL, as one of the characteristics of bilingualism is to feel identified both with L1 and L2 cultures (Mehisto et al., 2008). Therefore, CLIL methodology is based on four major principles, denominated as 4 Cs: Content, Communication, Cognition, and

Community, which are equally important in the application of this method (Mehisto et al, 2008; Coyle et al, 2010).

On procedural level Mehisto et al. (2008) establish the following features to be implemented in a CLIL classroom: multiple focus, safe and enriching environment, authenticity, active learning, scaffolding, and cooperation. The understanding of these features leads to the correct implementation of CLIL. By multiple focus, Mehisto et al. propose to support language learning as well as content learning in CLIL classes, organize cross-curricular themes and projects, and support the reflection on a learning process.

Safe and enriching environment, in turn, means using routine activities, displaying language and content throughout the classroom, giving access to authentic learning materials, and increasing student language awareness. Furthermore, to support the language and content learning process graphic organizers and posters with content-obligatory (BICS, Cummins, 1984) and content-compatible language (CALP, Cummins, 1984) should be always on a display in the classroom. While these posters facilitate the immediate access to the necessary language, they also serve as a powerful strategy to memorize key vocabulary and language. Pazan Torres et al. (2017) state that visual learning style enhances long-term memory and favours the retention of the content.

Authenticity means accommodation of the class to the students' interests, making relevant connection to students' lives, and providing opportunities for the students to communicate with other speakers of the CLIL language. Furthermore, the access to authentic learning materials and environments supposes the use of the Internet and ICT in the classroom.

Furthermore, active learning shifts the focus from the teacher to the student/s, favouring peer cooperative work, promoting STT, giving the learners opportunity to set their own goals. Teachers, in turn, work as facilitators of the learning process.

Scaffolding is a technique which uses students' previous knowledge and experiences to acquire new knowledge and skills as well as repackaging knowledge in user-friendly ways, responding to three learning styles (visual, auditory and kinesthetic), and fostering creative and critical thinking. Regarding the students' learning profile, Juárez-Díaz y Florez-González (2018) arrived at the conclusion in their research that the predominant profile in English language learning is reflexive. And as such, the use of graphic organizers can be seen as a learning tool not only to store information, but also to construct meaning and explore the relationship between concepts (Dale et. al., 2011). All in all, this leads to the students' reflection upon the content of the subject.

And, finally, co-operation is explained as planning lessons and themes with non-CLIL teachers and involving parents and local community to form part of the students' learning process.

All of these strategies should find their way into effective teaching with CLIL, as "[t]he CLIL approach encourages teachers to keep using their favourite strategies and to apply standard best practice in education. However, it does require an understanding of those strategies that are essential for CLIL" (Mehisto et al., 2008, p.27).

2. Research Methodology

The general objective of this research is to investigate the degree of knowledge and the teachers' capacity to implement CLIL methodology, as a tool to reach bilingualism in Primary Education in Madrid Community. To meet the above-mentioned objective quantitative correlation methodology is applied. The design of this research is experimental.

2.1. Hypotheses

- H1 The teachers who fail to identify themselves as a bilingual are not bilingual.
- H2 The teachers of Social and Natural Sciences, who are bilingual, implement all CLIL principles in their classes.
- H3 The teachers who implement CLIL methodology correctly, use all the didactic resources in their classes.
- H4 The teachers who fail to implement CLIL methodology, perceive academic achievement in a bilingual programme as a failure.

2.2. Data Collect Procedures

The period of data collect is from January to November 2020. After having identified bilingual schools in Madrid Community, the letter of introduction, describing research objectives, was forwarded to 97 bilingual schools in Madrid Community. Having received the consent, the questionnaires were sent to the schools.

2.3. Sample Description

There were several requirements to take part in the research: teaching Social and/or Natural Sciences, Primary education, a bilingual school, and Madrid Community. Therefore, in this research simple random sampling was used (Otzen & Manterola, 2017).

The total sample is formed by 75 teachers: 34 informants work in chartered schools; 27 - in private schools; and 14 - in public schools. Most of the informants speak English and Spanish, albeit there is one informant who speaks three languages (Spanish, English and Polish). As far as the teaching experience of the informants, it varies from 1 to 29 years. Moreover, all the informants have an official certification of the English language, except the two native English speakers and one with English Philology Degree.

2.4. Tool of analysis

To carry out this research, a questionnaire was elaborated and validated by expert judgement, *ad hoc*. Most of the questions were closed-response format except for three open questions. However, only closed-response questions are analysed. The questionnaire was distributed in three different ways: e-mail, in hand, or by Google forms. The latter was done during pandemic. The information collected was on anonymous basis.

The questionnaire consists of 22 items, and the responses are collected as follows: Y/N; MC; T; Likert scale (level of agreement 1-5). As for the structure, there are four different parts: 1) personal and professional background (items 1 to 5); 2) understanding of the phenomenon of bilingualism (items 4, 5, 8); 3) CLIL methodology (items 10 to 21); 4) didactic resources used in CLIL classes (item 22 - multiples options).

The 12 items created to delve into the implementation of the 4 methodological principles of CLIL were grouped as follows:

Table 1

Item grouping according to CLIL methodological principle.

Methodological Principles	Questionnaire Items
Content	12, 18
Communication	10, 13, 16
Cognition	17, 19, 20, 21
Community	11, 14, 15, 17

Item 17 is used as a variable in both Cognition and Community principles, as on the one hand, teamwork is part of Community principle, and on the other hand, solving challenging tasks in collaboration with others encompasses students' thinking abilities.

The statistical data analysis programme SPSS 24 was a tool to group the items with similar common features (see Table 1), and relevant calculations were performed seeking to develop an appropriate weighting of the questions of all the informants in each of the items.

Informants' affirmation of being bilingual was cross matched with item 8 (the definition of bilingualism) to prove their understanding of the phenomenon of bilingualism. Furthermore, item 7

was cross matched with the following items: item 4 (official language certification), item 5 (living-abroad experiences), and item 10 (the consistent L2 use in classes).

Once the identification of bilinguals, which met the requirements, was performed, the degree of their application of each of the four principles of CLIL (Communication, Content, Cognition, Community) was analysed. According to the results the informants were divided into two groups: bilingual (hereinafter BT group) and non-bilingual (hereinafter NBT group). The

Nonparametric statistical test U de Mann-Whitney (Mac Faraland et al., 2016) was used to identify possible relevant statistical differences according to the application of CLIL principles in both groups of informants. Moreover, to identify the differences between the two groups in relation to their use of didactic resources Chi-cuadrado test (Daniel & Villamizar, 1981) was applied.

U de Mann-Whitney was used to verify whether there were any differences in the application of CLIL principles in relation to the teachers' perception that the students in bilingual programmes have better academic achievement compared to other educational programmes.

Finally, to verify possible differences in the use of didactic resources in relation to the application of CLIL principles by both groups Chi-cuadrado test was applied.

3. Data Analysis Results

Once the data analysis of the questionnaires was moved to the statistical analysis programme SPSS version 24, relevant analysis was carried out to verify the research hypotheses.

3.1. Data analysis of the teachers' being bilingual

On cross-matching items 7 and 8, the following results were obtained:

Table 2.

Teachers' self-identification with being bilingual.

What does "being bilingual" mean	Do you consider yourself bilingual		Total
	Yes	No	
a) A person with native-like command of the four language skills.	16	24	40
b) A person who identifies himself with both cultures (Spanish and British).	0	2	2
c) A person although with a dominant language, but who can function well in a second language in a different context.	22	4	26
d) A person who is able to translate from one language to another.	3	2	5
All (4)	1	0	1
Total	42	32	74

35% of the total number of the informants (42) identified themselves as bilingual, albeit 52% (22) out of those who considered themselves bilingual mark the correct definition of bilingualism (c).

It was of special interest to ascertain the characteristics according to which the informants identified themselves as bilinguals. Therefore, this item was cross matched with the possession of official language certificates, living-abroad experiences, and their consistent L2 use in the classes of Natural and Social Sciences, as a tool of communication in a vehicular language.

Table 3.

Self-identification with being bilingual and official language certification, living-abroad experiences.

Official language certification	Do you consider yourself bilingual		Total
	Yes	No	

FCE	1	0	1
CAE	34	28	62
Proficiency	4	3	7
Other	0	1	1
Total	39	32	71

Living abroad

Yes	36	26	62
No	6	6	12
Total	42	32	74

I always speak in English in my Natural Sciences or Social Sciences classes

Totally disagree	1	1	2
Disagree	1	0	1
Neither agree nor disagree	3	7	10
Agree	16	15	31
Totally agree	19	9	28
Total	40	32	72

Out of the total number of the teachers who considered themselves bilingual, 97,4% were in the possession of the official CAE or Proficiency certificates. As for living-abroad experiences, 85,7 % of the informants who considered themselves bilingual had at least one 'abroad' experience. In relation to item 7 (consistent L2 use), 87,5% of the informants who considered themselves bilingual consistently used the vehicular language in their classes, the answers rating from "In agreement" (16) and "In total agreement" (19).

42 informants identified themselves as bilingual. However, having cross-matched the results of item 7 to items 4, 5, 8 (official language certification, living-abroad experiences, consistent L2 use), 17 informants, who met all the requirement of being a bilingual, were assigned to BT group, the rest of the informants were allocated into NBT group.

3.2. Data analysis according to CLIL principles application.

Once BP group was identified, the degree of the application of CLIL principles was analysed:

Table 4.

BT group and CLIL principles application.

BT group	Communication	Cognition	Community	Content
N	17	17	17	17
AVG	4,12	3,53	4,53	3,65
Me	4,00	4,00	5,00	4,00
Mo	4	4	5	3
SD	,485	,514	,514	,862

The factor which presented the higher value of agreement is related to Community (m=4,53; ds=0,51), followed by the factor of Communication (m=4,12; ds=0,48). While the rate of agreement in factors Content (m=3,65; ds=0,82) and Cognition (m=3,53; ds=0,51) are of less value.

Despite the differences in the degree of agreement between BT group and NBT group, U de Mann-Whitney statistical test did not show significant differences (p>0,05).

Table 5.
NBT group and the application of CLIL principles.

NBT group	Communication	Cognition	Community	Content
N	53	54	50	54
AVG	4,15	3,54	4,34	3,94
Me	4,00	4,00	4,00	4,00
SD	,770	,605	,772	,940

NBT group did not present higher levels of agreement in CLIL principles except Community (m=4,34; ds=0,77).

Neither nonparametric Chi-cuadrado test detected any relevant differences between the results of the two groups in relation to didactic resources used in the classroom ($p>0,05$): textbook, recyclable material, the Internet, and new technologies, visual material, and graphic organizers.

3.3. Data analysis of the degree of the application of CLIL principles and the use of didactic resources.

Table 6.
The application of CLIL principles and the use of didactic resources.

Textbook	Degree of agreement		Total
	Low	High	
No	2 12,5%	3 5,8%	5 7,4%
Yes	14 87,5%	49 94,2%	63 92,6%
Total	16 100,0%	52 100,0%	68 100,0%
Recyclable material			
No	4 25,0%	24 46,2%	28 41,2%
Yes	12 75,0%	28 53,8%	40 58,8%
Total	16 100,0%	52 100,0%	68 100,0%
The internet and ICT			
No	3 18,8%	3 5,8%	6 8,8%
Yes	13 81,3%	49 94,2%	62 91,2%
Total	16 100,0%	52 100,0%	68 100,0%
Visual material			
No	1 6,3%	0 0,0%	1 1,5%
Yes	15 93,8%	52 100,0%	67 98,5%
Total	16 100,0%	52 100,0%	68 100,0%
Graphic organizers			
No	8 50,0%	16 30,8%	24 35,3%
Yes	8 50,0%	36 69,2%	44 64,7%

	16	52	68
Total	100,0%	100,0%	100,0%

In general, the teachers who apply CLIL principles to a higher degree use all the didactic resources in their classrooms. However, in relation to the use of recyclable materials the results are just the opposite. The use of recyclable materials (materials elaborated from recyclable material, such as empty cans, glass bottles, etc.) is related to Community principles since responsible recycling contributes to development of the children's awareness of global citizenship. 75% of NBT group incorporate this resource in comparison to 53,8% of BT group.

The most incorporated type of didactic resources in relation to CLIL principles application by both groups of informants is visual material (100%), followed by textbook, the Internet and ITC (94,2%), graphic organizers (69,2%), and finally recyclable materials (53,8%).

This differences in relation to the use of didactic resources and the application of CLIL principles were not statistically relevant according to Chi-cuadrado test ($p > 0,05$).

3.4. Data analysis of teachers' perception of better academic achievement in bilingual programmes and their application of CLIL principles.

The relation between better academic achievement in bilingual programme and higher degree of the application of CLIL principles can be a factor to take into consideration since the implementation of all methodologic principles leads to academic success. Therefore, it can be assumed that BP group would consider that the students in bilingual programmes have better academic achievement. To verify this hypothesis cross-matched table using U Mann-Whitney test was elaborated.

Table 7.

BT group and the application of CLIL principles.

Children in bilingual programme have better academic achievement in CAM		Communication	Cognition	Community	Content
Yes	N	45	44	41	45
	AVG	4,13	3,64	4,46	3,80
	Me	4,00	4,00	5,00	4,00
	SD	,726	,574	,778	1,014
No	N	23	24	24	24
	AVG	4,04	3,42	4,29	3,96
	Me	4,00	3,00	4,00	4,00
	SD	,638	,584	,624	,751
Total	N	68	68	65	69
	AVG	4,10	3,56	4,40	3,86
	Me	4,00	4,00	5,00	4,00
	SD	,694	,583	,725	,928

However, no relevant significant differences were found ($p > 0,05$). The bilingual teachers who consider that there is better academic achievement in bilingual programmes show higher value in relation to the factors of Community ($m=4,46$; $ds=0,77$), Communication ($m=4,13$; $ds=0,72$) and Cognition ($3,64$; $ds=0,57$). However, they present lower values in relation to Content factor. The non-bilingual teachers (see Table 5) who do not agree that the students have better academic achievement in bilingual programmes show the average value of 3,96 ($ds=0,75$) in comparison to 3,8 of BT group average ($ds=1,01$).

4. Conclusions

After having analysed the data results of the questionnaires, the following conclusions were elaborated. Hereinafter the results are contrasted to the initial hypotheses of the present research.

As for H1, *The teachers who fail to identify themselves as a bilingual are non-bilingual*, we can state the following. Out of 72 informants, 42 identified themselves with being bilingual, however, having contrasted their self-identification to the requirements of bilingualism, 17 informants can be considered real bilinguals, considering various factors to classification of bilinguals, such as degree of linguistic competence (Macnamara, 1967; Fishman, 1971; Baetens-Beardsmore, 1982; Okurinmeta, 2013, function (Weinreich, 1968; Appel & Muysken, 1987; Siguan, 2001; Romaine, 2004; Bee and Wigglesworth, 2007), mental organization (Weinreich, 1968), attitude (Skutnabb-Kangas, 1984), and socio-cultural factors (Mohanty, 1994). This result displays that 25 teachers do not understand the phenomenon of bilingualism as such. In the same vein, other investigations demonstrate that self-identification with being a bilingual does not necessarily demonstrate being a bilingual (Bobadilla-Pérez & Díaz Caneiro, 2017; Bolarn, Porto & García-Villalba, 2012).

In relation to H2, *The teachers of Social and Natural Sciences, who are bilingual, implement all CLIL principles in their classes*, the results obtained demonstrate there are no significant differences between BT group and NBT group, albeit it can be noted that neither BT group nor NBT group implement all the four principles on a homogeneous basis. As CLIL is based on the four methodological principles, which are equally important, not implementing one principle already leads to the failure of the method. For example, Bialystok (2005), Cook (1997), Jäppinen (2005), Van de Craen, et al. (2007), Campillo-Ferrer, et al. (2020) state that overlooking the implementation of Cognition principle in Natural and Social Sciences classes can lead to students' failure in their learning process. In NBT group the informants demonstrated a higher level of agreement in all the methodological principles, except Community. This group applies teamwork and cooperation techniques less in their classes, which diminishes STT and leads to a total control of students' linguistic performance by the teacher. Giving less opportunities to the students for peer cooperation and discussion affect their acquisition of content and developing of high-order thinking skills. By the same token, Bolarn, Porto & García-Villalba (2012) discuss the importance of teamwork not only in relation to different class dynamics but also as a powerful tool to booster students' communication skills and to increase STT. The recent investigations performed by Herrero (2015), Ayala (2017), Bobadilla-Pérez and Díaz Caneiro (2017), Alcaraz-Mármol (2018) also corroborate these results and highlight the importance of training courses in CLIL methodology.

In relation to H3, *The teachers who implement CLIL methodology correctly, use all the didactic resources in their classes*, the results demonstrate no significant differences were found between the two groups. Although it can be stated that neither BT group nor NBT group use all the didactic resources. It is evident from these results that that the teachers in both groups opt for using visual material more in their classroom as most learners correspond to visual learning style (Pazan Torres et al., 2017). However, the use of recyclable materials contributes to Community principle, and the use of graphic organizers is a powerful tool to work with all types of cognitive skills. These two didactic resources are used less by the informants in both groups. Juárez-Díaz and Florez-González (2018) state that the use of appropriate didactic material can enhance different learning styles and as such leads to academic achievement. Likewise, both Ayala (2017) and Herrero (2015) highlight the importance and the adequate use of various didactic resources in a CLIL classroom, as they constitute a key pillar for the success of the learning process.

Finally, in relation to H4, *The teachers who fail to implement CLIL methodology, do not consider bilingual programmes successful*, no significant differences were found. However, as the teachers in both BT group and NBT group do not implement all the four principles of CLIL and do not use didactic resources homogeneously, it can be stated that the method *per se* is not being correctly implemented, and this can be the reason why some of the informants do not consider bilingual programmes successful. In the same vein, the investigations performed by Herrero (2015), Herranz (2017), Marroquí (2017), McBride (2017), San Román (2017), Barrios and Milla Lara (2020) discuss the relation between the correct application of CLIL methodology and academic success of a bilingual programme, stating that incorrect implementation of CLIL leads to poor academic achievement.

The results of this research point in the direction of further investigations to tackle certain limitations such as the size of the sample. Taking into consideration the general objective of this research to investigate the degree of knowledge and the teacher's capacity to implement CLIL methodology as a tool to reach bilingualism in Primary education in Madrid Community, the results demonstrated general lack of understanding of this methodology by the informants, thus, CLIL training courses should be put on educational agenda in Madrid Community to reach the final goal of bilingualism. These training courses should be a must and encompass the teaching of all CLIL principles and their implementation in teaching Natural and Social Sciences in bilingual programmes.

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