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LANGUAGE LEARNING STRATEGIES AND CLIL: A SYSTEMATIC REVIEW

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Abstract

This study is a systematic review of research about the use of Language learning strategies (LLS) in Content and Language Integrated Learning (CLIL) contexts. The method employed was The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) model. Five databases were systematically searched. Finally, 24 studies were selected for the review. It was concluded that, teachers should facilitate the students´ learning process by training them in the effective use of LLS. Besides, teachers must consider the effect of individual variables on the LLS used by students. Consequently, students will become more effective learners since their autonomy, awareness and cognition will be developed. Undoubtedly, the analysis of the use of LLS in CLIL settings is a topic of interest these days, due to the popularity of CLIL methodology as well as to the benefits of strategic learning.

Resumen

Este estudio es una revisión sistemática sobre el uso de Estrategias del Aprendizaje de la Lengua (EAL) en contextos de Aprendizaje Integrado de Contenidos y Lenguas Extranjeras (AICLE). El método empleado fue el modelo Ítems de referencia para revisiones sistemáticas y metaanálisis. Cinco bases de datos fueron revisadas sistemáticamente. Finalmente, 24 estudios fueron seleccionados para la revisión. Se concluyó que, los profesores deben facilitar el proceso de aprendizaje de los alumnos entrenándolos en el uso efectivo de EAL. Además, deben considerar el efecto que tienen las variables individuales en las EAL utilizadas por los alumnos. En consecuencia, los alumnos se convertirán en aprendices más efectivos ya que su autonomía, conciencia y cognición se desarrollarán. Sin duda, el análisis del uso de EAL en contextos AICLE es un tema de gran interés en la actualidad debido a la popularidad de la metodología CLIL y a los beneficios del aprendizaje estratégico.

KEY WORDS: CLIL; language learning strategies; strategic learning; explicit strategic training.

PALABRAS CLAVES: AICLE; estrategias del aprendizaje de la lengua; aprendizaje estratégico, entrenamiento estratégico explícito.

1. INTRODUCTION

In the last decades, the educational approach known as CLIL has been frequently adopted by European educational institutions (Perez-Cañado, 2012). Its main characteristic is that students learn non-linguistic subjects by means of a Foreign Language (FL) (Cenoz, 2015). Moreover, CLIL approach not only develops students´ language and content but also, their cognition and culture (Coyle, 2007). As a consequence, one of the main objectives of this approach is to increase the students´ awareness about their own learning process (Coyle, Hood & Marsh 2010). That is why, teachers have a new responsibility, which is to help students to learn to conscious choose and use new tools (widely known as Language Learning Strategies) that improve their language learning. If CLIL teachers do so, learners will become more autonomous and more independent regarding their own learning process (Oxford, 2003). However, up to now, only a few studies dealing with the use of LLS in CLIL contexts have been conducted (Ruiz de Zarobe, 2017). Thus, the main aim of this systematic review was to examine the extent to which the research community has attempted to deal with the importance of using LLS in CLIL settings. This systematic review is divided as follows: the starting point deals with the antecedents. The next part includes the description and different stages of the method employed which follows the PRISMA model. Then, in the following section, the results of the systematic revision have been presented and synthesize. Finally, the conclusions, limitations, lines of future research as well as the references are included at the end of the document.

2. ANTECEDENTS

Over the last years, LLS have been regarded as a key element in CLIL lessons since they facilitate the teaching-learning process (Ruiz de Zarobe, 2017; Brown, 2013; Yang, 2017; Yang, 2018). Despite this, research of LLS in CLIL settings is still scarce and very little is known about how CLIL learners face their content and language difficulties. There are only a few books which deal with this topic in any of their chapters. The most relevant one by Tejkalova (2009) provides an important overview of the most important strategies used in CLIL lessons. Besides, in Montalto, Walter, Theodorou & Chrysanthou´s (2014) book, it is highlighted the importance of encouraging students to work in a personal way by developing their own strategies. Moreover, the book by Psaltou-Joycey, Mattheoudakis & Alexiou (2015), included in this systematic review, uses a questionnaire in order to discover the effect of using LLS in CLIL and non-CLIL primary classes, the differences in the use of LLS

because of age and the influence that the gender has over strategy use. Apart from books, it has been found one unpublished doctoral dissertation which dealt with the importance of using LLS in CLIL streams along with the impact of different variables in this process. However, no systematic reviews dealing with this outstanding topic have been published. Given the urgency and the need to review and analyse this topic in a systematic way, the present systematic review has been written. This systematic review aimed to a) justify the importance of using LLS in CLIL settings, b) analyse the impact that different variables may have on the use of LLS by CLIL students, c) present the role of teachers to enhance the use of LLS in CLIL lessons, d) outline the most important benefits of using LLS in CLIL streams.

3. METHOD

3.1. Literature search procedures

The PRISMA guidelines have been employed to conduct this systematic review. Five education, psychology and sociology electronic databases were systematically searched to retrieve relevant studies. These included: (a) Google Scholar, (b) Linguistics and Language Behaviour Abstracts (henceforth referred to as LLBA), (c) Web of Science (from now WOS), (d) Scopus and (e) ERIC. Besides, Researchgate database was used to retrieve some of the documents. However, we did not include Dialnet due to the most relevant articles published in Dialnet were also included in the chosen data bases.

Using the key words CLIL and learning strategies, our search of Google Scholar yielded 14,500 results. This is due to the fact that this database contains all types of publications including books, journal articles, conferences and magazines among others. Therefore, we decided to use some parameters so as to refine our search. First, we have given preference to journal articles since we were interested in empirical studies with significant results about the use of LLS in CLIL settings, rather than in other aspects such as terms definitions or didactic proposals. We preferred articles written in English or Spanish. Then, the literature search was delimited in the time period between 2000 and 2020. Finally, we searched including the word title followed by the key words between quotation marks. As a result, the records were reduced to 2,550. Because of the large amount of results obtained in this database, we did not use any other key words

Our search of ERIC, using three different key words and without using any parameters, generated 320 results. Using the key words "CLIL and learning strategies" our search yielded 32 results. We were interested in using the term "learning strategies" in general rather than using a specific kind of learning strategy because we wanted to get a global perspective of the topic. Then, with the key words "CLIL and strategic learning" we obtained 8 results and introducing "Content and language integrated learning and learning strategies", ERIC generated 280 results.

Our search of WOS generated less records than in the two previous databases because it is compulsory to use at least one parameter when searching on it. We decided to apply the "title" parameter so as to refine our search and find different studies whose titles were related to the key words used. When we introduced the key words "CLIL and learning strategies", our search yielded 7 results and with the key words "Content and Language Integrated Learning and learning strategies" we obtained 4 records. However, when we used the words "CLIL and strategic learning" we did not get any results.

The next database used was SCOPUS. We decided to refine our search by using the parameters "abstract, title and key words" to avoid studies that were not related to our topic. Using the key words "CLIL and learning strategies", we got 77 results, introducing "CLIL and learning strategies" we obtained 17 records and finally, using the key words "Content and Language Integrated Learning, our search yielded 162 results.

Finally, we conducted our search on LLBA. We decided to use the parameter "abstract" after checking that it was the one which led us to more results. Using the key words "CLIL and learning strategies" we obtained 47 records, using "CLIL and strategic learning" we got 7 results and using "Content and Language Integrated Learning" we obtained 8 records.

Table 1 illustrates the procedure, including the different databases with the key words used in each of them along with the search parameters used.

DATABASE	KEY WORDS	PARAMETERS	ALL RESULTS YIELDED	INCLUDED RESULTS AFTER 1ST SCREEN: TITLE	INCLUDED RESULTS AFTER 2ND SCREEN: ABSTRACT
GOOGLE SCHOOLAR	CLIL and learning strategies	Language: English & Spanish Years: 2000-2020 Title	2550	21	10
ERIC	CLIL and learning strategies	None	32	2	1
	CLIL and strategic learning	None	8	1	1
	Content and language integrated learning and learning strategies	None	280	2	2
WOS	CLIL and learning strategies	Title	7	5	1
	CLIL and strategic learning	Title	0	0	0
	Content and language integrated learning and learning strategies	Title	4	3	1
SCOPUS	CLIL and learning strategies	Abstract, title and key words.	77	20	4
	CLIL and strategic learning	Abstract, title and key words.	17	5	1
	Content and language integrated learning and learning strategies	Abstract, title and key words.	162	22	5
LLBA	CLIL and learning strategies	Abstract	47	12	3
	CLIL and strategic learning	Abstract	7	1	0
	Content and language integrated learning and learning strategies	Abstract	8	1	0
			3199	94	29

Table 1. Description of the search procedure, including databases, key words and parameters.

3.2.Inclusion criteria

To capture relevant studies on this field, the following criteria for inclusion were developed:

a. Studies must be related to a single or multiple learning strategies (i.e., metacognitive, strategic, and vocabulary, among others). Those studies focused on one specific sub-strategy cannot be considered.
b. Studies must have been carried out in a CLIL setting.
c. Studies must be empirical.

3.3.Screening procedure

Initially, 3,199 potentially relevant records were identified using the search terms and method already described. After 199 duplicate records were removed, 3,000 articles were screened for eligibility. In a first screen, to assess the suitability of retrieved articles against the listed inclusion criteria, we examined the studies´ titles. 2,906 records were excluded due to the fact that studies did not deal with learning strategies as a main focus of interest. Then, the ninety-four remained studies were screened again by examining their abstracts. Sixty-three records were excluded because they did not cope with learning strategies in CLIL settings. The PRISMA diagram in Figure 1 depicts the progression from studies that were initially identified to those included in the current systematic review.

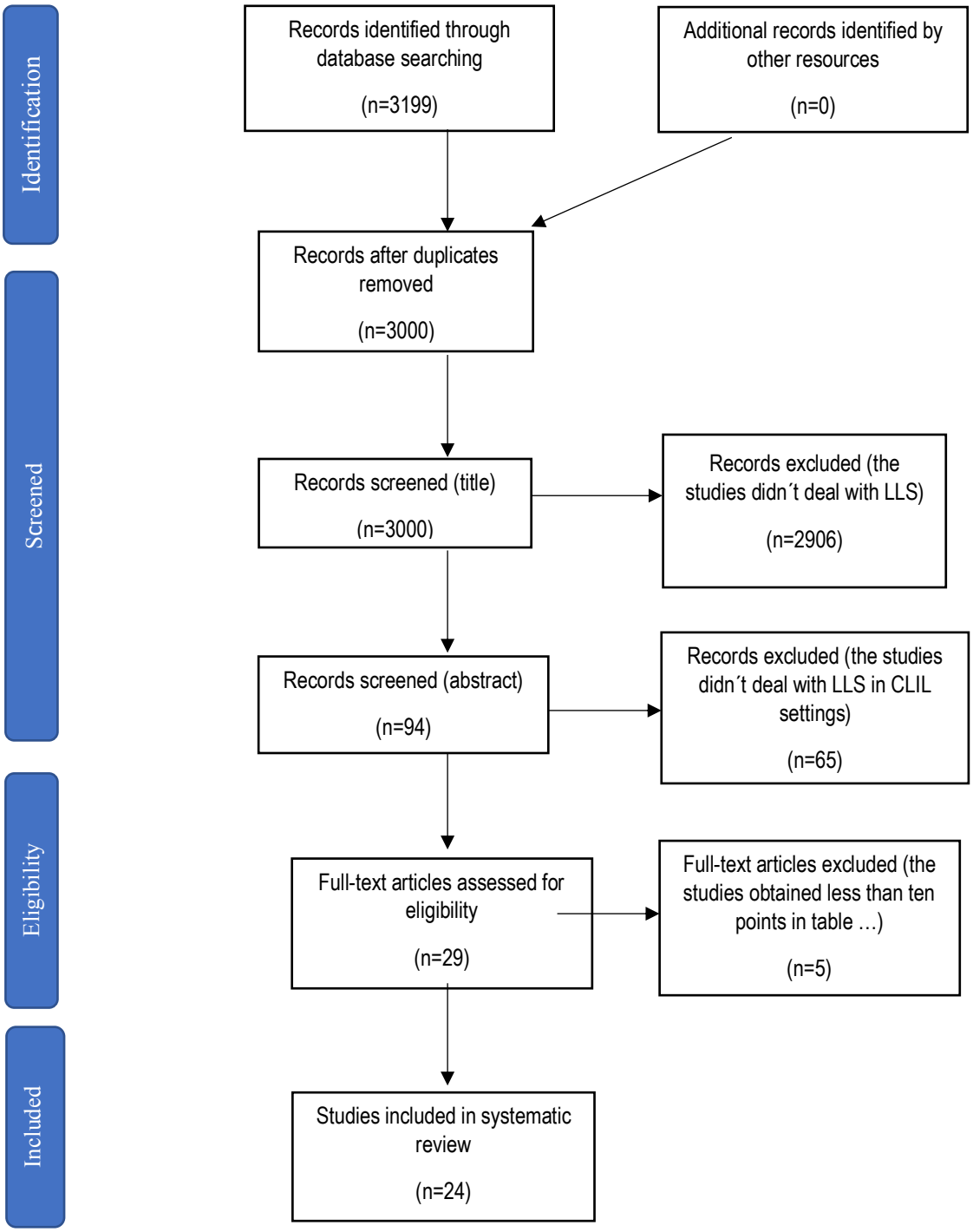

FIGURE 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram of selection proce

3.4.Eligibility Procedure

Along this procedure, two different tables were used so as to select the studies for the systematic review. On the one hand, main information about the selected 29 full-text articles was collected in table 2. This table was very useful so as to record and analyse the main aspects of the selected studies.

STUDY	LEARNING STRATEGIES	GRADE LEVEL	METHOD	DATA SOURCES	MAJOR FINDINGS
De Graaff, Koopman, Anikina&Westhof (2007)	Compensation, reading and listening	Secondary (12-17 years)	Descriptive	Observation by using videos and interviews	CLIL teachers, in order to be effective, they have to help learners to face their comprehension problems by teaching them how to use different `receptive and productive compensatory and communication strategies´
Tudor (2009)	Learning strategies	Secondary (12-16 years)	Survey	The CLIL questionnaire	CLIL teachers should provide students with tools and teach them learning strategies because they need more scaffolding than non-CLIL students because they are learning by means of a FL.
Brown (2013)	Vocabulary	University	Survey, descriptive and experimental	Questionnaires, tests and interviews.	Teachers should know that strategic learning is beneficial for students since it helps them to become more aware about their own learning process.
Ruiz de Zarobe&Zenotz (2015)	Reading	Primary (11-13 years)	Experimental	Tests	Explicit strategy instruction seems to have a positive effect on CLIL students´ learning.
Méndez García (2014)	Communication	Primary and Secondary (6-16 years)	Descriptive	Interviews	CLIL methodology is concerned about the importance of developing students´ cognition. Thus, it entails more cognitively challenging elements. In order to cope with this, students need to learn to use LLS.
Jaekel (2015)	Learning strategies	Primary (6-12 years)	Theoretical	-	It has not been found a link between language proficiency and the use of LLS.
Castellano-Risco (2015)	Vocabulary	Secondary (14-15 years)	Survey and experimental	Test and questionnaire	The results show that students who used vocabulary learning strategies seemed to have a better vocabulary size.

STUDY	LEARNING STRATEGIES	GRADE LEVEL	METHOD	DATA SOURCES	MAJOR FINDINGS
Psaltou-Joycey, Mattheoudakis& Alexiou (2015)	Memory, cognitive, compensation, metacognitive, affective, and social strategies.	Primary (9-12 years)	Survey	A self-report questionnaire	This study shows that there are some variables such as gender or CLIL level that seem to influence the frequency of use and variety of LLS used by students.
Freihofner, Smala& Campbell (2016)	Translinguing and self-regulated	Secondary (13-14 years)	Survey, descriptive	Questionnaire, voice recordings and interviews	Students, when using translanguaging practices, they become better at self-regulating their own learning process and, as a consequence, their cognition is developed.
Nieto (2016)	Metacognitive and learning	Secondary (13-14 years)	Experimental	Assessment Units	CLIL methodology has a positive effect on the development of students´ learning to learn competence. In fact, students, when they useLLS, they are more aware about how they learn and they become more effective learners.
Javed (2017)	LLS	-	Theoretical	-	The use of LLS is essential for students if they want to acquire a FL.
Martínez &Ruíz de Zarobe (2017)	Reading	Primary (11-13 years)	Experimental	Tests	It has been found that metacognitive reading strategy training improves students´ reading competence and helps them to become aware learners.
Yang (2017)	Learning strategies	University	Descriptive and Survey	Survey and interviews	There are different variables that seem to have an effect on the use of LLS by CLIL learners.
Sanad & Ahmed (2017)	Reading and vocabulary	University	Experimental, pre-test, post-test	Tests	CLIL methodology seems to have an important role in developing students´ vocabulary and comprehension skills.
Basterrechea, Martínez-Adrián & Gallardo-del-Puerto (2017)	Reading	Primary (10-12 years)	Survey	A self-reported questionnaire	There are a few differences in the use of compensatory learning strategies by students of different sex. This result is in line with previous research on this topic.
Ruíz de Zarobe (2017)	Reading	Primary and Secondary (10-13 years)	quasi-experimental, pre-test post-test design and survey	Questionnaire.	Explicit strategy training seems to have a positive effect since it enhances the use of LLS by students. However, this effect is not maintained over time.

STUDY	LEARNING STRATEGIES	GRADE LEVEL	METHOD	DATA SOURCES	MAJOR FINDINGS
Ruiz de Zarobe&Zenotz (2018)	Reading	Primary and Secondary (10-13 years)	Experimental Pre-tests and post-tests	Tests	Explicit strategic instruction on multiple strategies has a positive effect since students improve their reading competence.
Jaekel (2018)	Leaning strategies and self-efficacy	Secondary (13-14)	Survey and quasi-experimental	Questionnaire, tests and C-tests	The use of LLS by students seems to be influenced by different variables such as students´ gender and self-efficacy.
Andriani, Padmadewi, &Budasi (2018)	Learning strategies	Primary (6-7 years)	Descriptive	Observation, interview, and document study	There are some LLS that promote CLIL students´ autonomy regarding their own learning process.
Yang (2018)	Memory, cognitive, compensation, metacognitive, affective and social	University	Survey	Questionnaire and survey	There are significant differences in the use of LLS by students in two different CLIL contexts due to the influence of different variables.
Castellano-Risco (2019)	Vocabulary	Secondary (14-16 years)	Survey	Questionnaire	There are significant differences between CLIL and non-CLIL students regarding their preferred LLS.
Zaim (2019)	Reading, reviewing, re- porting, receiving and reflecting	University	Empirical	Observation, interviews and tests.	The 5R strategy helps students not only to cope with the content but also to communicate in English in a contextualised way.
Sánchez & Salaberri (2019)	Leaning strategies	Primary (6-12 years)	Methodological proposal	-	A tested CLIL unit planning has been used including different LLS that support the achievement of the objectives of the unit.
Quintana, Restrepo, Romero & Cárdenas (2019)	Reading	Secondary (15-16 years)	Survey. descriptive and experimental	Survey of reading strategies, questionnaire-type test, observation grid, journals, a teaching unit and a focal group	The use of reading comprehension strategies in CLIL settings improves students´ reading comprehension.

STUDY	LEARNING STRATEGIES	GRADE LEVEL	METHOD	DATA SOURCES	MAJOR FINDINGS
Huang (2020)	Cognitive	Primary (10-12 years)	Descriptive and experiments	Graphic organizers, interviews, students' self-assessment, and students' tests	CLIL students, while using LLS, they develop their cognition.
Mahan (2020)	Modelling and strategy use, comprehension.	Secondary (15-16 years)	Descriptive	Video and observation	CLIL teachers usually employ more strategies to help students comprehend materials in a FL but less strategies to complete tasks.
Sakirah, Syahrialb&Khaerudinc (2020)	Speaking	University	Empirical	Observation, questionnaire, interview and test	Students learn better to speak Arabic if the CLIL learning strategy is employed.
Gallardo-del-Puerto, Basterrechea & Martínez-Adrián (2020)	Compensatory	Primary (9-11 years)	Survey and experimental	Background questionnaire, level test, strategy questionnaire	There are significant differences in the use of compensatory learning strategies by students of different language proficiencies. However, no differences have been founded regarding the total number of strategies used.
Martínez-Adrián (2020)	Speaking	Primary (9-11 years)	Descriptive	Description of images	There are significant differences in the use of L1 interactional strategies between CLIL and non-CLIL learners. This could be because of the communicative nature of CLIL approach.

Table 3. Main information of the studies assessed for eligibility

Then, these studies were assessed for eligibility using the table 3. This table contained 22 different criteria to evaluate the quality of the 29 studies included in this revision. We read the full articles to check in what extent they met the different criteria. Every time one article met one criterion, we added one point to its score. Fifteen articles scored between 18 and 22 points, nine articles got between 10 and 17 points and five articles achieved less than 10 points. After this evaluation, we decided to remove those articles which obtained less than 10 points. Therefore, five articles were excluded from the systematic revision. At the end of this process, twenty-four articles were included in this systematic review.

Study		De Graaff, Koopman, Anikina&Westhof (2007)	Tudor (2009)	Brown (2013)	Ruiz de Zarobe &Zenotz (2015)	Méndez García (2014)	Jaekel (2015)
	Point						
Title and summary	1	1	1	1	1	1	0
Introduction							
Context/foundations	2	1	1	1	1	1	1
Aims	3	0	1	1	1	0	1
Methods							
Study design	4	0	1	1	1	1	0
Context	5	1	1	1	1	1	0
Participants	6	1	1	1	1	1	0
Variables	7	1	1	1	1	1	0
Data sources	8	1	1	1	1	1	0
Bias	9	1	0	0	1	0	0
Sample size	10	1	1	1	1	1	0
Qualitative variables	11	0	1	1	1	0	0
Statistical methods	12	0	1	1	1	0	0
Results							
Participants	13	1	1	1	1	1	0
Descriptive data	14	0	1	1	1	1	0
Data from the outcome variable	15	0	1	1	1	0	0
Major findings	16	1	1	1	1	1	0
Other analysis	17	0	0	1	0	0	0
Discussion							
Key findings	18	1	1	1	1	1	0
Limitations	19	0	0	1	0	1	0
Interpretation	20	1	1	1	1	1	0
Generability	21	1		1	0	0	0
Other information							
Funding	22	1	1	1	1	0	0
OVERALL SCORE		16 points	18 points	20 points	19 points	14 points	2 points

Study		Castellano-Risco (2015)	Psaltou-Joycey, Mattheoudakis& Alexiou (2015)	Freihofner, Smala& Campbell (2016)	Nieto (2016)	Javed (2017)	Martínez &Ruíz de Zarobe (2017)
	Point						
Title and summary	1	1	1	1	1	1	1
Introduction							
Context/foundations	2	1	1	1	1	1	1
Aims	3	1	0	1	1	0	1
Methods							
Study design	4	1	1	1	1	0	1
Context	5	1	1	1	1	0	1
Participants	6	1	1	1	1	0	1
Variables	7	1	1	1	1	0	1
Data sources	8	1	1	1	0	0	1
Bias	9	0	0	0	1	0	0
Sample size	10	1	1	1	1	0	1
Qualitative variables	11	0	1	0	1	0	1
Statistical methods	12	0	1	0	1	0	1
Results							
Participants	13	1	1	1	1	0	1
Descriptive data	14	1	1	0	1	0	1
Data from the outcome variable	15	1	1	0	1	0	1
Major findings	16	1	1	1	1	1	1
Other analysis	17	0	0	0	0	0	0
Discussion							
Key findings	18	1	1	1	1	0	1
Limitations	19	1	1	1	0	1	0
Interpretation	20	1	1	1	1	1	1
Generability	21	0	0	0	1	0	0
Other information							
Funding	22	0	1	0	1	0	1
OVERALL SCORE		16 points	18 points	14 points	19 points	5 points	18 points

Study		Yang (2017)	Sanad & Ahmed (2017)	Basterrechea, Martínez-Adrián & Gallardo-del-Puerto (2017)	Ruíz de Zarobe (2017)	Jaekel (2018)	Andriani, Padmadewi, &Budasi (2018)
	Point						
Title and summary	1	1	1	1	1	0	1
Introduction							
Context/foundations	2	1	1	1	1	1	1
Aims	3	1	1	1	1	1	1
Methods							
Study design	4	1	1	0	1	1	1
Context	5	1	1	1	1	1	1
Participants	6	1	1	1	1	1	1
Variables	7	1	1	1	1	1	1
Data sources	8	1	1	1	1	1	1
Bias	9	1	0	1	0	1	1
Sample size	10	1	1	1	1	1	1
Qualitative variables	11	1	0	0	1	1	1
Statistical methods	12	1	1	0	1	1	0
Results							
Participants	13	1	1	1	1	1	1
Descriptive data	14	1	1	1	1	1	1
Data from the outcome variable	15	1	1	1	1	1	0
Major findings	16	1	1	1	1	1	1
Other analysis	17	0	0	1	0	0	0
Discussion							
Key findings	18	1	1	1	1	1	0
Limitations	19	0	0	1	0	0	0
Interpretation	20	1	1	1	1	1	1
Generability	21	0	1	0	0	0	0
Other information							
Funding	22	1	0	0	1	0	0

Study		Yang (2018)	Ruiz de Zarobe&Zenotz (2018)	Quintana, Restrepo, Romero & Cárdenas (2019)	Castellano-Risco (2019)	Zaim (2019)	Sánchez &Salaberri (2019)
OVERALL SCORE		19 points	17 points	18 points	18 points	17 points	15 points
	Point						
Title and summary	1	1	1	1	1	1	1
Introduction							
Context/foundations	2	1	1	1	1	1	1
Aims	3	1	0	1	1	1	1
Methods							
Study design	4	1	0	1	1	0	1
Context	5	1	1	1	1	0	1
Participants	6	1	1	1	1	0	1
Variables	7	1	1	1	1	1	0
Data sources	8	1	1	1	1	0	0
Bias	9	0	1	0	1	0	0
Sample size	10	1	1	1	1	0	0
Qualitative variables	11	1	0	0	1	0	0
Statistical methods	12	1	0	1	1	0	0
Results							
Participants	13	1	1	1	1	1	1
Descriptive data	14	1	0	1	1	0	0
Data from the outcome variable	15	1	0	1	1	1	0
Major findings	16	1	1	1	1	1	1
Other analysis	17	1	0	0	1	0	0
Discussion							
Key findings	18	1	1	1	1	1	0
Limitations	19	0	0	0	1	0	0
Interpretation	20	1	1	1	1	1	0
Generability	21	1	1	0	0	0	0
Other information							
Funding	22	1	1	0	0	0	1
OVERALL SCORE		20 points	16 points	17 points	20 points	9 points	9 points

Study		Mahan (2020)	Martínez-Adrián (2020)	Huang (2020)	Sakirah, Syahrialb &Khaerudinc (2020)	Gallardo-del-Puerto, Bastarrechea & Martínez-Adrián (2020)
	Point					
Title and summary	1	1	1	1	1	1
Introduction						
Context/foundations	2	1	1	1	1	1
Aims	3	1	1	1	0	1
Methods						
Study design	4	1	0	1	1	1
Context	5	1	1	1	1	1
Participants	6	1	1	1	0	1
Variables	7	1	1	1	0	1
Data sources	8	1	1	1	0	1
Bias	9	0	1	1	0	0
Sample size	10	1	1	1	0	1
Qualitative variables	11	0	1	1	0	1
Statistical methods	12	1	1	1	0	1
Results						
Participants	13	1	1	1	0	1
Descriptive data	14	1	1	1	1	1
Data from the outcome variable	15	1	1	1	1	1
Major findings	16	1	1	1	1	1
Other analysis	17	0	0	1	0	0
Discussion						
Key findings	18	1	1	1	0	1
Limitations	19	1	1	1	0	1
Interpretation	20	1	1	1	1	1
Generability	21	0	0	0	0	0
Other information						
Funding	22	1	1	0	0	1
OVERALL SCORE		18 points	19 points	20 points	8 points	19 points

Table 3. Quality evaluation of the studies included in the revision.

4. RESULTS

Over 3000 articles were identified from the initial systematic search (Figure 1). Of these, 26 articles met the inclusion criteria and were retained for detailed examination in this review.

We now provide an overview of the geographical region of the studies and countries in which the studies took place (Table 4). Of the 24 articles, the majority (n=19) were from Europe. This could be explained by the fact that this is a mainly European phenomena and it has not been developed abroad to a great extent yet. That is why, just one article was from Australia and 4 articles were from Asia. Regarding the countries in which the studies took place, almost half (12) of the reviewed articles were from Spain, but samples from Australia (1), China (3), Germany (1), Greece (1), Indonesia (1), Japan (1), Netherlands (2), Norway (1) and Saudi Arabian (1) were also included.

GEOGRAPHICAL REGION	COUNTRY (n)
Europe (19)	Germany (3), Greece (1), Netherlands (2), Norway (1), Spain (12)
Asia (4)	China (1), Indonesia (1), Japan (1), Saudi Arabian (1)
Australia (1)	Australia (1)

Table 4. Distribution by geographical region and country of (n=24) studies.

Our analysis of years of publications (figure 2) shows that this topic is relatively new but rapidly growing field of academic endeavour. This could be explained if we consider that this approach is relatively recent. Of the 24 articles reviewed, only 2 were published before 2010 (De Graaff, Koopman, Anikina & Westhof, 2007; Tudor, 2009) and they both were from Netherlands perhaps reflecting that this country was one of the first ones in Europe to analyse this topic. Between 2013 and 2015 we have selected 5 articles. Interest in this topic has grown from 2016 and 2020 since the rest of the articles (n=17) were published in this four-year period.

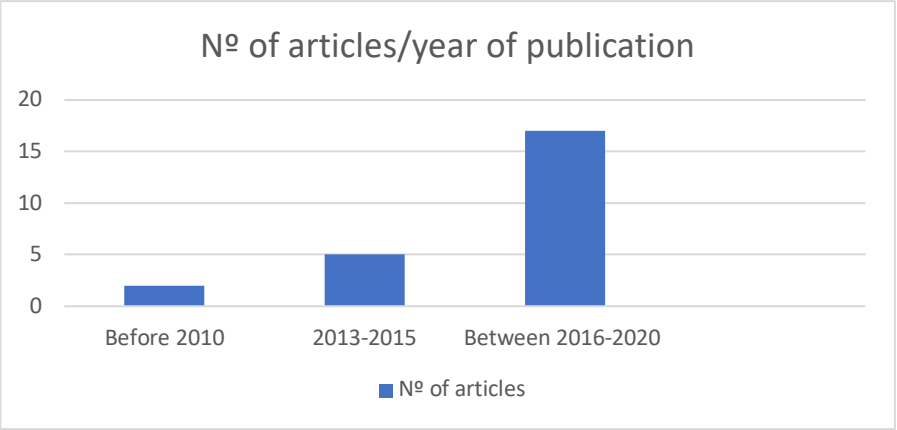

Figure 2. Years of publication of (n=24) studies

Almost half of the articles (n=12) included participants whose mother tongue was Spanish as shown in table 5, but there were also Australian (1), Arabic(1), Chinese (1), German(3), Greek (1), Dutch(2), Indonesian (1), Japanese (1) and Norwegian (1) native speakers. It shows that LLS in CLIL settings seems to be a primary concern for Spanish teachers.

PARTICIPANT´S MOTHER TONGUE	Nº OF STUDIES
Australian	1
Arabic	1
Chinese	1
German	3
Greek	1
Dutch	2
Indonesian	1
Japanese	1
Norwegian	1
Spanish	12

Table 6. Different mother tongues of participants of (n=25) studies.

All studies in this systematic review were focused on LLS in CLIL settings. However, it is difficult to generalize on the kind of strategy included since there is a great variety of them as illustrated in figure 3. Reading LLS are the most common ones (8), followed by vocabulary (4), compensation (4) and LLS in general (4). The rest of the kinds just appeared in three

articles (cognitive, metacognitive and communication), in two articles (self-regulation, communication, memory, affective and social) or even in just one article (comprehension, modelling, listening, speaking and writing).

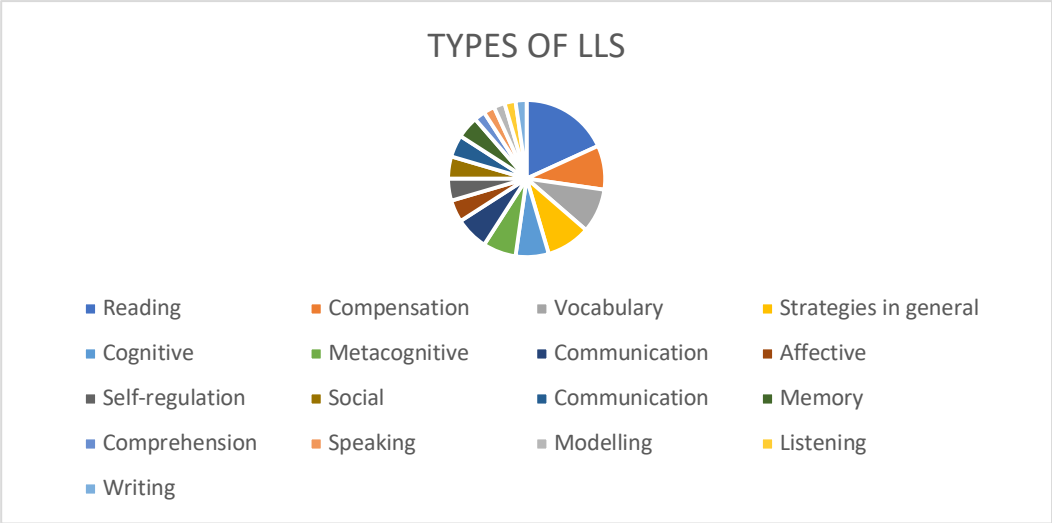

Figure 3. Types of LLS of (n=24) studies

In table 6, studies are classified according to their respondents´ age range. The majority of studies in this systematic review were focused on subjects between 9 and 16 years old (n=18). However, the age range is varied as there were 2 studies focused on participants aged 6-9 and 4 studies focused on university learners.

PARTICIPANTS´AGE	Nº OF STUDIES
6-9	2
9-13	9
13-16	9
(16, ?)	4

Table 6. Participants´ age range of (n=24) studies.

4.1. The nature of LLS

If we think of learning strategies in general, one of the most concise definitions of this term was provided by Weinstein and Mayer (1986) when they defined them as "behaviours and thoughts that a learner engages and which are intended to influence the learner's encoding process." (p.1). In this article, it is claimed that the aim of each learning strategy is to influence the way in which the student usually acquires and process new information. Therefore, every learning process, as Hardan (2013) assumed, requires a strategy to be adapted so as to achieve the main process of learning.

Learning strategies has been considered as an integral element of learning and teaching (O'Malley &Chamot, 1990). That is why, Sternberg (1999) asserts that one of the reasons why many children can´t learn is because they are not taught or assessed in a way that enable them to achieve their learning outcomes. To solve this situation and help these children to learn successfully, he developed the theory of successful intelligence. The thing is that teachers´ job is not only to teach students "what" do they have to learn but also "how" they have to learn (Weinstein & Mayer, 1986). Thus, it can be concluded that "helping students, develop effective ways to handle the barrage of information coming from the environment, as well as handle their own thinking processes, is a major-arid increasingly important-goal of our educational system" (p.3).

In the field of Foreign Language learning (FLL), defining LLS has been a hard task for researches (Griffiths, 2007, p. 91). In fact, Oxford (1990) claimed that:

> At this stage in the short history of language learning strategy research, there is no complete agreement on exactly what strategies are; how many strategies exist; how they should be defined, demarcated, and categorized (Oxford, 1990: 17).

Despite this, this topic has attracted a great amount of interest (Ruiz de Zarobe, 2017). The reason is that one of the essential factors that help determine how well students are going to learn a language is their use of these kind of strategies (Oxford, 2003:1). As Oxford (1990:1) stated, LLS "... are especially important for language learning because they are tools for active, self-directed movement, which is essential for developing communicative competence."

Following this line, most researchers have linked this term to the concept of effective FLL because they are considered as a facilitator in successful learning process (Ghani, 2003). One

of the pioneers was Rubin when in his in his 1975 article "What the 'Good Language Learner' Can Teach Us" claimed that one of the main differences between good language learners and other learners is their autonomous use of LLS along the FLL process. He defined LLS as tools that the learner uses so as to acquire new knowledge or as "... any sets of operations, steps, plans, routines used by the learner to facilitate the obtaining, storage, retrieval, and use of information." (Rubin, 1987:19). In this path, Richards & Schmidt (2002) defined them as means that learners use in order to learn and use the English Language in an effective and correct way.

4.2. The taxonomy of LLS

Many researchers have attempted to classify LLS (Oxford, 1990; O'Malley, Chamot, Stewner-Manzanares, Russo &Kupper, 1985; Wenden & Rubin, 1987, etc.). Nevertheless, these categorizations present a lot of similarities, as it can be seen when handling with them. The most popular is the "taxonomy of language learning strategies" by Oxford (1990). She divided them into two main classes: direct and indirect LLS. According to her, direct strategies are those that the learner employs in a conscious way, whereas indirect strategies are the kind of strategies that students use unconsciously. Inside the first group, she included 3 subgroups of LLS: memory strategies which are those that help students to storage information, cognitive strategies which are the ones that the learner uses to make sense of the learning process and compensation strategies which help students to overcome language problems that impedes communication. In the second group, 3 different kinds were included: metacognitive strategies that help learners to control their own learning process, affective strategies which are related to the learners´ emotional aspects and social strategies used to enhance communication in the FL. Another famous classification is the one by O´ Malley et al. (1985). This group of authors did not differentiate between direct and indirect strategies. In fact, they only divided LLS in three big groups: cognitive strategies which are more related to specific learning tasks, metacognitive strategies that help students to plan and manage their own learning process and socioaffective strategies which support communication with others.

4.3. LLS and CLIL

Nowadays, the domain of a second language has become one of the main educational objectives of the current globalised world in which we live. We are living what Mehisto, Marsh and Frigols (2008) refers to as a `period of disjuncture´ in which there are

tensionsbetween the previous and new approaches that are changing the status quo. Actually, learning just one language is considered "second-rate education" (Lorenzo, 2007: 35), and monolingual students are regarded as the new illiterates of the 21st century. In this context and in response to the new linguist demands, CLIL emerged as an "European solution to a European need" (Marsh, 2000: 11).

The term CLIL was coined in 1994 and since then, it has been defined by many authors. Probably, the most popular definition is the one provided by Marsh &Langé (2000): CLIL is "a dual-focussed education approach in which an additional language is used for the learning and teaching of both content and language" (p.2). The main difference between CLIL and the rest of the bilingual education programs is that it is an integrated pedagogic plan which entails content, cognition, communication and culture into learning practice. (Coyle, Hood & Marsh, 2010). Again Coyle (2007), referred to it as the 4 C´s framework. His explanation of this new framework is included in Quintana, Restrepo, Romero & Cárdenas (2019: 434):

> It can be said that a good class with CLIL had to adopt four elements, which are: first, Content (specific topics or progression in knowledge). Second, communication (to the use of language to learn while learning to use the language). Third, cognition (to the development of abstract and concrete reasoning) and fourth, culture (to the consciousness of oneself and the other in a specific culture).

Regarding the influence of CLIL, this new approach has an enormous influence and success as it is expanding across Spain, Europe and beyond (Ruiz de Zarobe&Lasagabaster, 2010). CLIL is at this moment considered as an innovative, recognized and useful approach aimed to enhance FL and content learning in the curriculum (Ruíz de Zarobe&Zenotz, 2015; Cenoz, Genesee &Gorter, 2014). However, CLIL students, apart from promoting their linguistic competence, as they learn non-linguistic subjects by means of a FL, they also develop their cognition, independence and authenticity (Coyle, Hood & Marsh 2010). Thus, they also claimed that one of the most important aims of strategic instruction matches with one of the main foundations of CLIL approach. They were referring to help students to become more aware of their own learning, that is, to know how they learn and how they could learn in a more effective and autonomous way. In this line, Marsh, Maljers&Hartiala (2001) asserted that CLIL entails five different dimensions which are culture, environment, content, language and learning. They considered that the learning dimension is one of the most important ones since it focuses the attention on motivating students to become autonomous learners and to use LLS.

As a consequence, Dupuy (2000) explained that CLIL learners show a higher interest in learning the target language as well as a higher confidence regarding their own ability to use it. In fact, the main particular aspect of this methodology is that learners "learn to use language and use language to learn" (Mehisto, Marsh &Frigols, 2008: 26). Therefore, to reach the high expectations of developing both content and language, students need to develop different LLS and competences so as to face and overcome the problems in the learning process concerning content and language (Ruiz de Zarobe&Zenotz, 2015). In that respect, they claimed that there is a need of training learners to use these strategies. Nevertheless, they insisted on the fact that the use of LLS in CLIL settings has not been a frequent topic of research. This idea is also supported by Yang (2018) "Although SILL has been extensively used in many contexts to research LLS in ELT settings, an examination of its impact on the CLIL approach is still lacking" (p.49).

4.3.1. The impact of individual difference variables in the use of LLS.

Different authors have investigated about the effect of individual differences and learner characteristics on the use of LLS in CLIL settings (Javed, 2017). In fact, they are thought to have an effect on both LLS use and language development. (Jaekel, 2018).

Four authors have been interested in exploring the influence that the *gender* has on the use of LLS in a CLIL context. Firstly, in 2015, Psaltou-Joycey et al. examined gender differences on the use of LLS in CLIL and non-CLIL group of students. They conducted a survey study whose main aim was to address the skills and cognitive level of primary learners. The sample was constituted by 136 learners between 9 and 12 years old. Their school was situated in a western suburb of a Thessaloniki, a Greece city. It was supervised by the Department of English Language and Literature of the Aristotle University of the city. The distribution of students in the different classes was done in a randomly way. Therefore, both classes the experimental (CLIL) and control groups (non-CLIL) had students with different learning styles, different abilities and different levels of proficiency concerning language and content. They all had to answer a self-report questionnaire based on Oxford's Strategy Inventory for Language Learning (SILL) (1990). Learners´ answers were recorded and statistically analysed and they found "statistically significant differences between boys and girls mostly in the CLIL group" (p.4). In all cases, females reported to use LLS more frequently than males. In this respect, girls tried to guess the meaning of new words by the context, wrote

down made errors to improve, tried to speak despite their mistakes and did not feel stressed because of the teacher's questions.

Two years later, in 2017, Basterrechea, Martínez-Adrián & Gallardo-del-Puerto analysed the self-reported use of compensation strategies (CSs henceforth). For that, they conducted a survey study using a self-reported questionnaire on compensatory strategy use. The participants sample was constituted by 142 (58 female, 84 male) primary students in the 5th and 6th grades of Primary Education. They studied in a `semi-private school´ in the Basque Community. Consequently, students were Basque/Spanish bilingual. The main objective of this study was to explore the type of strategies preferred by primary CLIL male and female learners in terms of preferences and amount. In this research, mean scores, standard variations, Mann-Whitney tests and Wilcoxon tests were necessary to obtain the results. Regarding the amount of strategies, an inter-group analysis revealed that "there were no significant differences between males and females in the overall amount of use of CSs" (p.62). However, there were significant differences in the use of borrowing between males and females because males showed a lower use of this strategy. Thus, it could be suggested that females "tend to resort to their L1 as a way to build meanings collaboratively and avoid communication breakdowns" (p.63). In fact, it was concluded that females tend to use LLS related to a efficient use of the FL. Moreover, a closer look at the inter-group analysis revealed that males use the predicting strategy more often than females which might mean that males have a higher "tolerance of ambiguity" and that they are more risky and less concern about making mistakes.

One year later, Yang (2018) compared the employment of English LLS by university Chinese speakers under the CLIL approach in two different contexts, Taiwan and Hong Kong, according to various variables. One of these variables was genre. He conducted a survey study using Oxford's (1990) Strategy Inventory for Language Learning (SILL) as the instrument to identify strategy preferences at university level in both contexts. On the one hand, the Taiwan group was very heterogeneous as it was made up of 275 CLIL learners (193 females and 82 males) including students with different levels of language proficiency, graduates and undergraduates and learners of both hard and soft studying disciplines. On the other hand, the Hong Kong group was constituted by only 54 students (35 females and 19 males), all with a similar level of language proficiency but from different knowledge domains, some of them were graduates and others undergraduates. Despite the uneven numbers of each variable, both samples are representative because they include students from

different institutes and various demographic backgrounds. Once they had collected the data, they conduct a descriptive analysis. They included frequencies, means, standard deviations, and percentages. In Yang´s study, the Taiwan group indicated many significant intra-group differences due to gender. In Taiwan, on average and in a significant way, males used more direct strategies than females. In other words, males rely more on their memory and on using compensatory and cognitive motors to approach English learning. In fact, female learners have "higher English proficiency" (p.52) and the result indicates that the higher the proficient students are, the more indirect strategies they use. In contrast, the Hong Kong group exhibits less variance regarding the gender variable. The reason may be that "both male and female students have equally high exposure to English in schooling and life in Hong Kong" (p. 54). Yet, female students use ore rhymes than male students and male students pay more attention when someone is speaking in the English language. These results are in line with Yang (2017) previous study, where it was found that the variable of gender, among others, "lead to some differences in preferred LLS" (p.21).

In the same year, Jaekel (2018) was concerned about how does gender contribute to language learning strategy use in secondary education. Sixteen Year 9 classes (7 EFL and 9 CLIL) of nine grammar schools in the state of North-Rhine-Westphalia, Germany accepted to participate in this quasi-experimental, cross-sectional and quantitative study. The participants sample was constituted by 378 students who had been studying English for 6.5 years. In this study, since schools and learners were not selected and assigned to groups randomly, "data collection was based on a convenience sample" (p.10). Moreover, they all showed a high internal consistence because they had a high Cronbach´s α. Besides, it was used Confirmatory factor analysis (CFA) so as to ensure that the scale was a valid instrument. The CFA results confirm the construct validity of the self-efficacy scale used in this study. In addition, in order to analyse and "control covariances between predictor variables, which is often neglected in other studies, structural equation modelling (SEM)", along with bivariate correlations and multiple regressions, will be used (p.10). The conclusions of this research were that, at a descriptive level, there were not significant differences due to students´ genre. However, both latent and manifest variables showed that girls used more LLS. These results are very specific and they did not include any details or extra information regarding the reasons why females seem to use more LLS or regarding the kind of strategies preferred by each genre.

Apart from gender, Jaekel´s (2018) research also identified *self-efficacy* as an important predictor of the LLS use. However, it is essential to signal that among the different studies

selected for this systematic review, only this one included self-efficacy when listing the most influential variables that affect LLS use. In order to support his findings, this author used different authors´ definitions and studies results. Moreover, they all showed a high internal consistence because they had a high Cronbach´s α. Besides, it was used Confirmatory factor analysis (CFA) so as to ensure that the scale was a valid instrument. The CFA results confirm the construct validity of the self-efficacy scale used in this study. Self-efficacy is defined as an individual process of self-persuasion (Dörnyei&Ushioda, 2011) because it is believed that our view of whether we believe we can achieve our objectives or not has an influence on our effort, choices, decisions and time devoted (Bandura, 1997 & Zimmerman, 2000). Actually, Jaekel (2018) also claimed that if learners present low self-efficacy, it can have a negative impact on their learning because tasks will seem to be too difficult for them, increasing their anxiety. Considering the importance of this predictor, self-efficacy students´ beliefs regarding English learning were assessed. The students from different Year 9 classes had to answer different questions based on a scale consisting of five different items. To answer to these questions, he had to reflect about different aspects such as their English proficiency, their FLL ability, the difficult level of learning English and the importance of reaching a high English-speaking proficiency. It was found that the different items of this scale were correlated highly. Finally, the very specific results of his quasi-experimental study "showed that students with higher self-efficacy used more LLS" (p.14).

The link between *language proficiency* and LLS seems to be a polemic topic as Yang (2018) pointed out that associating English proficiency levels and LLS use should be always done carefully. Actually, according to this author, concluding that proficiency students use better LLS could be risky. However, in his study to university Hong Kong and Taiwan learners already mentioned, it was concluded that "proficient English learners tend to use strategies more often than the intermediate and lower achievers, in particular cognitive strategies" (p.14). The explanation of this conclusion was given by the same author in his 2017 descriptive and survey study. The context for that study was different, as students were from the same Taiwanese national polytechnic university, which is one of the very few Taiwanese polytechnic universities. The subjects were all part of the undergraduate tourism programme of the university, in which most of the content subjects were taught by using CLIL approach. The main aim of this study was to check if CLIL students, with the passage of time, made changes in their employment of LLS. Thus, there were two kinds of participants: those who were in their last year of studies (28 students) and those who were in their first year (29

students). To achieve this aim, this study used a combination of both qualitative and quantitative methods so as "to adopt triangulation, and employ multivariate procedures" (p.7). The instruments employed were a questionnaire survey and a semi-structured interview. In this study, it was asserted that proficient English learners resulted to be equipped with "better learning skills such as summarising, reasoning, or analysing to cope with language learning" (p.53). A similar survey and experimental study by Gallardo-del-Puerto et al (2020) concluded in a different way. The participants were 139 bilingual students (Basque and Spanish) of a primary school in Vitoria-Gasteiz, the capital of the Basque Country, in Spain. They were from the third cycle of primary education. The objective was to discover if there were differences in the use of CSs by learners with different levels of language proficiency. To collect data, they used a background questionnaire, a level test and a strategy questionnaire. At the end, they found that there were not significant differences in the amount of compensatory strategies between students with different proficiencies. However, they found differences "in terms of types of CSs used" (p.3). More proficient learners used more CSs based on the FL such as "miming" or "avoidance", whereas less proficient learners used some strategies which are common among more advance learners such as "paraphrasing".

In the same line, two of the already cited studies have dealt with the association between the students´ *age* and LLS. Psaltou-Joycey et al (2015) founded that Greek students of year 5 tended to use a wider range of strategies than older CLIL students. Some of the strategies that were significantly more used by 5th grade students were using new words in sentences (memory strategy), trying not to translate into Greek language (cognitive strategy) asking questions when they do not understand (social strategy) and speaking even with mistakes (affective strategy). Besides, when comparing 4th and 6th grade CLIL students, the younger group only used one strategy in a more frequent significant way. This was a social strategy that had to do with wanting teachers´ correction when they make mistakes. The results of this study are considered "quite interesting, as one would expect strategy use to develop as learners grow older" (p. 7). However, the results of Yang´s study (2017) with university Taiwanese students did not agree with the previous study and consequently with the statement: the younger students are, the higher number of strategies they use. In fact, the results of this study indicated that "the higher-level CLIL achievers tend to use more strategies and employ cognitive strategies more often than lower-level CLIL achievers, who depend more on social strategies" (p.14).

The influence of *culture* on LLS has been another recurrent and challenging topic (Yang, 2017). However, only this Yang´s study among all the selected studies had included this variable. This author decided to compare the use of LLS by the two different groups of subjects of the study: local Taiwanese students and international students. After making intra-groups comparisons of all the CLIL learners, significant differences were found concerning the use of LLS by the two different groups. Thus, the variable culture seems to have an effect on learners´ use of LLS as concluded in this comparison among Taiwanese learners.

Next, there are significant differences "in the variance of the respondents' *studying disciplines*, which has not been explored in depth in the previous literature" (Yang, 2018: 53). Yang was the only research who was interested in this individual variable. The results of his study with Taiwanese CLIL university learners showed that students in the hard science domain used cognitive strategies more often because this domain had two common learning aspects which were the students´ ability to reason and analyse. On the contrary, learners in the soft knowledge area were used affective and social strategies more often because in soft disciplines, interaction has an essential part. Moreover, in the use of memory LLS, significant differences have been found in each kind of discipline. Secondly, Hong-Kong students in both knowledge areas use indirect strategies to a similar extent whereas soft discipline students are more aware of how to improve their English level by themselves.

Finally, Castellano-Risco (2019) found differences between CLIL and EFL students in the kind of LLS used. Thus, according to her survey study, the *kind of teaching approach* used may have an impact on the learning strategy preferred by students. Its participants were 138 secondary students, from which 72 were CLIL students and 56 were EFL learners. All participants were asked to fill in a ´vocabulary learning strategies questionnaire´ based on Schmitt's taxonomy of vocabulary learning strategies (2000). The questionnaire was composed by 21 strategies and students had to mark if they used each of them in a scale from 1 to 4. This questionnaire was the instrument for data collection so as to compare the kind of strategies used by CLIL and EFL students. When the answers were analysed, she found that CLIL learners used more strategies than EFL learners. Besides, she discovered that: "CLIL learners make more use of some strategies, such as use of English- language media, analysis of affixes and roots and connection with synonyms and antonyms. Contrarily, they made significantly less use of word lists and written repetition strategies" (p.96). Martinez-Adrián (2020) was also interested in comparing CLIL and non-CLIL students, this time regarding their use of their mother tongue in interactional strategies. To reach her objective, she decided

to conduct a descriptive study. The participants were 43 students (21 CLIL and 22 non-CLIL) between 9 and 11 years old. They belonged to two different state schools in Pamplona, Spain. CLIL students had been studying half of their subjects in English since they were 3 years old. Contrarily, non-CLIL students had studied English only as a FL. The data was collected by asking students to narrate a story in English by ordering a series of vignettes. Then, descriptive and inferential statistical analyses were performed by calculating mean scores and standard deviations regarding the use of the mother tongue in interactional strategies. On the one hand, in order to investigate if examples were normally distributed, she performed T-test analyses. On the other hand, for those examples which were not normally distributed, she used Mann-Whitney tests. The results of the study indicate that "NON-CLIL learners produce more instances of L1 use in interactional strategies and that greater differences emerge as grade increases. This is consistent with previous research in CLIL contexts as well as investigations that have compared CLIL and NON-CLIL contexts" (p.1). It could be due to the higher English proficiency attained by CLIL students due to the communicative nature of the CLIL lessons.

4.3.2. The role of teachers and LLS in CLIL settings

One of the main responsibilities of CLIL teachers should be to help students to "overcome their language and content comprehension or/and communication problems, by developing a repertoire of receptive and productive compensatory and communication strategies" (De Graaff et al., 2007: 610). These authors piloted a descriptive study with the aim of finding practical evidence for teaching performance promoting learner language acquisition within CLIL contexts. For that, 9 different lessons from 3 Dutch CLIL secondary schools were analysed and observed. Students were between 12 and 17 years old. The sample was constituted by 9 different CLIL teachers (4 male teachers and 5 female teachers), all of them with at least 2 years of experience as CLIL teachers. There was only one native teacher. The researches decided to use video-tapes as an observation tool for effective pedagogy. These videotapes were analysed by at least two researches. After the lessons, in order to collect more information about teachers´ intentions, researches conducted twenty-minute-interviews. As a conclusion, they suggested a series of indicators so as to achieve an effective teaching performance. These were: to elicit receptive and productive compensation strategies, to elicit reflection on the use of strategies as well as to scaffold strategy use. In this sense, Tudor (2009) conducted a survey study on teachers´ self-reported pedagogical

practices. In this study, all Dutch secondary CLIL teachers were invited to participate. Moreover, 40 students who did not offer CLIL education participated in the study too. They all had to answer to an English-language online questionnaire called "the Content and Language Integrated Learning Questionnaire" which contained open and close questions. Once the subjects´ answers were collected, data was analysed through descriptive statistics, qualitative content analysis and multivariate analysis of covariance (MANCOVA). It was concluded that CLIL students need more scaffolding than non-CLIL students due to the difficulty of learning contents in a second language. That is the reason why, teachers should provide students with more tools as well as to enhance their use of LLS.

A similar descriptive study, by Mahan (2020) was sought to shed in light the teachers´ responsibility to scaffold their students´ learning. The sample was constituted by an 11th grade CLIL classroom where students were between 15 and 16 years. They were at an upper secondary Norwegian school which offered an English CLIL programme for three subjects: social science, geography and natural science (ages 15–16). The participants in this study were on the one hand, the 25 CLIL students, and on the other hand, the 3 CLIL teachers. One interesting aspect was that all the participants were females. Regarding data collection, 12 lessons were video-recorded so as to be analysed by researches. The videos were analysed using a manual aimed to observe teachers´ actuations which is called PLATO (Protocol for Language Arts Teaching Observation). There were various findings of this study. Firstly, it was founded that CLIL teachers used a great amount of strategies so as to help students comprehend contents and materials in the FL. Some examples were that CLIL teachers made connections between known and unknown materials, prompted the use of academic language and provided CLIL students with materials which supported their learning. However, there were found little evidence of strategic instruction by CLIL teachers. Thus, this study concluded that CLIL teachers provide students with very "little explicit and detailed instruction on strategies to help them complete task" (p. 11). Despite there were little evidence found, the importance of training students in the use of different kinds of LLS is highlighted in Yang´s study (2018). According to this author whose study has been previously examined, the responsibility of teachers is not only to provide students with strategic training, but also to help them to decide which learning strategy best suits their learning styles and encourages their CLIL learning. This specific teachers´ responsibility is perfectly explained by the same author, one year before when he claimed that "CLIL teachers can attempt to raise learners' confidence and awareness of the fact that there is no single right

strategy, but that multiple effective strategies can suit their new learning contexts" (Yang, 2017: 22). Therefore, effective CLIL teachers are those who help students to learn in a better way by scaffolding their conscious selection of LLS (Hong-Nam &Leavell, 2006). In short, this study reveals that CLIL teachers should encourage students to try different strategies and practise them.

In fact, there is one study which reveals that students do not acquire LLS naturally if they are not specifically trained on it (Pressley, 2006). As a consequence, in this study it is claimed that learners need to be taught the wide variety of strategies that they can use as well as the way in which they can use them in different contexts. However, "there is very little research concerning the fundamental concept of learning strategies and strategic instruction in CLIL, even though learning strategies are an integral part of the curricular elements that help students to learn" (p. 320). So, it is important to examine the influence that teachers´ explicit training has on students´ use of LLS and how these strategies should be taught and learnt in CLIL contexts (Yang, 2017). To reach this aim, Ruiz de Zarobe&Zenotz (2018) conducted a two-year longitudinal research involving a quasi-experimental pre- and a post- test design. The study was conducted at a school in the Basque Country in Spain. Students were attending to Year 5 and Year 6 classes, so they were between 11 and 13 years of age. Students were divided into two groups. On the one hand, there was a control group formed by 50 non-CLIL students. On the other hand, there was an experimental group constituted by 50 CLIL students. They were all native Spanish speakers. The experimental group was provided with explicit strategic instruction on multiple strategies such as identifying the main ideas, making predictions, guessing from context and paying attention to the type of text, among others. In order to check the effect of strategic training on reading comprehension, both groups had to complete a metacognitive reading test twice, in the pre- and post- test phases. According to their results, this effect is positive. In this respect, they asserted that, in a two-year period, it had a significant effect on the development of students´ reading competence. Moreover, they suggested that the metacognitive awareness of the students in the experimental group was greater. Furthermore, they found that those students who were trained in reading strategies seemed to have greater metacognitive awareness. The results of this study seemed to be more reliable than previous studies on this topic due to the larger sample. They concluded that in a context where students are multilingual, "the benefits of strategy training and instruction in one skill (in our case reading) and mainly one language (English L3) can potentially be applied to other languages (L1 or L2), or to different skills (e.g. other receptive skills such as

listening)" (p. 10). They claimed that there were a need of pedagogical changes and that languages should be viewed as "interconnected systems" (p.10) so as to create conditions in which students could develop their awareness of their own learning, autonomy and responsibility.

In a similar vein, in the same year, Ruiz de Zarobe (2017) also investigated the influence of reading strategy training in primary education. This time, she conducted a quasi-experimental study including a pre- and a post-test design together with a survey. The subjects of the study were from a private school of Basque Country in Spain. They were between 11 and 13 years old and they were divided into two groups: an experimental group (50 CLIL students) and a control group (50 non-CLIL learners). The following fragment of the study summarized in a clear way its conclusions:

> It seems that training language learners may be effective, but it is less evident whether the effects of the training persist longitudinally. It might be the case that strategies need to be practised and refined over time in order to become automatised and have long-lasting effects. How long must that training last? The answer probably depends on the specific mechanisms of the different training types and on students' increasing awareness of those interventions. (Ruiz de Zarobe, 2017: 36).

4.3.3. The benefits of strategic learning

Once we have outlined the importance of explicit strategic instruction, we would like to focus on the benefits that it brings to students. For this, we will explore different studies carried out by educational researches.

Firstly, in 2018, Andriani, Padmadewi&Budasi (2018) conducted a descriptive qualitative study and found out that students become more autonomous if they learn to use LLS. The main aim of the study was to discover what strategies were used by two CLIL teachers in order to promote autonomous learning in a CLIL context. The teachers were from an Indonesian school called "Bali Kiddy Primary School". The participants in the study were 20 students between 7 and 8 years of age and two CLIL teachers, one science teacher and one maths teacher. The data for the study was collected through direct observations and document study as well as through interviews with the CLIL teachers so as to ask them for

clarifications regarding the observations. Then, the data was analysed in a descriptive way. As a conclusion, they reported that some frequent strategies can be used so as to enhance autonomous learning. These strategies were: "table of content training, questioning & presenting, journal writing, choosing activities, and using online activity emphasize the students to make choice and take control of their own learning in science and maths" (p.3).

Secondly, Castellano-Risco (2015) affirmed that there was a link between the employment of different LLS and a "better receptive vocabulary size" (p.36). She conducted a survey and experimental study in which two classes of Secondary Education were analysed. One of them was learning through CLIL methodology and the other one only learned English as a FL. They were all attending to a Spanish school located in a rural area. The name of the school was "The Vegas Bajas High School". The instruments used in the study were two. The first instrument used was a Yes/No test by Meara (2010) so as to measure the size of students´ receptive vocabulary. The second instrument was a vocabulary learning strategies questionnaire which was created using Schmitt's (2000) vocabulary learning strategies taxonomy as a reference in order to check what vocabulary learning strategies were used by participants. One of the main targets of this study was to check if students who used vocabulary learning strategies had a better receptive vocabulary size than other students. It was found that "a good size vocabulary level can be related to the use of certain strategies" (p.36). In fact, a positive, significant and moderate correlation was found between these two variables with the following learning strategies: "using new words in a sentence" (0.567), "studying and practicing meaning in group" (0.325), "grouping words together to study them" (0.393) and "analysing affixes and roots" (0.419). Finally, the results showed that the more students used the vocabulary learning strategy called "skipping or passing new word" strategy, the worst vocabulary size they achieve.

On this note, Quintana et al (2019) examined how the use of LLS in a CLIL context may improve students´ reading comprehension in L2. The study population were 21 eleventh grade students from a private school in Tuluá, Colombia. They were between 15 and 16 years of age. They need an intervention program because they had to face an exam which included different readings in order to assess students´ English level together with their correct use of LLS. Hence, this was an experimental, descriptive and survey study whose instruments to collect data were six: The Survey of Reading Strategies (SORS) (Mokhtari&Sheorey, 2002) so as to discover the kind of strategies that each student used to understand reading texts, a questionnaire called KET to evaluate if students reach the level A2 of English by Cambridge

English Language Assessment (2016), a teaching unit divided in different sessions, an observation grid to assess the efficacy of the reading strategies used by students, journals to record the most relevant episodes of the study and finally, a focal group to discover different perspectives of the situation. It is important to highlight that students showed an important progress in the use of reading learning strategies during the intervention program. Some of the strategies that students used were predicting the content, using reference materials and using graphic organizers, among others. At the end, they claimed that, although students used strategies in an "unconscious and integral way" (p.447), when the researches compared the results with those after the LLS intervention program, they found that students understood the text in an easier way. when the results of the backgrounds are compared with those of the after engaging the reading strategies, they more easily understood the texts they faced during the eight weeks of intervention.

In a similar vein, Sanad & Ahmed (2017) were interested in examining to what extent CLIL methodology helped students to develop their comprehension and vocabulary skills. For that, they conducted an experimental study at the College of Sciences and Humanities in Alghatt, Majmaah University, KSA. The participants in the study were ten students of the level eight. To participate in the study, they had to take a pre reading comprehension test and a pre vocabulary test. Then, they "received the experimental treatment through teaching a module of (CLIL) content and language integrated learning" (p.115). After it, they had to take post reading comprehension test and post vocabulary test. The objective was to check the effectiveness of the implemented program. Comparing the results of the tests, it was found that students, after participating in the implemented CLIL program, they improved their reading comprehension skills and vocabulary skills.

Investigations by Martínez y Ruiz de Zarobe (2017) were aimed to discover if learners really benefit from "metacognitive reading strategy training" (p.72). For that, they conducted an experimental study in two different schools in the Spanish province of Santander (Cantabria). One of the schools was implementing CLIL methodology (experimental group) and the other one (control group) was not, but students were learning the English Language as a FL. The subjects of the study were 145 students between 11 and 13 years of age. This study followed a pre-test and post-test model. So, students in the experimental group participated in a training programme after taking the pre-test and before doing the post-test. The results of the study showed that those learners who participated in the strategic training performed better the metacognitive reading task. Furthermore, they found this kind of training "not only to

improve learners' reading competence, but also to help them become better, more independent learners able to monitor their own learning process" (p.86).

Brown (2013) also supported that strategic learning was advantageous for learners. The context of his survey, descriptive and experimental study was the well-known Jikei University School of Medicine in Tokyo. The agents were first-year students who attended to a "medical English CLIL course with vocabulary learning strategies instructions" (p.274). They had to take tests, answer to interviews and fill in questionnaires. The students´ feedback indicated that most students found useful learning new vocabulary strategies because they helped them to study. Besides, they discovered that this program increased students´ awareness about how they learnt vocabulary and also expanded their vocabulary range (p.284).

Besides, two authors supported that the learning and usage of LLS was beneficial for learners because it developed their cognition. First, Méndez García´s (2014) descriptive study included as one of its main objectives to discover if CLIL students achieved "higher order thinking skills processes" (p. 27). There were 15 participants in the program (4 language assistants, 4 language teachers and 7 content teachers). All the participants were from different primary and secondary schools of Jaen in Andalusia, Spain. The data was collected by interviewing the participants. They conducted `semi-structured´ interviews and the produced transcripts were coded "by means of key words" (p.29). As a result, they obtained that "evaluate and create higher order cognitive processes are likely to surface from CLIL tuition" (p.36). That is why, learners had a need of more language strategies in order to establish communication and consequently, their mental schemes become better.

The findings of the study by Freihofner, Smala& Campbell (2016) were in line with those of the previous one. Their main aim was to examine "how translanguaging practices (using both German and English to communicate in bilingual education settings) contribute to and shape self-regulated learning in a scientific open inquiry process" (p.235). To achieve their aim, they piloted a survey and descriptive study whose participants were 22 Year 9 students between 13 and 14 years of age. They were all participating in a CLIL program for second year in a roll and their mother tongue was Australian. The qualitative data was collected by means of three different instruments: questionnaires, voice recordings and interviews, so as to gather all students´ opinions, experiences and thoughts. When they analysed the data collected, they discovered that when students used translinguing strategies they become

better at self-regulating their own learning process since they used "self-regulatory strategies such as self-motivation, performance and self-evaluation" (p.243). Moreover, they realised that while using these kinds of LLS, students used high order thinking processes.

Similarly, Huang (2020) found out that students, when using LLS in CLIL settings, they developed their cognition as "it increases the cognitive challenge and promotes higher order thinking skills" (p.10). This result was the conclusion of a descriptive and experimental study whose participants were 30 primary learners. They were enrolled in a school in Tichung, Taiwan. Their age range was between 10 and 12 years old. Different data collection techniques were used so as to ensure the validity of the study: graphic organizers, interviews, students' self-assessment, and students' tests. On the one hand, to analyse the qualitative data, he compared the results of students´ pre- and post- test. On the other hand, in order to synthetize quantitative data, he used the technique known as "categorizing". At the end, they concluded that students, as a result of using LLS in CLIL settings, they not only developed their cognition but also, they became more effective learners.

This last conclusion, was as well obtained as a result of the experimental study by Nieto (2016). Its participants were 16,679 students. Some of them, the experimental group, were CLIL students (n=1,966) and the rest, the control group, were non-CLIL students (n=14,713). They were all from a Secondary School in Castilla-La Mancha (Spain). They were enrolled in the second course of this stage and consequently, their ages were between 13 and 14 years old. In this study, data was collected using "a set of Assessment Units developed by the Evaluation Office of the Ministry of Education of the Regional Government of Castilla- La Mancha during the General Diagnostic Assessment of Castilla-La Mancha" (p.25). Participants had to perform different tasks using two kinds of strategies: "metacognitive strategies" and "learning and self-regulation strategies". They obtained that CLIL students, as they used these kinds of strategies, they were more aware about their own learning process and thus, they become more effective learners.

5. CONCLUSION

The purpose of this systematic review was fourfold. Firstly, it was aimed to overview the importance of using LLS in CLIL settings. For this, we provided a definition of the concept of "learning strategies" in general and then, of the term LLS. Although this last term has been defined by different authors, one accepted definition was the one by Oxford (1990), when she defined them as tools that learners used in an autonomous way so as to develop their

communicative competence. After this, different reasons to justify the importance of using these tools in CLIL contexts were provided. In short, it was claimed that they helped students to learn successfully, to handle their own learning process, to become more autonomous and to learn in a faster, easier, more enjoyable and more effective way (Weinstein & Mayer, 1986; Sternberg, 1999; Oxford, 2003). Moreover, the link between LLS and CLIL approach was analysed. CLIL was defined as a teaching approach through which students learn non-linguistic subjects by means of a FL (Marsh &Langé, 2000). So, Ruiz de Zarobe & Zenotz (2015) reported that CLIL learners needed to use LLS so as to face the high demands of this approach. Our second objective was to review what the selected studies had claimed about the impact of individual difference variables in the use of LLS. In these studies, the most analysed variable was genre. Despite this, findings were very diverse and it was difficult to reach a conclusion. There were authors who claimed that girls used more LLS than boys (Psaltou-Joucey et al., 2015) and others who found that there were significant differences in the males and females´ preferred strategies (Basterrechea et al 2017; Yang, 2018). However, the most reliable conclusion was the one by Jaekel (2018), due to the fact that this study had the largest sample and the most consistent results. This author concluded that, at a descriptive level, there were not significant differences due to students´ genre. The second variable analysed was self-efficacy. Despite the importance of this variable, it was analysed in just one study (Jaekel, 2018). His findings showed that students with higher self-efficacy used more LLS. The third variable reviewed was language proficiency. All the studies that dealt with this topic found that there were significant differences in the kind of LLS used by students depending on their FL proficiency level (Yang, 2017,2018; Gallardo-del-Puerto et al. 2020). Regarding the variable age, there were two different postures. On the one hand, it was found that younger students used more LLS (Psaltou-Joucey, 2015). On the other hand, Yang (2017) concluded that the older students are the more strategies they use. Then, this author also founded that culture, the fifth variable, seemed to have an effect on learners´ use of LLS. The sixth variable was only included in Yang´s (2018) because he was the only one that included students from different studying disciplines in his study. According to his results, the study discipline affected the types of LLS used by students because the characteristics of each discipline influence the LLS used by learners. Finally, it was analysed the findings regarding the variable called teaching approach. It was founded that CLIL students used more LLS than non-CLIL students (Castellano-Risco, 2019) and that they produced less instances of L1 use in interactional strategies (Martinez-Adrián, 2020).

The third objective was to present the role of teachers to enhance the use of LLS in CLIL lessons. It has been found that CLIL teachers had a very important responsibility since they had not only to scaffold the students learning process but also, they have to explicit train students in the use of LLS. (De Graaff et al., 2007; Mahan, 2020; Yang, 2018). Moreover, CLIL teachers also have to help students to select those strategies that best fit their learning style (Ruiz de Zarobe & Zenotz, 2018).

The last aim was to outline the most important benefits that strategic learning brings to CLIL learners. It has been found that when students learn to use LLS, they become more effective learners (Yang, 2020) as they increase their autonomy (Andriani et al.,2018), independence (Martínez & Ruiz de Zarobe, 2017), self-regulation techniques (Freihofner et al., 2016) and awareness about their own learning process (Brown, 2013). Moreover, it seems that strategic learning helps students to learn more as it has been discovered that they have better vocabulary size (Castellano-Risco, 2015; Sanad & Ahmed (2017), better reading comprehension and competence (Quintana et al., 2019). Finally, some studies revealed that strategic learning improves students´ cognition and promotes higher order thinking skills (Huang, 2020; Freihofner et al., 2016; Sanad & Ahmed, 2017)

6. LIMITATIONS AND LINES OF FUTURE RESEARCH

Regarding limitations, it is important to signal that one possible limitation could be that most of the references are from articles published in journals. The reason is that the method used in the present systematic review is focused on this kind of references. However, books fragments have also been used so as to define LLS and to make a LLS' taxonomy. The second limitation could be that we have focused mainly on results rather than on a debate regarding the positive and negative aspects of LLS, since we were interested in comparing the results obtained in the different studies. Finally, a minor limitation could be that the period of publication of the selected studies is short and recent. That is because CLIL is a considerably recent methodology and authors has started to relate this approach with other concepts such as LLS in the last years. As a consequence, only two studies were published before 2010, as it can be seen in figure number 2. Finally, as it has been concluded that using LLS in CLIL contexts is beneficial for students and improves their learning, a possible line of future research could be to develop didactic materials linked to this LLS. By doing this, those

teachers who are interested in using LLS will have this intervention as a reference and they will feel supported and helped.

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