

Master's Dissertation/
Trabajo Fin de Máster

DYSLEXIA AND CLIL: A SYSTEMATIC REVIEW.

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Abstract:

The purpose of this dissertation is to provide a systematic review in order to know the characteristics of dyslexic students, how it is identified and what the most beneficial teaching strategies and techniques to support the learning of these students are in CLIL contexts. Therefore, a search was carried out in databases and journals where the records from five databases, three journals and the general catalogue of the University of Cordoba was selected. After screening, 54 resources were included in the review. It is concluded that dyslexic students could benefit from learning a second language where multisensory methodology has an important role, as well as the use of new technologies and games as they will increase student motivation. Teachers have a key role in this process and their training must be a priority. Moreover, collaborative work is essential among special needs teachers and language teacher, where we would add content teachers in CLIL methodology. Finally, there is a general consensus among authors on the need for more research focusing on bilingual learners with dyslexia, especially longitudinal studies.

Keywords: Dyslexia, CLIL, attention to diversity, bilingualism, foreign language learning.

Resumen:

El objetivo de esta tesis es realizar una revisión sistemática para conocer las características del alumnado disléxico, cómo se identifica y cuáles son las estrategias y técnicas de enseñanza más beneficiosas para apoyar el aprendizaje de estos alumnos en contextos AICLE. Con este fin, se realizó una búsqueda en bases de datos y revistas donde se seleccionaron los registros de cinco bases de datos, tres revistas y el catálogo general de la Universidad de Córdoba. Tras la selección, se incluyeron 54 recursos en la revisión. Se concluye que los alumnos disléxicos podrían beneficiarse del aprendizaje de una segunda lengua donde la metodología multisensorial tiene un papel importante, así como el uso de las nuevas tecnologías y los juegos, ya que aumentarán la motivación del alumno. Los profesores tienen un papel clave en este proceso y su formación debe ser prioritaria. Además, el trabajo colaborativo es esencial entre los profesores de apoyo y el profesor de lengua, a lo que habría que añadir los profesores de contenido en la metodología AICLE. Por último, existe un consenso general entre los autores sobre la necesidad de realizar más investigaciones centradas en los alumnos bilingües con dislexia, especialmente estudios longitudinales.

Palabras clave: dislexia, AICLE, atención a la diversidad, bilingüismo, aprendizaje de una lengua extranjera.

1. INTRODUCTION

Diversity is a common fact inherent to human development and it should therefore be considered normal that the groups of students with whom we work are diverse and heterogeneous. As Linares (1993) pointed out, the teacher's work does not only lie in planning the work of the different lessons, if there is one crucial aspect of the teacher's work, it is attention to diversity. This will allow all students to develop the curricula of our areas and to benefit from them.

As it is the case when we implement the Content and Language Integrated Learning (CLIL) approach, diversity is also present not only in the different levels of foreign language learning but also in the learning needs of each student because their needs do not disappear but they can even increase in some cases.

The growth of the CLIL approach and the importance of attention to diversity for organisations such as the European Union and authors such as Pedrosa & Moreno, 2021; Pérez Cañado, Rascón Moreno, & Cueva López, 2021 has fostered the beginning of the European project: "CLIL for All: Attention to Diversity in Bilingual Education" which is known as ADiBE¹ and Dyslexia@ Work on Erasmus Project

Although attention to diversity has been claimed, teachers have a lack of knowledge in the methodological strategies and tools to cater for diversity in their classrooms (Nijakowska, Tsagari, & Spanoudis, 2018; Košak Babuder & Jazbec, 2019; Jalali-Moghadam & Hedman, 2016). Moreover, as a bilingual Physical Education teacher in Andalusia, I have experienced myself situation in which I was encouraged to abandon bilingual education if there were students with special needs: once an educational counsellor told us, the teachers, that the solution for students with special needs was to eliminate bilingual subjects for such students. This striking statement made me reflect upon whether there was no other possible alternative for these students, since the number of bilingual schools is increasing²

¹ The website of the Project is linking here: <https://adibeproject.com/>

² This increment can be observed in the publications made by the Junta de Andalucía <https://www.juntadeandalucia.es/boja/2022/53/39>
<https://www.granadadigital.es/la-junta-aumentara-el-numero-de-centros-bilingues-con-un->

and the basis of bilingual education is the foreign language, in this case English. The elimination of bilingual subjects as a measure to cater to diversity is applied to students with dyslexia owing to the difficulties they have in learning to read and write, among others, as detailed below, and which hinder their learning. The question is whether this is the best measure. In order to answer this question and to have arguments to refute it, a systematic review will be carried out.

This systematic literature review is motivated by the need for educators to find answers to the best curricular adaptations for dyslexia, the need for more research cited in attention to diversity articles and the lines of future research highlighted in the first studies found about dyslexia (Ganschow & Sparks, 2000; Johansson, 2006; Yamasaki, & Luk, 2018). As well as the absence of a systematic review focused on the methodological approach of CLIL and the need to provide an overview on the methodological recommendations for teachers to be used for dyslexic students in CLIL classrooms.

2. LITERATURE REVIEW

The rapid expansion of CLIL has not been accompanied by the same level of research in all the CLIL areas or topics and therefore more research is needed (Coyle, Hood, & Marsh, 2013; Tudor, 2008) as cited in Pérez-Cañado (2012), in the specific field of attention to diversity which has sometimes been forgotten, especially the study of specific measures for dyslexia, Asperger, Autism, among others (Herrera Fernández, 2008; Ruiz Fernández, 2013). Moreover, as Pérez-Cañado (2012) states generally for CLIL, it is necessary to dispel fears, which is also applicable to attention to diversity, as well as to reinforce the connection between the academic world and praxis.

The present dissertation begins by theoretically situating CLIL as an educational approach and provides a succinct description of dyslexia; then it continues to present the methods of research, the results obtained and finally presents the discussion about relevant issues and further lines of research.

2.1 What is dyslexia?

Understanding dyslexia as well as its casuistry and the characteristics of this disorder is crucial to successfully addressing it. Moreover, this helps to recognise and adopt measures to cater for diversity. Therefore, two definitions will be presented: Peer's (2003) and the American Psychological Association's definition (American Psychological Association [APA], n.d.).

Dyslexia is best described as a combination of abilities and difficulties that affect the learning process in one or more of reading, spelling and writing. Accompanying weaknesses may be identified in areas of speed of visual processing, short-term memory, sequencing and organisation, auditory and/or visual perception, spoken language and motor skills. It is particularly related to mastering and using written language, which may include alphabetic, numeric and musical notation (Peer, 2003; as cited in Portwood, 2003, p.1).

The American Psychological Association (APA) describes dyslexia as:

A neurologically based learning disability manifested as severe difficulties in reading, spelling, and writing words and sometimes in arithmetic. Dyslexia is characterized by impairment in the ability to process sounds, that is, to make connections between written letters and their sounds; written work is often characterized by reversal errors. It can be either acquired (in which case it is often referred to as alexia) or developmental, is independent of intellectual ability, and is unrelated to disorders of speech and vision that may also be present. It is not the result of lack of motivation, sensory impairment, inadequate instructional or environmental opportunities, emotional disturbances, or other such factors. Since the 1960s, information-processing and other psychological accounts of acquired dyslexia have prompted investigators to subdivide it into two general classes: (a) visual word-form dyslexia, which is characterized by difficulty in the visual analysis of written words; and (b) central dyslexia, which is characterized by difficulty in later stages of the reading process (i.e., pronunciation and comprehension). Various types and subtypes of dyslexia, both acquired and developmental, have also been proposed, but there is no universally accepted system of classification (American Psychological Association [APA], n.d.).

In summary, dyslexia is included in a broad classification of Specific Learning Disabilities (SLD) defined as "Disorder in one or more of the basic processes involved in oral and written language comprehension" (ASANDIS, 2010, p. 5). Problems can be observed at school in different areas: speaking, reading, writing, spelling or difficulty in handling mathematical signs. It occurs in learners with normal or high cognitive development or intelligence, who do not suffer from perceptible sensory alterations and who have received an adequate instruction.

One of the neurological models explaining reading and consequently the levels of dyslexia is the triangle model. This model establishes three units: phonological, semantic and orthographic. These units have bi-directional pathways between them and the representation of the sub-lexical map occurs with different weights between the units. Another model is the dual-route cascaded widely used to explain English reading. This model proposes three fundamental reading routes: the sub-lexical route, the lexical pathway and the semantic pathway. It explains the levels of dyslexia by a disruption at each pathway. For example, while this model explains phonological dyslexia by disruption of the grapheme-phoneme conversion route. The triangle model describes it as damage due to phonological pathway (Balasubramanian, 2019).

2.1.1 Characteristics and symptoms of dyslexia

One of the most common factors of dyslexia is related to difficulty in reading and spelling. However, many children display such difficulties in literacy, i.e., the abilities to read and write, and they are not dyslexic. For that reason, it is key to recognise the main characteristic of dyslexia, which are shown below.

Firstly, reading and reading comprehension might be usually a difficulty, but not always. This could be because of a lack of fluency, i.e., the speed of reading, or accuracy in decoding. Moreover, spelling difficulties are often an obvious characteristic (Peer & Reid, 2013). Symptoms include confusion of letters, change of syllables, repetition, deletion or addition of letters or words, invention in reading, poor

reading comprehension, lack of intonation and rhythm, skipping of lines (ASANDIS, 2010).

Secondly, the difficulty of writing skills could be shown in expressive writing and their handwriting style. The dyslexic students do not perform to their real ability in descriptive or imaginative writing and they also make inappropriate use of capital and lower-case letters (Peer & Reid, 2013). As in reading, they make inversions, omissions, substitutions or additions in letters or words. In addition, they have difficulty in memorising and automating spelling rules, especially if it is not in their mother tongue (ASANDIS, 2010).

Thirdly, dyslexic learners also have problems in the short-term and long-term memory. Although they can develop efficient methods of recalling and retaining information, bulk of information can be a challenge (Peer & Reid, 2013).

Moreover, coordination difficulties might appear or not and but when they do, they involve handwriting, fine motor activities and/or general coordination (Peer & Reid, 2013). As a consequence, tying shoelaces, riding a bicycle, coordinating different movements, kicking or bouncing a ball is a trouble for students. In addition, their balance is also affected, they confuse left and right, up and down, front and back (ASANDIS, 2010). However, when they do not appear, students may be talented in art and crafts, as well as in physical education and sports (Peer & Reid, 2013).

In addition, students with dyslexia also have organisational difficulties. These might be the less obvious, nonetheless, they are a fundamental aspect of dyslexia.

Finally, information processing, as mentioned above is also affected and it could present difficulties in any or all the three stages of the information processing cycle: input, cognition and output. Thus, as a teacher, the information presented must make some impact on students at the initial stage of learning. In order to success, material can be presented in diverse ways: visual and kinaesthetic are the most effective for them, following by tactile methods and the traditional and most used in school, auditory should be avoided according to evidence (Peer & Reid,

2013). However, dyslexia has another manifestation which is visual difficulty, therefore, the teacher must consider whether or not this need is present in his/her methodological decisions.

Because this problem affects the processes of learning and processing information, teachers need to provide a clear connection between prior and new knowledge (Peer & Reid, 2013).

2.2 What is CLIL?

Globalisation and increased communications make it necessary to use a common language for interaction. Moreover, it also creates the need to learn another language in addition to one's mother tongue. The learning of this foreign language has evolved over the years and the term that we know today as CLIL emerged in the 1990s as 'teaching and learning through a foreign language' (Marsh, 2002, p. 54). This approach is based on content and foreign language learning (Coyle et al., 2013) and it provides a real learning experience for students. This was encouraged by the Commission of the European Communities in 1995 when the mandate 1+2, that is to say, the L1 (mother tongue) and 2 additional languages was established (Commission of the European Communities, 2005). As a consequence, the implementation of CLIL programmes has become commonplace in most European educational systems. For example, the implementation in Andalusia commenced in 2005 when the Andalusian Plan for the Promotion of Plurilingualism (APPP) was approved (ACUERDO de 22 de marzo de 2005 [Consejo de Gobierno], Por el que se aprueba el Plan de Fomento del Plurilingüismo en Andalucía. 5 de abril de 2005).

CLIL encompasses different methodologies and models which are determined by the context of school and their students. This approach invites the creation of a new organisation of schools which is reflected in their educational projects. Therefore, there is a variety of model across Europe and these models depend on aim, context and desired outcomes. Moreover, there are variants for all levels of education (Marsh et al.,2005)

2.2.1 Core features of CLIL: components

CLIL is a complex matter which requires a profound reflection on linguistic and non-linguistic objectives. Therefore, CLIL teachers have to define assessment criteria for content-subject and foreign language without forgetting that the priority in CLIL is content aim whereas language is the means of instruction. Taking into account this relationship, Coyle et al. (2013) drew a conceptual map of CLIL based on the 4Cs Framework where content, communication, cognition and culture have an interrelationship. That is, thinking and learning processes take place through specific matter and through the use of the second language, in a context that allows for a real learning experience keeping the balance among context and second language.

In addition, Coyle et al. (2013) expounded the three different possible interpretations in the relation between language and learning in CLIL which is called Language Triptych: Language of learning, Language for learning and Language through learning. With regard to “language of learning”, it is the kind of language which student need to learn the contents, “language for learning” is the language that students need to work in a second language and “language through learning” is the language which student has during a lesson and their necessities. Furthermore, Cummins (1979) added that students need to develop two types of second language skills during the learning process. These are: Basic Interpersonal Communication Skills (BICS), i.e., social language, and Cognitive Academic Language Proficiency (CALP), i.e., academic language.

The process of learning is different in each student, consequently the process of acquiring those skills will be specific for each student. Thus, teachers need to scaffold appropriately, i.e., the wide variety of strategies which are used to offer a support of students according to their personal level of language, especially in CLIL where students have the disadvantage of not being native speakers of the vehicular language. In order to create a good scaffolding, teachers have to take into account the use of supplementary material, speech adaptation or clear instructions, among others.

2.2.2 CLIL, attention to diversity and dyslexia

Attention to diversity is an indispensable feature of any educational system because schools should be inclusive (Callado Moreno, Molina Jan, Prez Navo, & Rodríguez Moreno, 2015; Ortiz González, & Lobato Quesada, 2004). However, there have been periods where segregation was an option and different student capacities was an obstacle. So, the argument for detractors of CLIL is that CLIL does not attend on diversity. In order to demonstrate that this is not true, new studies focus their attention on diversity. For example, a study has been carried out to design and validate assessment instruments (Pérez Cañado et al., 2021). Other studies cited above have demonstrated the success of CLIL in a variety of contexts (Pavón Vázquez, 2018; Pérez-Cañado, 2020; Rascón Moreno & Bretones Callejas, 2018) although there is still a lack of studies which focus on dyslexic students in CLIL contexts.

The teaching of a foreign language to dyslexic learners is complex, so they are often distanced from it (Crombie, & McColl, 2001). However, CLIL methodology is based on the use of knowledge and skills acquired during a regular foreign language class. Moreover, students are pushed to use the foreign language more and better than a regular foreign language class because they have a reason to interact and the focus on the content will be a lowering of the affective filter/blockage which is common in them, as a consequence of a lack of self-esteem. In this way, the language becomes the medium for learning and communicating which leads to an unconscious reinforcement of linguistic knowledge (Romito & Graziano, 2015), therefore dyslexic students could also benefit from CLIL.

3. OBJECTIVES

The main objective of this systematic review is to answer the following questions:

- How is the literacy and language performance of the dyslexic learners in the learning of a second language?
- What are the methodological recommendations to cater for learners with dyslexia in a CLIL classroom?
- What are the brain factors that influence the information and communication process in dyslexic learners?
- What tools are used to identify and assess dyslexia in bilingual students?
- Are CLIL teachers methodologically prepared to cater for diversity?

The second aim is to describe new lines of research on this specific topic, dyslexia and CLIL. The rapid expansion of CLIL approach in Europe means that its research is in its infancy (Wolff, 2005), mainly that related to diversity and specifically to dyslexia.

4. METHODS

4.1 Data collection and analysis

The literature search process was conducted in different steps. This process is summarised and illustrated in the flowchart below (figure 1) which was created taking into account the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline (Page et al., 2021).

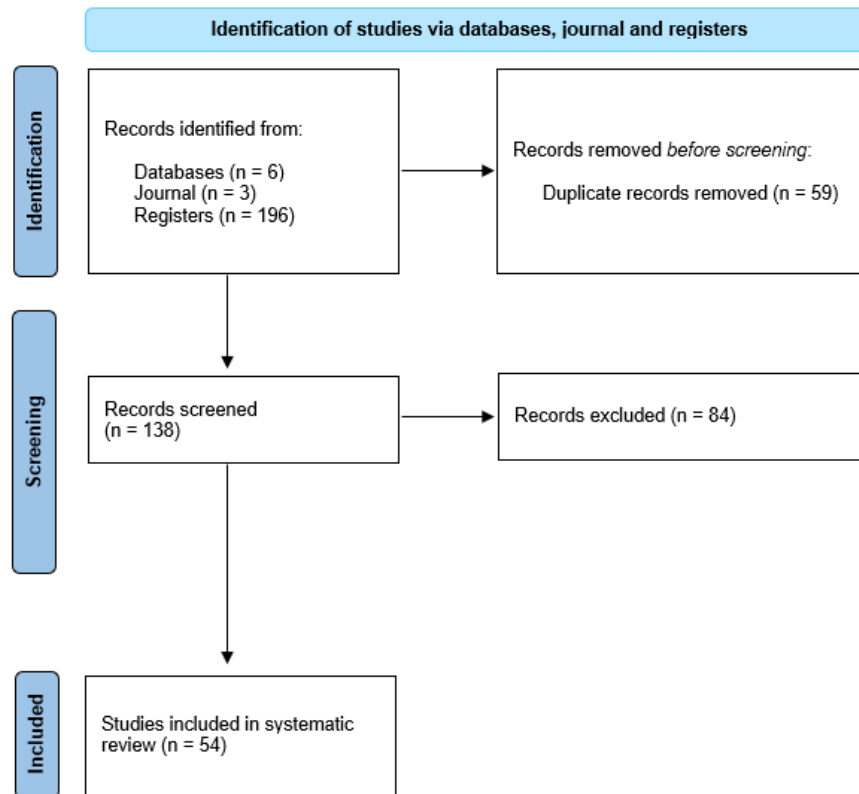


Figure 1. Literature search process depicts in a flowchart based on PRISMA model.

Firstly, the search was started in the general catalogue of the University of Granada with scarce results, and the process was repeated in the general catalogue of the University of Córdoba. Subsequently, Google Scholar was consulted, where the first results were found, coinciding with an opening of the search. Firstly, we continued with the search for “attention to diversity” and then the specific term “dyslexia” was included. The first step was carried out for piloting the search, the feasibility of the systematic review and the choice of search terms were tested.

In the second step, keywords are decided after testing them in the pilot study. As a result, the following keywords has been used for the review of the published literature: **dyslexia and CLIL**, **dyslexia and bilingual education**, **dyslexia and foreign language learning**. The review was carried out from the beginning of February 2022 until the end of May 2022 in databases (Educational Resources Information Center (ERIC), Scopus, Proquest, Web Of Science, and Google Scholar), in the catalogues at the university and in specific journals (International Journal of Bilingual Education and Bilingualism, Dyslexia (Chichester, England:

online), Annals of dyslexia (online), European Journal of Special Needs Education) as it is described during subsequent paragraphs. The journals were chosen for their affinity with the thematic area: bilingualism, dyslexia and attention to diversity respectively. The general catalogues of the University of Córdoba and Granada were chosen taking into account the open access to the all the resources available to their students through the VPN connection and the databases were chosen taking into account their relationship with educational field.

Using the keywords “CLIL and dyslexia”, our Google Scholar search yielded 853 results when quotation marks were used and 846 results without quotation marks. When the terms “bilingual education and dyslexia” were used results were 21200 and finally “foreign language learning and dyslexia” as keywords yielded 34100 results. Given the impossibility of effective refining in Google Scholar and reviewing the titles of the first pages of the search, as well as the abstract of several random articles, it was not possible to find enough relevant articles for the study. Thus, after completing the search in the other databases, it was decided not to include Google Scholar in this first study, as it was only part of the pilot study that was developed in the begging of February.

Our next search was performed on a journal named Dyslexia (Chichester, England: online) by British Dyslexia Association the words “CLIL, bilingual education and foreign language learning” were used as keywords without “dyslexia” for the specificity of the journal and the research generated 128 results in total and 0, 59 and 69 respectively. In addition, it was applied the “title” parameter to refine our search with 0 results for “CLIL and bilingual education” and 9 results for “foreign language learning”. There are 11 matches in this search so, the results are 111 after duplicates were removed. The last review was carried out on 31 May 2022 and the search was not refined by date.

Afterwards, search was carried out in another specific journal “Annals of dyslexia” (Online) where the research was also made with the same keywords, “CLIL, bilingual education and foreign language learning”. However, it showed less results than the previous journal, in total 91 and 0, 45 and 46 respectively. In this case “title” parameter was applied and it did not provide any results using any of

keywords “CLIL, bilingual education and foreign language learning”. Moreover, “abstract” parameter also failed to provide any results. In terms of duplicates, there are no duplicates with respect to the previous search in “Dyslexia” and there are 22 duplicates in the search of this journal. The last review was also conducted on 31 May 2022 and the search was not refined by date.

Our next search is in ProQuest database using “CLIL and dyslexia, bilingual education and dyslexia and foreign language learning and dyslexia” as keywords which total search generated 22241 results, “CLIL and dyslexia” 129 results, “bilingual education and dyslexia” 9119 results and “foreign language learning” 12996 results. When “title” parameter was applied to refine the search only 14 results were obtained for the keywords “foreign language learning”, only 9 of them were journals. However, for the “abstract” parameter, better results were obtained 1 for “CLIL and dyslexia”, 21 for “bilingual education and dyslexia” and 62 for “foreign language learning”. When “journals” was added as a new parameter the results were 1, 9 and 48 while the “thesis” parameter obtained 0, 8 and 7. Finally, first matches with previous searches appeared: 4 with Annals of dyslexia and 1 with Dyslexia. The search was not refined by date and the last review was carried out on 31 May 2022.

The next database is SCOPUS, the same keywords “CLIL and dyslexia, bilingual education and dyslexia and foreign language learning and dyslexia” were used and it yielded 6328 results, the largest amount of results was obtained with “bilingual education and dyslexia” with 3281, followed by 3002 for “foreign language learning and dyslexia” and 45 for “CLIL and dyslexia”. Furthermore, search was refined in title with 11 results for “foreign language learning” and 0 for the others, and in abstract with 0, 7 and 56 as it is illustrated in Table 1. There are matches with previous searches: 15 with ProQuest, 1 with Annals of Dyslexia, and 3 with Dyslexia. The last review was also conducted on 31 May 2022 and neither search was refined by date.

Our search continued with a specific journal in bilingual education whose name is International Journal of Bilingual Education and Bilingualism. Its results using the same keywords were 1693 in total; 8 for “CLIL and dyslexia”, 751 for “bilingual education and dyslexia” and 934 “foreign language learning and dyslexia”.

The search was refined using the parameter “title and abstract”, the results were for “title” 0, 0, 2, and for “abstract” 0, 1, 9. However, 2 results for “CLIL and dyslexia” were directly removed because they were not related to dyslexia and it was problematic to export the references to citation manager. Moreover, we found three matches with SCOPUS. The last review was also carried out on 31 May 2022 and neither search was refined by date.

The search on ERIC and the European Journal of Special Needs Education provided little success, so these search engines were finally not included. In addition, the search in the general catalogue of the University of Granada yielded low results in terms of numbers and quality because it included mostly books, whereas the search in the general catalogue of the University of Cordoba provided better results. The details of the search are illustrated in Table 1.

We concluded step two with a search of the WOS database, the results of which were 114; 0, 18 and 96 using the same keywords and the order presented in Table 1. The search was refined with no results for “CLIL and dyslexia”, with 5 results in the “abstract” parameter for “bilingual education and dyslexia” and 9 and 41 for “foreign language learning and dyslexia” in the parameters “title and abstract” respectively. The matches found were: 1 in this search, 4 in Dyslexia, 11 in ProQuest, 4 in International Journal of Bilingual Education and Bilingualism, 1 in Annals of dyslexia and 1 in SCOPUS. Neither search was refined by date and the last review was carried out on 31 May 2022.

Step three extends the search by adding two more databases: SpringerLink and JSTOR. The SpringerLink search gave a large volume of results in the general search using the same keywords “CLIL and dyslexia, bilingual education and dyslexia and foreign language learning and dyslexia”, However, when refining the search by the parameters “title or abstract” no results were obtained. Therefore, the parameters “scientific article and year 2022” are applied to narrow down the results. The parameter “2022” was not applied in the search for “CLIL and dyslexia” because no results were obtained from the search with the parameter “paper”. While the JSTOR search gave 1957 results in all fields applying the same keywords; 12, 692 and 1253 respectively. In addition, the applied parameters of title and abstract

yielded only 2 results for the keywords “foreign language learning and dyslexia”. After completing these two searches, only 1 match was found in the general catalogue of University of Córdoba. The last reviews were carried out on 31 May 2022.

To sum up, we found a total amount of 76.693 references; after parameters were applied the number of references was 196 with 138 remaining after duplicate was removed. The applied parameters were title and abstract, moreover, first title screening was made in the journal and databased whose results were 0 with parameters and the references for Dyslexia journal were included to screening because of the relationship with one of the main topics of the review. Finally, the reason to apply parameters was the impossibility to access and export the total amount of references when their volume is higher than 10.000 references, a summary from total number and duplicates of each databased is in Table 2.

DATABASE or JOURNAL	KEY WORDS	ALL RESULT YIELDED	TITTLE PARAMETER	ABSTRACT PARAMETER	OTHER PARAMETERS
Dyslexia (Chichester, England: online)	CLIL	0	0	-	
	Bilingual education	59	0	-	
	Foreign language learning	69	9	-	
Annals of dyslexia (Online)	CLIL	0	0	0	
	Bilingual education	45	0	0	
	Foreign language learning	46	0	0	
ProQuest	CLIL and dyslexia	129	0	1	
	Bilingual education and dyslexia	9119	0	21	
	Foreign language learning and dyslexia	12993	14	62	

SCOPUS	CLIL and dyslexia	45	0	0		
	Bilingual education and dyslexia	3281	0	7		
	Foreign language learning and dyslexia	3002	11	56		
International Journal of Bilingual Education and Bilingualism	CLIL and dyslexia	8	0	0		
	Bilingual education and dyslexia	751	0	1		
	Foreign language learning and dyslexia	934	2	9		
WOS	CLIL and dyslexia	0	0	0		
	Bilingual education and dyslexia	18	0	5		
	Foreign language learning and dyslexia	96	9	41		
SpringerLink	CLIL and dyslexia	27	0		Papers	0
	Bilingual education and dyslexia	750	0		Papers 2022	19
	Foreign language learning and dyslexia	1410	0		Papers 2022	25
JSTOR	CLIL and dyslexia	12	0	0		
	Bilingual education and dyslexia	692	0	0		
	Foreign language learning and dyslexia	1253	1	2		
GOOGLE SCHOLAR	CLIL and dyslexia	856	0	-		
	Bilingual education and dyslexia	21200	0	-		
	Foreign language learning and dyslexia	34100	0	-		

General Catalogue of UGR	CLIL and dyslexia	0	-	-
	Bilingual education and dyslexia	13	-	-
	Foreign language learning and dyslexia	19	-	-
General Catalogue of UCO	CLIL and dyslexia	35	1	-
	Bilingual education and dyslexia	3067	2	-
	Foreign language learning and dyslexia	4963	25	-

Table 1. Description of the results obtained in the first search.

DATABASE	TOTALS	DUPLICATES	REMAINIG
Dyslexia (Chichester, England: online)	68	3	65
Annals of dyslexia (Online)	17		17
ProQuest	36	9	27
SCOPUS	18		18
International Journal of Bilingual Education and Bilingualism	10		10
WOS	14		14
SpringerLink	0		3
JSTOR	0		2
General Catalogue of UCO	28	5	23
TOTAL		17	182
REMAINING		59(17+42)	138

Note: 59 are the duplicates in total. There are 17 coincidences inside the same database or journal and 42 coincidences between all database or journals reviewed.

Table 2. Description of the total register per databased and duplicated in the own databased.

4.2 Inclusion and exclusion criteria

Inclusion and exclusion criteria were used to narrow relevant literature:

- a. Reference should preferably be an article or thesis.
- b. The study is included if dyslexia is the main goal of study. In contrast, dyslexia cases notified during research were excluded.
- c. Studies should consider in their sample second or third language learning, foreign language learning, or include bilingual learners.
- d. Updated studies, after 2015, related to foreign language learning will be considered primarily.

As mentioned above, the protocol for this scrutiny was to search directly by title, then to search the abstract. After considering inclusion and exclusion criteria, 54 of the 138 articles remained and they were included in the study. Most exclusions had taken place because the main goal of the resource was not dyslexia and learning in a second language. Several resources excluded dyslexia of the bilingual research process.

Article management was carried out using RefWorks, updated with ProQuest and Microsoft Office Excel. Thus, the loss of register was reduced and register were kept under control and new duplicates were detected although they were overlooked by the automatization tool. In Excel, each database had a sheet with a table where it was recorded the title, notes and whether it was included or not. The method used to review the register was the personal judgement of the single reviewer in accordance with the inclusion and exclusion criteria. Thus, there is no risk of bias in the variability of reviewers' opinions. Instead, the collected records include descriptive studies, theses, and research that have not always had a peer reviewer and whose results should be interpreted with caution. As a result, the sample of studies collected will be examined closely in terms of breadth, bilingual sample and dyslexic sample. Subsequently, based on the notes and the in-depth reading of the text, each register was marked with one colour to create the different groups.

4.3 Screening procedure

The article screening process began by refining the search. This was done using mainly the title and abstract parameters, as indicated above, and manual screening was conducted in databases and journal with null results in these parameters for Annals of Dyslexia, SpringerLink, JSTOR, and Dyslexia. At the end, this resulted in a reduction of the volume of records from 76693 to 196. The RefWorks citation manager was then configured to perform a search for duplicates, first per journal or database folder and then in general. The results indicated that there was a total of 17 duplicates per database or journal and 24 in general. Furthermore, 18 more duplicates were detected in a manual review. The number of matches had previously been partially checked during the search as described in the method development. However, it is important taking into account that these number were prior to setting the search parameters and closing the number of records reflected in Table 2.

The screening procedure continued by reviewing each resource, starting by re-reading the title, then the keywords. If doubts remained about its suitability, a search for the key words in the resource was carried out: dyslexia, bilingual, bilingualism or foreign with an automatic tool (Ctrl + F). Then a reading of the abstract and in some cases of the conclusions was carried out, in the registers that allowed it. In other cases, such as theses, a review of the Table of contents was carried out. The final objective was to check if they fulfilled or not the inclusion or exclusion criteria of the review that we have previously detailed.

Despite being a systematic review there are inclusion and exclusion criteria that cannot be proposed due to the lack of specific studies that exist in this field, where most researchers conclude their studies by indicating that studies with a larger sample, with a longitudinal study or applying the same protocols to another type of sample are needed. It is for this reason that the current search cannot be limited to written articles in a particular language or a search based on a specific second language learning, as well as researches which include only empirical studies or articles with peer reviewers. This is also the reason why searches with title or abstract filtering are so limited for bilingual teaching and almost non-existent for

CLIL methodology. However, the other reason might be the choice error in the key words and this would imply an information bias in the review.

Moreover, the pyramid search proposed responds to this characteristic, because CLIL methodology is part of bilingual teaching and bilingual teaching arises as a response to the learning of a foreign language. Therefore, research has been carried out firstly on a foreign language learning and then on bilingualism. In addition, as Cline (2000) quoted, research with dyslexia had been focused on monolingual individuals and bilingualism had not been investigated (Cline, 2000).

5.RESULTS

The results will be presented according to the research questions and therefore grouped into different thematic areas: teacher training, dyslexia assessment, performance skills, factors that affect learning process and the methodology applied.

5.1 How is the literacy and language performance of the dyslexic learners in the learning of a second language?

The comparative studies which are included in Table 3 are fundamentally based on the investigation of participants' performance in the skills of reading, listening, writing, comprehension, spelling, decoding or discrimination of sound as well as phonological processing or morphological abilities, the main outcomes of which are the positive influence of bilingualism on the performance of bilingual learners with dyslexia. As shown by De Bree & Unsworth (2014) who have confirmed the benefits to English proficiency that have been offered by previous studies, such as Van der Leij et al., (2010) and Verspoor et al., (2010) as cited in De Bree & Unsworth (2014), and Vender et al. (2021). Indeed, students with dyslexia at bilingual schools scored significantly higher on language and literacy tasks than their dyslexic peer in regular schools. It is also demonstrated that the students' skills are

better in the experimental group than in the control group with absolutely all dyslexic sample in control and in experimental groups (Abu Rabia & Salfety, 2021).

Author/s, Year	Country	Second Language	Type	Brief Summary
Lingrén & Laine, 2011	Finland	Swedish	QT	Comparative study about performance of multilingual Finnish university students with suspected dyslexia and without.
Joshi, Padakannaya, & Nishanimath, 2010	South India	Kannada English	QT	This study analyses the performance of bilinguals in Kannada and English. Comparative study between control group and dyslexic and hyperlexic individuals.
Anderson, Lin, & Wang, 2013	USA	Mandarin	QT	Comparative study of ability to discriminate native and novel language from non-linguistic sounds.
De Bree & Unsworth, 2014	Netherlands	English	QT	Comparative study of oral language and literacy skills in dyslexic and non-dyslexic pre-university students.
Abu Rabia & Salfety, 2021	Israel	English	QT	The purpose of this study is to examine the improvement in English as a foreign language among different levels of dyslexia, which were established taking into account Arabic mother tongue: severe, moderate and light.
Vender et al., 2021	Italy	Italian	QT	The goal of this study is to investigate how bilingualism interacts with dyslexia in the students' performance.
Romonath, Wahn & Gregg, 2005.	Germany	English German	QT	It is a pilot study whose purpose is discovering any relationship between phonological and orthographic processes of reading and spelling in German and English.
Scott, 2005	USA	Non-defined	QT	It is the first study to analyse the attitudes and perception about the process of learning a foreign language taking into a count dyslexic.
Marín-Ospina et al., 2019	Colombia	English	D	The goal of this study is to identify absence or presence of dyslexia by subtractive bilingualism.

Note. QT = Quantitative

Table 3. Outcome of systematic review about performance and skills in dyslexic learners.

5.2 What are the methodological recommendations to cater for learners with dyslexia in a CLIL classroom?

Negative experiences in foreign language learning for individuals with dyslexia were higher according to Scott (2005). Despite the inconsistency of the outcome, the author of this paper states that it seems that learning for dyslexic students is harder, highlighting the importance of the instructor and the methods used. This idea about methodology and attitude of instructors is also stressed by other authors such as Kormos, Csizér, & Sarkadi (2009), Scott, Bell & McCallum (2009) and the apparently reason is enthusiasm in language learning which is a motivational factor. Therefore, dyslexic students' difficulties in language learning cause a negative experience in these learners and consequently a poor level of motivation. The attitudes of teachers employing motivational strategies (Kormos et al., 2009) and fostering experiences of success in them will enhance motivation through self-esteem and positive attitudes (Kormos & Csizér, 2010). In another study by Csizér, Kormos, & Sarkadi, 2010, they also stress the loss of interest in learning English because of the difficulties that they experience. In contrast, it shows how learning more transparent orthographies promotes learners' intrinsic interest in these languages. Scott et al. (2009) also confirmed that weaker skills produced negative experiences and stressed the importance of effective instruction for students (Kormos et al., 2009) who have learning disabilities and, of course, sensitivity and awareness of the teachers (Szaszkiwicz, 2013). In addition, Young (2015) showed that self-esteem of dyslexic participants was lower than non-dyslexic.

After having outlined the reasons why it is appropriate to use motivational strategies, we continue with the rest of registers in Table 4 whose focus is on the most appropriate methodological approach for students with learning disabilities, especially dyslexic pupils. Sparks et al. (1991) espouse the Orton-Gillingham approach, a methodology that has proven successful over the years with students who have difficulties in reading, writing and spelling in their native language. Moreover, this “natural” approach to language learning, whose focus is multisensory, structured language, enables students to see, hear and do the language at the same time (Sparks, Ganschow, Kenneweg, & Miller, 1991). This theory described by Sparks et al. (1991) is not confirmed by scientific studies. Whereas the studies

conducted by Mohamadzadeh et al. (2020) do yield data on multisensory approach whose outcome reveals that instruction in second language enhance students' performance in both languages applying multisensory phonics instruction (Mohamadzadeh, Sotoudehnama, Marandi, & Akhavan Tafti, 2020) and by Ganschow & Sparks (2000) mentioned multisensory seems to benefit at risk students. However, this approach has already been mentioned as beneficial without empirical evidences (Crombie, 2000; Crombie, 1997). In addition, explicit instruction has also been shown to facilitate learning for dyslexic students (Tribushinina, Berg & Karman, 2021) and the relation of self-efficacy and appropriate foreign language instruction in dyslexics have also a positive scored (Gosiewska-Turek, 2022).

Another useful, interesting and beneficial tool, as the evidence shows, is the use of new technologies. For example, ICT in art classroom (Gallacher, 2022), an intervention programme with computer software specifically designed (Pfenninger, 2016), technologically- based gamification (Chan, Santally, & Whitehead, 2022). Audiobooks as electronic resources also have evidence of positive benefices supporting dyslexic learners. Besides, Sigh & Alexander (2022) pretends to be a guide to those who are interested in adopting a wide range of strategies.

Indeed, there is a high probability for inter-lingual transfer when there is an adequate teaching centred on the learner's needs and the necessary reading and writing skills in the second language are developing (Feder & Abu-Rabia, 2020). In order to develop these skills, one common measure is providing extra time for students (Rontou, 2012; Crombie, 2000), in fact, it is a common adaptation in Spanish schools. Furthermore, Cline (2000) reminded that one of the huge challenges for teachers is finding effective strategies to support families in the active participation of reading at home because there are programmes that show how reading brings improvements in students with dyslexia. This fact could be based on the functional changes that occur in the brain during the reading process (Kermani, Verghese, & Vidyasagar, 2018). Another challenge is to reduce the number of students per group in order to increase the time the teacher can spend with each student (Rontou, 2012; Kormos et al., 2009; Mohamadzadeh et al., 2020), these students need more time and attention and they choose reduce their break in order to receive that attention (Yamasaki & Luk, 2018).

Author/s, Year	Country	Second Language	Type	Brief Summary
Cline, 2000	-	-	RW	Cline reviews multilingualism and dyslexia in an attempt to identify the major challenges for researchers and teachers.
Rontou, 2012	Greek	English	QL	This article discusses differentiation of teaching methods and extra time in class for students with dyslexia that are learning a foreign language.
Kormos & Csizér, 2010	Hungary	English German	QT	The purpose of this cross-sectional study is to test the language learning motivation where the 20% of the sample is dyslexic. The questionnaire used was different for dyslexic and non-dyslexic.
Csizér et al., 2010	Hungary	English or German	QL	The main goal is to observe the dynamics of language learning motivation with dyslexia. The research use interview to analyse the participant.
Chan, Santally, Whitehead, 2022	Mauritius	French	M	Playful strategies are evaluated in this research through gamification.
Sigh & Alexander, 2022	-	-	RW	The main goal of this paper is to analyse the effects that audiobooks listening and print reading have on comprehension performance as well as the role of student characteristics, text features and contextual factors have in the outcomes.
Kormos et al., 2009	Hungary	English or German	QL	This interview study examines the experience of Hungarian dyslexic students during the language learning group and related to general behaviour the instructional methods and assessment techniques of their teachers,
Mohamadzadeh et al., 2020	Iran	English	QT	Multiple-case study focuses on examining the effects of the noted instruction on their native language and second language performance.
Pfenninger, 2016	Switzerland	German	QT	The goal is to discover the interrelation of motivation, autonomy, metacognition and English gains as a third language.

Feder & Abu-Rabia, 2020	Israel	English	QT	This research analyses the outcome to apply a foreign language method centred on the student's needs.
Scott, Bell & McCallum, 2009	USA	Non-defined	QT	The focus of this research is to investigate the relation of foreign language attitudes and perception to reading and spelling skills.
Gallancher, 2022	Spain	English	DD	It is a master's dissertation that provides an approaching to dyslexia through ICT during the Art CLIL classroom.
Sparks et al., 1991	Non-defined	Spanish	D	This article features on Orton-Gillingham method which is a multisensory, structured language approach and the practical guide to learning disabled students.
Young, 2015	Wales	Welsh	M	It is a thesis with different studies. One interesting issue in this review is the focus on dyslexic and motivation.
Downey, Snyder, & Hill, 2000	USA	Spanish Latin	QT	This research shows how modified classes enable dyslexic students to achieve university studies in a foreign language.
Tam & Leung, 2019	China	English	QT	This study applies a 40-week intervention programme and compares its results with those of the control group.
Crombie, 2000	-	-	D	Crombie describes a wide variety of strategies to learn a second language.
Tribushinina et al., 2021	Netherlands	English	QT	This study compares implicit instruction versus explicit instruction in order to discover what has less difficulties in the foreign language learning.
Szaszkiewicz, 2013	Norway	English	T	This thesis provides a theoretical contribution that serves as a contextualisation. It also carries out a qualitative study based on students' experiences of learning English as a second language.
Crombie, 1997	UK	French	QT	Comparative study which assesses the four areas of speaking, listening, reading and writing. In addition, recommendations are supported.
Ganschow & Sparks, 2000	-	-	RW	The line of research is based on the difficulties of students with learning disabilities in learning a foreign language.

Gosiewska-Turek, 2022	Poland	English	M	The focus of this article is to analyse the interdependence among dyslexia, self-efficacy and foreign language instruction.
Yamasaki, & Luk, 2018	USA	English	QT	The main goal of this paper is to examine the association among language experience and elementary student's eligibility for special education.

Note. QT = Quantitative; QL = Qualitative; M = Mixed; D = Descriptive studies; RW = Review; DD = Didactic Master's Dissertation.

Table 4. Outcome of systematic review about methodologies and programmes applied in dyslexic learners.

5.3 What are the brain factors that influence the information and communication process in dyslexic learners?

Knowing the causes of a problem is the key to solving it and achieving success. For that reason, it is important to know how dyslexic students' brains react and what problems they face. These issues are the focus of the studies listed in Table 5 where problems in decoding and orthographic representation of the second language are shown in the study (Commissaire & Demont, 2022). As well as phonological processing deficits, which persist into adulthood, although modified classes enable dyslexic students to achieve university studies in a foreign language (Downey et al., 2000).

Furthermore, the non-word repetition test reveals that dyslexic students have phonological memory deficit compared with non-dyslexic participants. Serial order memory is also affected in dyslexic students, especially in spoken digits and spatial location task (Cowan et al., 2017). This fact should be considered in the design, methodology and strategies that are adopted for second language teaching taking into account the problems for memorizing (Kormos et al., 2009).

In addition, another area of interest is brain activation. Functional magnetic resonance imaging shows that there is a highly right lateralization for stimuli that required phonological processing in bilingual dyslexic adults compared to the activation of monolingual adults. This fact helps to understand why dyslexics are atypically lateralized, i.e., there is a predominance of one side of the brain (Park, Badzakova-Trajkov, & Waldie, 2012; Johanson, 2006). As well as, visual capacity has also an influence in left and right visual hemifields. Due to reading has a deep influence on brain activation with a predominance of one or other side (Kermani et al., 2018). Besides, it is shown by Van De Craen & Surmont (2017) that implicit motor learning has a stimulating effect on the cerebellum.

Moreover, Balasubramanian (2019) described acquired dyslexia in people with aphasia. This description is based on the damage of the brain and it is classified as central or peripheral dyslexia. For example: neglect dyslexia (peripheral) is related to a damage in right hemisphere.

Author/s, Year	Country	Second Language	Type	Brief Summary
Cowan et al., 2017	-	-	QT	This study assesses the memory of participants with and without dyslexia.
Kermani et al., 2018	Australia	English Farsi Arabic Hebrew	QT	Researches compared visual capacity in the left and right visual hemifields whose outcome is no asymmetries between hemifields in bilingual readers while it exists in the dominant hemisphere in languages that read from left to right or right to left.
Commissaire & Demont, 2022	France	English	QT	The purpose of this research is to analyse the reading performance of French students in English.
Park et al., 2012	New Zealand	English	QT	The focus of this study is to identify the neural substrates of an adult English-German bilingual with dyslexia.
Johansson, 2006	-	-	RW	Wide issues are reviewed by Johansson such as brain activation, hemispheric asymmetry, brain plasticity, hemisphere subspecialisation in language, dyslexia and second language learning.

Van De Craen & Surmont, 2017	-	-	D	The paper discusses about language learning and the influence which has subject matter. Moreover, details about CLIL and dyslexia are found.
Balasubramanian, 2019	UK	English	T	Chapter 5 of this thesis describes difficulties in bi-literate bilingual people with aphasia

Note. QT = Quantitative; RW = Review.

Table 5. Outcome of systematic review about factors that have influence in the information process and communication.

5.4 When does dyslexia arise, who can detect it, what tools are used to identify dyslexia in bilingual students and what difficulties do they assess?

Knowing the problems caused by dyslexia also helps to develop appropriate tools for early identification. Table 6 presents a number of studies aimed at assessing dyslexia in bilingual learners, they are discussed below.

De Bree, Van den Boer, Toering & Jong (2022) highlighted that dyslexia can be diagnosed late for two reasons: late-emerging or late-identified problems. Whereas dyslexia could also be undiagnosed (Deponio, Landon, Mullin, & Reid, 2000) specially in children who speak English as an additional language (Hutchinson, Whiteley, Smith, & Connors, 2004), this idea is also supported by Frederickson and Frith (1998) when they mentioned that IQ-achievement test could be insufficient to identify children with specific learning difficulties. In addition, the maximum effects for intervention programmes are shown in early identification of dyslexia (Hutchinson et al., 2004)

In order to avoid undiagnosed dyslexia, the screening procedures in schools have been adequately developed for monolingual learners. However, they have not been implemented for bilingual learners and they also need to be (Deponio et al., 2000). Moreover, bilingual students could benefit from the same early screening procedures which are used for monolingual students (Everatt, Smythe, Adams, &

Ocampo, 2000; Durkin, 2000). Additionally, tools to identify difficulties in literacy acquisition of bilingual students should be produced (Smythe et al., 2008). In this line dynamic reading test could be a promising tool for dyslexia diagnosis (Elbro, Daugaard, & Gellert, 2012) or phonological skills (Durkin, 2000). Other difficulties assessed: the ability to associate sounds with letter sequences (Smythe et al., 2008), reading disabilities (Geva, 2000). These difficulties can be detected and evaluated by the teacher and those students will be deeply assessed by the school counsellor and medical practitioners.

In addition to assessing students' difficulties and diagnostic skills. The most beneficial assessment process for learners seems to be dynamic assessment that allows the teacher and student to interact continuously and to discover learning problems (Schneider & Ganschow, 2000). Besides, the evaluation of instruments and systems is necessary, as Fawcett and Lynch (2000).

Author/s, Year	Country	Second Language	Type	Brief Summary
Deponio et al., 2000	Scotland	English	P	An audit whose outcome reveals an extremely low incidence of suspected dyslexia among bilingual students.
Durkin, 2000	-	English	RW	The current review is focused on the phonological approach to the identification of dyslexia. The research considered English as a second language in bilingual or multilingual.
Frederickson & Frith, 1998	UK	English	QT	This article includes three studies. First one based on children with specific learning difficulties, second one based on children who have English as an additional language, and third on that is a comparison of word and text reading.
Everatt et al., 2000	UK	English	QT	This study compares the results of dyslexia screening test in monolingual and bilingual students.

Hutchinson et al., 2004	UK	English	QT	This longitudinal study compares development of phonological awareness skills in relation to progress of reading learning in bilingual students and their peers.
Fawcett & Lynch, 2000	UK	English	QT	A case study which assesses of the adequacy and effectiveness of RITA system (Reader's Interactive Teaching Assistant)
Smythe et al., 2008	-	-	QT	This study examines the measures of word-level literacy and undertook task which demanded the ability to associate sounds with letter sequences and simultaneously, involving visual, auditory and phonological-processing skills.
Schneider & Ganschow, 2000	-	English German	D	This article espouses and discusses about the concept of dynamic assessment and instruction related to the instruction and assessment of at risk second language students.
Geva, 2000	-	-	D	Geva discuss about different beliefs concerning to the diagnosis of reading disability in bilingual and multilingual students.
De Bree, Van den Boer, Toering & de Jong, 2022	Netherlands	Non-defined	QT	The research question and the focus of the research is whether this is due to a problem of late-emerging or late-identified, when dyslexia is diagnosed late.
Elbro et al., 2012	Denmark	Danish	QT	This study examines the relationship among poor second language proficiency, limited schooling or poor reading ability for the hardest diagnosed of dyslexia.

Note. QT = Quantitative; P = Pilot study; RW = Review; D = Descriptive studies.

Table 6. Outcome of systematic review about identifying and assessing dyslexia.

5.5 Are CLIL teachers methodologically prepared to cater for diversity?

On the one hand we have dyslexic learners, on the other hand we have the teachers who usually have to deal with this situation in the mainstream classroom. Therefore, researches focusing on awareness and training of teachers dealing with bilingual and dyslexic learners mainly concludes that there is scope for improvement in teacher training (Nijakowska et al., 2018; Košak-Babuder & Jazbec, 2019; Nijakowska, 2018; Jalali-Moghadam & Hedman, 2016; Rontou, 2012). Teachers are theoretically aware of dyslexia but do not have the tools to make the necessary methodological adaptations for dyslexic students. Indeed, Jalali-Moghadam & Hedman (2016) highlighted the crucial role of native language teachers in the identification of dyslexia in bilingual learners, as we have seen above, the diagnosis or identification of dyslexia in bilingual learners is more complicated than the identification of dyslexia in the first language. Moreover, the teacher's support to a monolingual dyslexic is the same as the one provided to a bilingual dyslexic.

Another interesting perspective is related to the perception that teachers have about their readiness for successful inclusion which is influenced by direct contact and personal involvement with dyslexic students (Nijakowska et al., 2018). However, Rontou (2012) stressed that teachers' training is necessary for secondary school teachers of all subjects and it should be specific to each subject. More specific details on the studies screened are outlined in the Table 7.

Author/s, Year	Country	Second Language	Type	Brief Summary
Nijakowska et al., 2018	Greece Cyprus Poland	English	QT	The purpose of research is to analyse the preparation of teachers to include dyslexic learners in mainstream classroom, whose conclusion was the necessity to professional training to deal with these cases.
Košak Babuder & Jazbec, 2019	Slovenian	German English	QT	The aim of this research is to review the awareness of dyslexia of in-service and pre-service teachers.

Nijakowska, 2019	Greece Cyprus Poland	English	M	This study made a conceptual framework of the capacity of the teachers to dealt with attention to diversity. In addition, it is presented the Nijakowska, Tzagari and Spanoudis' study of TEPID (2018) during the paper.
Jalali-Moghadam & Hedman, 2016	Sweden	Swedish	QL	This article transcribes the interviews of teachers in relation to bilingual dyslexic learners. It is concluded with the idea of the collaborative work with mother tongue teachers facilitates dyslexia identification in bilingual learners.

Note. QT = Quantitative; QL = Qualitative; M = Mixed.

Table 7. Outcome of systematic review about teacher knowledge and training about dyslexia.

6.DISCUSSION

The increase of the bilingual population in the world is a manifest fact, indeed in Europe the study of a second language is compulsory in most curricula. Nonetheless, studies on the attention to diversity in the bilingual population have not grown hand in hand and, as Joshi, Padakannaya and Nishanimath (2010) point out, more studies are needed about reading problems in the bilingual population with different orthographic distances. Likewise, the procedures of educational institutions which consider that a dyslexic learner is unable to acquire a second language satisfactorily have also not progressed and as a consequence they do not provide support in learning a foreign language to learning disabled students although there is empirical evidence about the positive effects in dyslexic students in foreign language learning when skills assessment has been carried out. This issue is shown by additional evidence, for instance, Palladino et al. (2013) claimed that in Italian law (law 170, October, 2010) children with dyslexia may be completely exempted from foreign language learning. Currently this law is still in force and students with dyslexia do not attend foreign language classes.

This belief from the late 1990s (Peer, 1999) is still held by teachers, especially those whose mission is the elaboration of support programmes for students with special educational needs in Spain. In contrast, the researches which are mentioned above have already shown positive results (Downey et al., 2000). For example, the recommendation to apply multisensory methodology that was made by Crombie (2000) has been proved by Mohamadzadeh et al. (2020) or by Nijakowska (2010) as cited in Tribushinina et al. (2021). It is therefore important for teachers to be aware and sensitive about the situation of these students, as Scott (2005) pointed out. This will enable them to support their learning by taking their needs into account. In addition, it will be important to prioritise language training in special needs teachers as it has mentioned by Johansson (2006). It is also important the second language training according to Nijakowska et al., 2018; Košak Babuder & Jazbec, 2019 although it is also interesting to reflect on the training that the rest of the teachers have on dyslexia, because language is not their speciality in their university studies and they also teach dyslexic students. In fact, content teachers in CLIL teach their specific contents using the second language as a vehicular language, as a consequence, they should be trained to implement appropriate learning strategies to achieve success with dyslexic learners.

Furthermore, lack of awareness and sensitivity provokes students with dyslexia not to feel included in class as well as feeling that their needs are not taken into account. In addition, students express a need to feel that they can succeed, a theory that has already been mentioned above as providing an increase in student motivation (Kormos & Csizér, 2010). They also require not to be compared and ridiculed in front of their peers (Szaskiewicz, 2013).

In order to consider their needs, multisensory methodology has been presented as suitable for this type of students. However, other methodological approaches such as content-based language learning, whose best-known approach is CLIL methodology, have not been studied in depth. Only one reference has been found (Van De Craen & Surmont, 2017), which cites implicit motor learning stimulates effect on the cerebellum.

Another evidence is the essential role that the special needs teacher has in support programmes and the necessity of collaborative work (Jalali-Moghadam & Hedman, 2016). Teamwork, project-based learning, and collaborative and cooperative work are methodologies used by these teachers and they are also used in CLIL together with other strategies such as scaffolding that would enable appropriate learning for this type of students. However, this has not been empirically proven and consequently, the lack of research in CLIL/bilingualism and dyslexia is a limitation of the current review.

In conclusion we can say that early identification of dyslexia and having the tools to assess dyslexia in bilingual students is essential for the effectiveness of the methodological tools and strategies to be implemented in the bilingual classroom. In addition, the recommended methodology with the best learning outcomes for dyslexic students is multisensory. Together with other strategies it has been shown that dyslexic students may perform better, although more research is needed as we will discuss below.

It is also recommended to incorporate the following measures in the protocols adopted for intervention:

- To give extra time in task, activities, projects or exam.
- To make a progressive introduction and to respect fixed structures. For example: introduction, new content, video, debate and games.
- To design the syllabus through the collaborative work of the whole educational team, in order to give a common structure to learning and where the common contents of each subject are worked on simultaneously, and the linguistic objectives are in accordance with those worked on in the second language and identical in all subjects.
- To use game, gamification or any strategies which imply playful work in order to increase the motivation to learn the second language.
- Personalised attention and positive reinforcement.

Although this protocol is generalisable, the limitations of this review need to be borne in mind. One of them is related to second language learning in Spanish-speaking learners because Spanish participants in eligible articles were not representative (Marín-Ospina et al., 2019). Considering that there seem to be different outcomes depending on the type of languages, for instance, more transparent languages or orthographies produce fewer learning difficulties for dyslexic learners (Miles, 2000), and these also increases their motivation, than those considered opaque (Csizér et al., 2010. As an example, Romonath et al. (2005) interchange native language and second language in the studies they carry out and describe in “Phonological and Orthographic Processes of Reading and Spelling in Young Adolescents and Adults with and without Dyslexia in German and English: Impact on Foreign Language Learning”.

Research outcomes should be examined in terms of whether the language under observation is transparent or opaque. Because the application of the protocol, programme intervention or support strategy used in that experimental group, only it will be generalisable to those equivalent language and should be applied with caution to other languages. Even if the programme is only to be taken as a reference for the creation of a new one. In addition, this review revealed a lack of studies on learning a foreign language in Spanish-speaking countries.

In addition, there is another limitation which is repeatedly mentioned by several authors and this is the lack of a representative sample. They all agree on the need to create future lines of research that include the application of the programme or the comparative study carried out on a more open sample of the population that includes more geographical variability, as well as a wider range of ages (Abu Rabia & Salfety, 2021)

Given the high value of multilingualism and plurilingualism in the European Union and the globalized world, competence in a foreign language has a vital role in education programmes. As a consequence, this should be reflected in future research, taking as a reference the lines drawn by the previous bibliography, which is summarised as follows.

- To investigate the language learning process of dyslexic students in all European countries with a global perspective.
- To analyse particular dyslexic manifestations in the different language (Miles, 2000).
- To analyse how levels of dyslexia are related to language learning process and language learning motivation.
- To carry out longitudinal studies in order to observe the sample in another context.
- To carry out longitudinal studies of the same participants to identify differences in the inter-relationships over time (Durkin, 2000).
- To investigate screening procedures for dyslexia to avoid being undiagnosed.
- To investigate about identification of alternative predictors or reasons for literacy difficulties in a wide variety of language (Smythe et al., 2008).

In addition to the lines of research set out by the authors mentioned above, it is necessary to go deeper and begin to carry out comparative studies on CLIL methodology and dyslexia. It is also necessary to accomplish cross-country collaborations in order to obtain the wide spectrum of samples that have been described as essential and it is stressed by Kormos & Csizér (2010), for example.

Spain, as a country, should not forget that studies are needed where the mother tongue of the participants is Spanish and the second language is English, because the tendency of our legal representatives is to increase the number of bilingual schools. Due to this situation and in order to guarantee equal access to education, we must be aware of the difficulties that these students have in learning English, French or German as a second language (languages offered in bilingual programmes in monolingual Autonomous Communities in Spain where English is usually the main second language), as well as the learning of Galician, Basque, Catalan or Valencian in bilingual Spanish Autonomous Communities. Besides, it is also crucial to be aware of these difficulties in order to support measures that these students should receive. Likewise, teacher training and awareness of dyslexia

should be assessed, as well as the capacity for collaboration between language teachers and content teachers.

Furthermore, it is important to stress that the Spanish studies could also contribute to amplify knowledge of the characteristics of dyslexia in other languages, in this case Spanish, Galician, Basque, Catalan and Valencian. As well as to increase the knowledge of the second language in students who have Spanish as their mother tongue, only this sample has been found in the study carried out in Colombia and its sample is very small (Marín-Ospina et al., 2019). As a consequence, these studies would help to confirm or disprove theories already put forward for other languages and whose studies are recommended by researchers in order to amplify knowledge and to be able to improve and/or develop appropriate support strategies.

Finally, the importance of the financial support for these studies and the involvement of the respective governmental representatives in them should be emphasised. Thus, initiatives such as the Dyslexia@ Work on Erasmus Project³ have been able to arise.

³ Details of the Project could be amplified here:
<https://www.bdadyslexia.org.uk/about/bda-projects/dyslexia-work-an-erasmus-project>

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7.1 Databases and journals links.

Annals of dyslexia (Online)

<https://www.proquest.com/publication/38024?OpenUrlRefId=info:xri/sid:primo>

Catálogo general de la Universidad de Córdoba.

https://mezquita.uco.es/discovery/search?vid=34CBUA_UCO:VU1&lang=es

Catálogo general de la Universidad de Granada.

https://granatensis.ugr.es/discovery/search?vid=34CBUA_UGR:VU1

Dyslexia (Chichester, England: online) by British Dyslexia Association

<https://onlinelibrary.wiley.com/search/advanced?publication=10990909&text1=#pane-5aab5ec1-e445-4b30-9dd1-5d8bd864384601>

Google Scholar

<https://scholar.google.es/>

International Journal of Bilingual Education and Bilingualism

<https://www.tandfonline.com/toc/rbeb20/current>

JSTOR

<https://www.jstor.org/>

ProQuest

<https://www.proquest.com/advanced>

SCOPUS

<https://www.scopus.com/search/form.uri?display=basic&zone=header&origin=#basic>

SpringerLink

<https://link.springer.com/>

WOS

<https://www.webofscience.com/wos/alldb/basic-search>

7.3 Links to RefWorks folders.

Annals of dyslexia (Online)

<https://refworks.proquest.com/public-share/BSMmXv2qVWHHe5U1rN1M0CQFB1kLFcfMAWk7foeP6xQf>

Catálogo general de la Universidad de Córdoba.

<https://refworks.proquest.com/public-share/k4IKT1VUqZnQ1LbyLYiahN917uiyUafhbGluV1blwBL>

Dyslexia (Chichester, England: online) by British Dyslexia Association

<https://refworks.proquest.com/public-share/zrjow3GSOGe5qrEsGu2yC9DDeB7L9qWVsFglqM3J52ib>

International Journal of Bilingual Education and Bilingualism

<https://refworks.proquest.com/public-share/1ONLh9IjM91IOfCRlopShXdRccsHxUTB2USI5urMNBhZ>

JSTOR

<https://refworks.proquest.com/public-share/6ivH6WqcnxKCBqADRCNd5KSGsMImCMVtHsCNA93Et50J>

ProQuest

<https://refworks.proquest.com/public-share/GRJ8tbIhfP6fJ25rNVY6kP0X2SWF9TWX6iBICHXRY6kT>

SCOPUS

<https://refworks.proquest.com/public-share/xgz1hDHCWGcmT193WgSmvFfaXLIHuEJ9v7KRAdMicxjl>

SpringerLink

<https://refworks.proquest.com/public-share/kY0eCfG0UMtnJzWTDIMaCLilp5FzMcuutzEXQoyLb5s9>

WOS

<https://refworks.proquest.com/public-share/4ZTgvyEL0C9yQUgnkrJXQaKXWmB3LEe9zBw7k20hpfDF>

APPENDICES

Appendix I: Excel

Transcript of the meaning of colour in excel.

	PROFESORES	
	EVALUACIÓN	
	METODOLOGÍA	MOTIVACION
	CASUÍSTICAS	
	DESCRIPCIÓN	
	HABILIDADES	
	PERFORMANCE	

Screenshot of Dyslexia

	Titulo	Notas	Incluir
1	An audit of the processes involved in identifying and assessing bilingual learners suspected of being dyslexic: a Scottish study		SI
2	Dyslexia and bilingual children—does recent research cause identification?		SI
3	Identifying dyslexia in bilingual children: a phonological approach with inner London/Suhami speakers		SI
4	Dyslexia and hyperlexia in bilinguals	Idea de que una persona puede ser disléxica en una lengua y no en otra. Fallos ortográficos similares en ambos idiomas, revisar de nuevo para más ideas.	SI
5	Dyslexia screening measures and bilingualism	La evaluación temprana de medidas sería beneficiosa	SI
6	Multilingualism and dyslexia: challenges for research and practice	Estrategias para la enseñanza bilingüe con dislexia. ¿grandes retos para investigar o trabajar?	SI
7	Dyslexia may show a different face in different languages	Dificultades según país. Puede ayudarle a soportar la idea de que cada lengua es diferente.	SI
8	Short-Term Memory in Childhood Dyslexia: Deficient Serial Order in Multiple Modalities	Problemas de memoria asociados a la dislexia.	SI
9	Native Children with Dyslexia are also Poor in Reading English Words, But Accurate in Reading English Pseudowords	Clave en el título, revisar en profundidad	SI
10	Native and Novel Language Prosodic Sensitivity in English-Speaking Children with and without Dyslexia		SI
11	Dyslexia and multilingualism	Deficit en el conocimiento de la estructura fonológica y morfológica de los dos lenguas. Son incapaces de superar con rigor académico lo que se espera de ellos a pesar de que den la impresión de que académicamente pueden. SON MÁS LENTOS EN DESCODIFICAR EN AMBOS IDIOMAS. LA FALTA DE AUTOMATISMO ES UNO DE LOS PROBLEMAS CENTRALES QUE EXPERIMENTAN LOS APRENDICESOS BILINGÜES.	SI
12	Attentional asymmetry between visual hemifields is related to bilateral direction of reading and its implications for debate on cause and effects of dyslexia	In conclusion, our study has shown further that there is a close association between visual attention and reading	SI
13	Investigating the reading aloud and silent reading in typically developing readers and dyslexic adolescents from grades 4 to 9	Primer estudio que estudia las dos variables de lectura. Se confirma hipótesis. Además se ve que a pesar del pobre vocabulario son capaces	SI

Idea super importante a recoger:
Que los estudios son limitados y específicos para la zona estudiada dado que los cambios podrían afectar en el aprendizaje de la persona que tiene dislexia (artículo 6). (Idea de la influencia de las lenguas artículo 10)

En el 2000, llevaban dos décadas estudiando la dislexia centrada en la parte morfológica; a partir de allí se empieza a estudiar cómo afecta en el aprendizaje de un segundo idioma aunque los estudios sobre enseñanza bilingüe son escasos y casi inexistentes para la metodología CLIL.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
18	18	Investigating L2 reading aloud and silent reading in typically developing readers and dyslexic adolescents from grades 6 to 9	2011 Primer estudio que estudia las dos variables de lectura. Se confirma hipótesis. Además se ve que a pesar del pobre vocabulario son capaces de construir representaciones ortográficas en L2 que les ayudan a leer. 2019	SI												
19	19	Evaluation of the effectiveness of a literacy intervention programme on enhancing learning outcomes for secondary students with dyslexia in Hong Kong	2019 Más tiempo para practicar las estrategias aprendidas. Intervención temprana. Revisar en profundidad ya que abarca tanto estudiantes como profesores, resultados interesantes.	SI												
20	20	The early identification of dyslexia: Children with English as an additional language	2019 Diagnóstico más complejo para aquellos que aprenden otro idioma, inglés.	SI												
21	21	Systematic identification and intervention for reading difficulty: case studies of children with L2	2019 Conclusiones limitadas por la muestra pero muy útiles	SI												
22	22	Predictors of world-level literacy amongst Grade 5 children in five diverse languages	2019 assessment of world-level literacy skills and a phonological perspective of dyslexia may not be universal	SI												
23	23	Dynamic assessment and instructional strategies for learners who struggle to learn a foreign language	2019 La importancia del diagnóstico en la enseñanza de una L2 al estudiante disléxico y otros estudiantes de riesgo. El artículo sugiere que un diagnóstico fiable de dislexia entre los niños puede lograrse examinando las diferencias de lenguaje en varios índices de habilidades básicas de lectura como la comprensión lectora, y no notando un hueco significativo entre el nivel de comprensión y el nivel de lectura.	SI												
24	24	Issues in the assessment of reading disabilities in L2 children—beliefs and research evidence	2019 Problemas y soluciones que deberían de ser aplicadas para saber qué hacer.	SI												
25	25	Dyslexia and the learning of a foreign language in school: where are we going?	2019 Año 2000, revisar si se ha hecho posteriormente. Ideas para aumentar la fase de contextualización con los problemas que se presentan. Idea de investigación que se propone en alumnado español que aprende inglés.	SI												
26	26	The Effects of Specific Learning Difficulties (Dyslexia) on the Learning of a Foreign Language in School	2019 Crombie propone replantearse la idea del aprendizaje de una segunda lengua en este alumnado. Las actitudes positivas no mejoran el éxito, MIRAR SI OTRAS TÉCNICAS SI. Incluye recomendaciones en el aprendizaje de una segunda lengua.	SI												
27	27	Contradictions around differentiation for pupils with dyslexia learning English as a Foreign Language at secondary school	2019 El artículo valora los diferentes métodos de enseñanza en el alumnado con dislexia para aprender una lengua extranjera. Argumenta que las diferencias surgen por falta de conocimiento, políticas no claras donde hay exceso de alumnado y poco tiempo. La importancia del tiempo extra. Ideas de cómo abordar los estudios, no sé hasta qué punto sé.	SI												
28	28	English as a foreign language teacher training needs and perceived preparedness to include dyslexic learners: the case of Greece, Cyprus, and Finland	2019 Analiza el efecto de las variables demográficas en la preparación que tienen los profesores para manejar la dislexia en clase. Concluyendo en la demanda de formación en los tres países.	SI												
29	29	Reflections on foreign language study for students with language learning problems: research, issues, and challenges	2019 Artículo con una gran revisión de documentación, sea estamentos interesantes a la hora de plantear los sujetos con riesgo y bastantes preguntas para las futuras investigaciones (2020), ¿Dios décadas después tenemos respuestas? Artículo para justificar la necesidad de seguir investigando.	SI												
30	30	Cognitive-linguistic performances of multilingual university students suspected of dyslexia	2019 Comparativo nivel universitario. Finés-sueco. Comparativa en la performance a base de baterías. Los estudios coinciden en la hipótesis del déficit fonológico.	SI												
31	31	A stitch in time... Comparing late-identified, late-emerging and early-identified dyslexia	2019 Además este artículo sobre la idea de diagnosticar a tiempo.	SI												
32	32	College students with dyslexia: persistent linguistic deficits and foreign language learning	2019 Este estudio su referencia está en otro proyecto en la WOS, no lo tienes referenciado así que no sé por qué.	SI												
33	33	A comparison of the foreign language learning motivation of Hungarian dyslexic and non-dyslexic students	2019 Estudio comparativo donde el alumnado disléxico estudiado no forma parte del grupo bilingüe.	NO												
34	34	English as a Foreign Language in Bilingual Language-Minority Children: Children with Dyslexia and Monolingual Typical Readers	2019 El bilingüismo aparece como una línea de investigación futura para comparar las habilidades realizadas en este estudio con un nivel más avanzado o experto.	NO												
35	35	Auditory Temporal Processing Skills in Musicians with Dyslexia	2019 No aplicación al bilingüismo	NO												
36	36	Dyslexia-Augusti Does Surtorius describe a pattern of signs consistent with dyslexia?	2019 No aplicación al bilingüismo	NO												
37	37	Weaknesses in Semantic, Syntactic and Oral Language Expression Contribute to Reading Difficulties in Chinese Dyslexic Children	2019 Case Yip, V., & Matthews, S. (2007). Relative clauses in Cantonese-English bilingual children: typical challenges and processing motivations. Studies in Second Language Acquisition, 29(3), 277-300.	NO												
38	38	Function differ in children with typical development and dyslexia	2019 No cumple la condición de que la muestra sea bilingüe y disléxica.	NO												

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
18	18	Investigating L2 reading aloud and silent reading in typically developing readers and dyslexic adolescents from grades 6 to 9	2011 Primer estudio que estudia las dos variables de lectura. Se confirma hipótesis. Además se ve que a pesar del pobre vocabulario son capaces de construir representaciones ortográficas en L2 que les ayudan a leer. 2019	SI												
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21	21	Systematic identification and intervention for reading difficulty: case studies of children with L2	2019 Conclusiones limitadas por la muestra pero muy útiles	SI												
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25	25	Dyslexia and the learning of a foreign language in school: where are we going?	2019 Año 2000, revisar si se ha hecho posteriormente. Ideas para aumentar la fase de contextualización con los problemas que se presentan. Idea de investigación que se propone en alumnado español que aprende inglés.	SI												
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27	27	Contradictions around differentiation for pupils with dyslexia learning English as a Foreign Language at secondary school	2019 El artículo valora los diferentes métodos de enseñanza en el alumnado con dislexia para aprender una lengua extranjera. Argumenta que las diferencias surgen por falta de conocimiento, políticas no claras donde hay exceso de alumnado y poco tiempo. La importancia del tiempo extra. Ideas de cómo abordar los estudios, no sé hasta qué punto sé.	SI												
28	28	English as a foreign language teacher training needs and perceived preparedness to include dyslexic learners: the case of Greece, Cyprus, and Finland	2019 Analiza el efecto de las variables demográficas en la preparación que tienen los profesores para manejar la dislexia en clase. Concluyendo en la demanda de formación en los tres países.	SI												
29	29	Reflections on foreign language study for students with language learning problems: research, issues, and challenges	2019 Artículo con una gran revisión de documentación, sea estamentos interesantes a la hora de plantear los sujetos con riesgo y bastantes preguntas para las futuras investigaciones (2020), ¿Dios décadas después tenemos respuestas? Artículo para justificar la necesidad de seguir investigando.	SI												
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32	32	College students with dyslexia: persistent linguistic deficits and foreign language learning	2019 Este estudio su referencia está en otro proyecto en la WOS, no lo tienes referenciado así que no sé por qué.	SI												
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34	34	English as a Foreign Language in Bilingual Language-Minority Children: Children with Dyslexia and Monolingual Typical Readers	2019 El bilingüismo aparece como una línea de investigación futura para comparar las habilidades realizadas en este estudio con un nivel más avanzado o experto.	NO												
35	35	Auditory Temporal Processing Skills in Musicians with Dyslexia	2019 No aplicación al bilingüismo	NO												
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37	37	Weaknesses in Semantic, Syntactic and Oral Language Expression Contribute to Reading Difficulties in Chinese Dyslexic Children	2019 Case Yip, V., & Matthews, S. (2007). Relative clauses in Cantonese-English bilingual children: typical challenges and processing motivations. Studies in Second Language Acquisition, 29(3), 277-300.	NO												
38	38	Function differ in children with typical development and dyslexia	2019 No cumple la condición de que la muestra sea bilingüe y disléxica.	NO												

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
35	<i>Spelling and Morphology in Dyslexia: A Developmental Study Across the School Years</i>	No cumple la condición de que la muestra sea bilingüe y disléxica	NO												
36	The cerebellar deficit hypothesis and dyslexic tendencies in a non-dyslexic sample	Centrado en la parte fisiológica y con tan solo a participantes bilingües de 22	NO												
37	Predicting dyslexia in Arabic-speaking children: Developing instruments and estimating their psychometric indices	Bilingüismo solo aparece en la revisión literaria	NO												
38	Problems in the definition of dyslexia	Origen de la dislexia. Puede servirte para completar info inicial	NO												
39	Pragmatic competence and its relationship with the linguistic and cognitive profiles of young adults with dyslexia	Bilingüismo es criterio de exclusión del estudio	NO												
40	Working Memory Limitation, Phonological Deficit, Sequential Disorder and Syntactic Impairment in a Child with a Severe Developmental Dyslexia	allowed us to assume that the child had at the same time a phonological/working memory/sequential impairment and a syntactic disorder Estudio de un solo caso, muestra poco aplicable así como los resultados porque no saben qué parte es debido al origen y cuáles consecuencia debido a la propia detección en años	NO												
41	Developmental dyslexia in Hindi readers: consistent sound-symbol mapping as an asset in reading? Evidence from phonological and visuospatial working memory	Bilingüismo no es el centro del estudio	NO												
42	Multilingualism and dyslexia: including the teaching of modern foreign languages	Presentación de datos de una conferencia (1) y presentación de artículos (2) Parte 1 y 2, dos hojas. Posible no incluirlo	NO												
43	Reading Comprehension Difficulties in Chinese-English Bilingual Children	La muestra que presenta dislexia es poca ya que se centran en bajo nivel. Lo que argumentan ya lo tenemos en otros estudios más focalizados por lo que el artículo se excluye	NO												
44	Comparing Bilingual to Monolingual Learners on English Spelling: A Meta-analytic Review	La dislexia solo aparece en el nombre de la revista. Algunos artículos en inglés, otros en español, pero no bilingües	NO												
45	What can Parents' Self-report of Reading Difficulties Tell Us about Their Children's Emergent Literacy at School Entry?	Bilingüismo es criterio de exclusión del estudio	NO												
46	Persistent readers? A meta-analysis exploring the reader's learning milieu by targeted counselling	No cumple criterio bilingüe, además de dislexia en muestra relevante	NO												
47	How persistent are phonological difficulties? A longitudinal study of reading-retarded children	Definición de dislexia. Pero no habla claramente de dislexia en la muestra antes del estudio	NO												
48	Two decades of research on learning disabilities in India	No cumple criterio de muestra ni bilingüe ni disléxica.	NO												
49	Autofocus stream biasing in children with reading impairments	No hay datos claros sobre qué parte de la muestra es bilingüe	NO												
50	Prediction of Reading in Hindi Does Deep Orthography Have an Impact?	No dislexia validada por así, además el bilingüismo lo marca como una línea de futura investigación	NO												

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
51	Using Arabic Word Identification Fluency to Monitor First-grade Reading Progress	No cumple la condición de que la muestra sea bilingüe y disléxica	NO												
52	Cross-linguistic transfer of phonological skills: a Malayalam perspective	No cumple la condición de que la muestra sea bilingüe y disléxica	NO												
53	Adults with self-reported learning disabilities in Slovenia: Findings from the international adult literacy survey on the incidence and correlates of learning disabilities in Slovenia	No cumple la condición de que la muestra sea bilingüe y disléxica. Tiene léxica en la conclusión que te pueden ayudar en la parte general como la necesidad de asistencia y soporte al alumnado disléxico.	NO												
54	Error patterns in word reading among primary school children: A cross-orthographic study	No cumple la condición de que la muestra sea bilingüe y disléxica	NO												
55	Morphology and Spelling in French: A Comparison of At-Risk Readers and Typical Developing Children	No cumple la condición de que la muestra sea bilingüe y disléxica	NO												
56	Cross-language Transfer of Metalinguistic Skills: Evidence from Spelling English Words by Korean Students in Grades 4, 5 and 6	No cumple la condición de que la muestra sea bilingüe y disléxica	NO												
57	Issue information: TDC	Resumen de referencias ya incluidas	NO												
58	Issue information	Resumen de referencias ya incluidas	NO												
59	Orthographic processing and reading comprehension among Arabic speaking monolingual and L2 children	Está basado en L2 en infantil, tiene datos similares y más aplicables en otros estudios. La lengua árabe se parece poco a las demás	NO												
60	Nata Coultraris equip-2020	Obituary	NO												
61	An exploration of the relationship between phonological and phonics knowledge and self-efficacy for reading	La palabra dislexia solo aparece en las referencias y en la revista	NO												
62	Teachers' knowledge about language constructs related to literacy skills and student achievement in low socioeconomic status schools	Objetivo central no es la dislexia, la nombra como posible causa	NO												
63	Carta al editor		NO												
64	Teaching a foreign language using multisensory structured language techniques to at-risk learners: a review	Texto muy específico centrado en el lenguaje y difícilmente aplicable a una clase que sea la segunda lengua como vehicular. No hay investigación.	NO												
65	Reading Speed and Phonological Awareness Deficits Among Arabic-Speaking Children with Dyslexia	Creo que no abarca bien el bilingüismo	NO												
66			NO												
67			66	total											
68			7	7											

Screenshot of Annals of dyslexia

	Título	Notas	Incluir
1	Cultural and Linguistic Influence on Brain Organization for Language and Possible Consequences for Dyslexia: A review	Mismos mecanismos usados en el primer y segundo idioma. La importancia de la memoria en el aprendizaje. Necesidad de estudios longitudinales, en especial en la dislexia.	SI
2	Dyslexia and Learning a Foreign Language: A personal experience	Apartado para la dislexia y el segundo idioma, posible explicación para una situación paradójica donde hay menos problemas en el segundo idioma que en el primero.	SI
3	Dyslexia in a second language? - a dynamic test of reading acquisition may provide a far answer	Los factores que tienen un impacto negativo en el aprendizaje del primer idioma tienen un impacto similar en el segundo. Texto incluye: 1.Revisión de la investigación de cómo la dislexia complica el aprendizaje del segundo idioma. 2.Descripción de cómo la dislexia ha afectado su experiencia educativa. 3.Descripción de la experiencia personal del aprendizaje de una lengua extranjera entre 1992-1998. 4. Recomendaciones para personas con dislexia que se quieren enfrentar con éxito al aprendizaje de la L2 y requerimientos para sus instructores.	SI
4	Second Language Learning and Reading with the Additional Load of Dyslexia	Leer cuando vas a escribir para coger las ideas. Describe muchos de los puntos importantes a tener en los resultados, posiblemente puntos de los tratados en varias de las clasificaciones que has hecho.	SI
5	Assessing preschoolers' emergent literacy skills in English and Spanish with the Get Ready to Read!	No cumple la condición de que la muestra sea bilingüe y disléxica	NO
6	Evidence for a preserved sensitivity to orthographic redundancy and an impaired access to phonological substrates in French developmental	No cumple la condición de que la muestra sea bilingüe y disléxica	NO
7	Foreign Language Learning, Hyperlexia, and Early Word Recognition	Tan solo cita a un estudio con muestra bilingüe	NO
8	Identifying dyslexia in adults: an iterative method using the predictive value of item scores and self-report questions	No cumple la condición de que la muestra sea bilingüe y disléxica	NO
9	Does orthographic knowledge improve reading children's performance in a nonword pluralization	No cumple la condición de que la muestra sea bilingüe y disléxica. No siquiera menciona el aprendizaje de una lengua extranjera.	NO
10	Orthographic knowledge in nonword recognition in individuals with dyslexia? Evidence from a meta-analysis	No cumple la condición de que la muestra sea bilingüe y disléxica. No siquiera menciona el aprendizaje de una lengua extranjera.	NO

11	Knowledge about basic language constructs among teachers of English as a Foreign Language in China and South Korea	No cumple la condición de que la muestra sea bilingüe y disléxica	NO
12	Project Dysadd: Implicit learning in adult dyslexia and ADHD	No cumple la condición de que la muestra sea bilingüe y disléxica	NO
13	Providing English foreign language teachers with content knowledge to facilitate decoding and spelling acquisition: a longitudinal perspective	No cumple con la condición de dislexia	NO
14	Reading difficulties in Spanish adults with dyslexia	Dyslexia se mantiene en la edad adulta. No cumple con la condición de que la muestra sea bilingüe	NO
15	Semantics impacts response to phonics through spelling intervention in children with dyslexia	Análisis de errores fonológicos, morfológicos y ortográficos (orthographical spelling). La mayor diferencia en la dislexia, la fonológica. El desarrollo de la representación semántica alta implica menos errores que cuando es baja en dislexia. El estudio demuestra que esto puede ayudar a reducir errores.	NO
16	Short-term memory for order but not for item information is impaired in developmental dyslexia	No tiene implicación en el aprendizaje de L2	NO
17			
18			
19			
20			
21		0	SI
22		4	SI
23		13	NO
24		17	TOTAL
25			
26			
27			
28			
29			

Screenshot of International Journal of Bilingual Education and Bilingualism

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
		Título	Notas	Incluido																		
1		Facilitating positive L1 transfer through explicit spelling instruction for EFL learners with dyslexia: an intervention study	Estudia la activación, con un grupo con dislexia y bilingüe	SI																		
2		Foreign language teacher preparedness to cater for general educational needs of learners with dyslexia: a conceptual framework	Artículo centrado en las habilidades del docente y sus prácticas. Revisar para escribir resultados en profundidad	SI																		
3		The language learning experiences of students with dyslexia: lessons from an interview study	Experiencias negativas en el estudio de grupo, especialmente si es grande. Diferenciar con las atenciones individuales. Aplicar explicaciones claras y bien estructuradas	SI																		
4		Teaching English to Students With Dyslexia in Iran: A Multiple-Case Study	Diagnóstico e intervención en L2 están abandonados. Multidimensional instrucciones fonológicas y sus efectos en L1 y L2. Instrucción en L2 mejora la adquisición en ambas. Revisar el resto de resultados	SI																		
5		Taking L3 learning by the horns: benefits of computer-mediated intervention for dyslexic school children	Intervención con un programa de software	SI																		
6		The acquisition of English as a foreign language among different levels of learners with dyslexia	2021 Muestra de 95, la E2 de esta. Divididos en tres niveles de dislexia: severa, moderada, leve. Se observan mejoras en los niveles de habilidad (número de respuestas correctas, no en cambio en la velocidad)	SI																		
7		An examination of differences in linguistic and meta-linguistic skills in English (FL) and Hebrew (L1) English intervention program for dyslexic, poor and normal readers	2020 Las mejoras más significativas las exhibieron los lectores disléxicos. Se observan mejoras en el grupo experimental	SI																		
8		When big kids don't learn: contextual modifications and intervention strategies for age 8-10 at-risk students	2020 Estudio descriptivo. Hay buenas ideas no sé si del todo acordes a lo que busca la revisión. Revisar en profundidad en una segunda vuelta.	SI																		
9		Relation of Native-Language Reading and Spelling Abilities Attitudes Toward Learning a Second Language	Investiga la relación entre las actitudes y percepciones de una lengua extranjera en las habilidades para leer y deletrear. Actitud negativa en igualdad con resultados más bajos. Muestra baja en dislexia y más amplia de los que creen o han tenido	SI																		

Screenshot of ProQuest

	A	B	C	D	E	F
		Título	Notas	Incluido		
1		Innovative Education and CIL	Hace una diferencia entre lenguas opacas y transparentes (por ejemplo en inglés y español por ejemplo) donde las transparentes como el español son más intuitivas que las opacas como el inglés o el francés. Preselección o no en de disléxicos es bajo tanto en la preselección como en Buzuelas que no la tiene. La mayoría de la gente cree que no se pueden enrolar en un programa bilingüe (ver estudio de Anton, 2004). La activación del cerebro tiene consecuencias sobre el área del lenguaje, probado con trabajo motor de equilibrio.	SI		El tipo de dislexia condicional o puede condicionar qué beneficia y qué no, a qué responde positiva o negativamente
2		The Literacy and Self-esteem of Children Attending Welsh-Medium and English-Medium Schools in Wales	TESIS Las ideas que aparecen se repiten en otros artículos, tiene un capítulo entero para la dislexia donde nombra al bilingüismo.	SI		
3		Consequences of bi-literacy in bilingual individuals, in the health and neurologically impaired	TESIS Capítulo 5, centrado en las dificultades de lectura en personas bilingües con afasia.	SI		
4		Relationships between operationalizations of dyslexia and attitudes and perceptions of learning a foreign language	Ideas útiles y basadas en autores sobre las habilidades en la dislexia y el bilingüismo	SI		
5		Policy and prevalence of dyslexia in Wales	TESIS No puedes acceder al recurso	NO		
6		Visual word recognition: Meaning and context, individuals and development	LIBRO No puedes acceder al recurso	NO		
7		Handbook of child language disorders	LIBRO No puedes acceder al recurso	NO		
8		Children with dyslexia exploring second language authorship in a multimedia environment: a single case study	TESIS No puedes acceder al recurso	NO		
9		Reading & writing	Son resúmenes de artículos	NO		
10		Book reviews (2001)	No cumple ninguna condición de muestra	NO		
11		Phonological awareness and reading ability in bilingual Native Spanish and monolingual English-speaking children	Habla de resultados con el español. Utilizan las herramientas de la dislexia para los test pero no habla de muestra con dislexia	NO		
12		Consequences of Misassignment to Treatment: Examining Targeted Policy Interventions in Education	TESIS Estudio por separado de la dislexia y el bilingüismo.	NO		
13		Insomniac Foundation distributes \$3 million in grants	Periodico	NO		
14		Light Farms Elementary on Target for PISD	Fuente por cable	NO		
15		Dyslexia and foreign language learning (2009)	LIBRO	NO		
16		Speech, Language and Learning Difficulties and Conditions - Dyslexia, Data on Dyslexia Reported by Researchers at	Fuente por cable	NO		
17		Speech, Language and Learning Difficulties and Conditions - Dyslexia, Reports Outline Dyslexia Study Results from Dong-A University	Fuente por cable	NO		
18		Speech, Language and Learning Difficulties and Conditions - Dyslexia, Studies from E.E. Yassman and Co-Researchers in the Area of Dyslexia Reported	Fuente por cable	NO		
19		Dyslexia y bilingüismo: estudios de caso en población infantil	DUPLICADO			

Screenshot of SCOPUS

	Título	Notas	Incluido
1	Dyslexia, Self-efficacy, and Language Instruction in Foreign Language Learning - A mixed Quantitative - qualitative Study.	2022 Cuestionarios y estudio de caso	SÍ
1	Eligibility for special education in elementary school: The role of diverse language experiences	Hacen falta más estudios para saber como interacciona el bilingüismo con la idoneidad para los servicios en la educación especial. Revisar si aporta algo más o no	SÍ
3	Dyslexia and foreign language learning (2012)	LIBRO	NO
4	Dyslexia and foreign language learning (2008)	LIBRO	NO
6	Dyslexia and learning: Theory into practise	LIBRO	NO
7	Educating deaf students with multiple disabilities	LIBRO	NO
8	Dyslexia in different language and the effect of dyslexia on foreign language learning.	Otro idioma	
9	Exploring pre-service an in-service teachers's perceptions about early foreign language learning and dyslexia.	2019 Duplicado	

Screenshot of WOS

	Título	Notas	Incluido	KEY WORDS
1	Dutch and English literacy and language outcomes of dyslexic students in regular and bilingual secondary education		SÍ	Bilingüal educación & dyslexia
2	Dyslexia y bilingüismo: estudios de caso en población infantil.	2018 - Español, muestra de 2. Concluye que la relación entre el bilingüismo y la dislexia es interdependiente. Se presentan síntomas asociados. Efectos contraproducente en la L1 porque se sustituye su enseñanza.	SÍ	Bilingüal educación & dyslexia
3	Dyslexia and bilingualism: Case reports in children			
3	Exploring Pre-service and In-service teachers' perceptions about Early Foreign Language Learning and Dyslexia	2019 El artículo concluye que los profesores de L2 conocen la dislexia de manera teórica aunque son conscientes sobre su necesidad de mejorar sus conocimientos didácticos específicos y sus habilidades. Habla también de extender el estudio. Tu apreciación particular sería conocer cómo los profesores de materia están formados en esto y qué saben sobre la dislexia, ya que la mayoría su especialidad no está relacionada con el lenguaje.	SÍ	
4	Dyslexia and Foreign Language Learning	LIBRO	NO	
6	Sample Activities for Learners with Dyslexia Learning English as a Foreign Language		NO	
5	Dyslexia in different languages and the effect of dyslexia on foreign language learning	Artículo en otro idioma, solo encuentras resumen en español. Podría ser útil pero tienes la barrera del idioma.	NO	
7	Eligibility for special education in elementary school. The role of diverse language experiences	Hacen falta más estudios para saber como interacciona el bilingüismo con la idoneidad para los servicios en la educación especial. Revisar si aporta algo más o no		Bilingüal educación & dyslexia
8	Phonological and orthographic processes of reading and spelling in young adolescents and adults with and without dyslexia in German and English: impact on foreign	Artículo en otro idioma, solo encuentras resumen en español. Podría ser útil pero tienes la barrera del idioma.		
3	Brain activity in bilingual developmental dyslexia: an fMRI study			Bilingüal educación & dyslexia
10	An audit of the processes involved in identifying and assessing bilingual learners suspected of being dyslexic: a Scottish study			Bilingüal educación & dyslexia

Screenshot of SpringerLink and JSTOR

	Título	Notas	Incluido
JSTOR			
1	Dyslexia and Learning a Foreign Language: A personal experience.	DUPLICADO	
2	The Dynamics of Language Learning Attitudes and Motivati Lessons From an Interview Study of Dyslexic Language Learners.	Estudio dibuja un modelo dinámico de motivación para el aprendizaje de L2. Revisar en profundidad para los resultados	SÍ
SPRINGERLINK			
1	Gamification as technology enabler in SEN and DHH education	Muestra pequeña. L2 francés. El juego ayuda en el aprendizaje	SÍ
2	Audiobooks, Print, and Comprehension: What We Know and What We Need to Know	Audiolibros como ayuda para la dislexia <i>Imagen de muestra de un diagrama PRISMA</i>	SÍ
1	Influence of assistive technology applications on dyslexic students: The case of Saudi Arabia during the COVID-19 pandemic	Influencia de la tecnología de apoyo en la mejora de la percepción visual, el procesamiento fonológico y las habilidades de los estudiantes con dislexia. No muestra bilingüe	NO

Screenshot of general catalogue of University of Córdoba

	Título	Notas	Incluido
1	Approaching dyslexia through ICT in the Art CLIL classroom	TEM de este master	SÍ
2	Special Education Teachers' Narratives on Literacy Support for Bilingual Students with Dyslexia in Swedish Compulsory Schools.	Entrevista a 13 profesores. Muestra que el apoyo es el mismo a los monolingües que a los bilingües. Trabajo colaborativo con el profesor de la L1 para facilitar la identificación y ganar una imagen más comprensiva.	SÍ
3	Inflectional morphology evidence for an advantage of bilingualism in dyslexia.	2021 Mejor actuación del alumnado bilingüe incluyendo al grupo que tiene dislexia	SÍ
1	Neurolinguistic and psycholinguistic perspective on SLA	LIBRO DESCARGADO El libro incluye estudios e información que puede ser relevante para los resultados. Capítulo y centrado en la dislexia y libro con enfoque al bilingüismo.	SÍ
1	The experience of Norwegian students with dyslexia learning English as a foreign language.	TESIS	SÍ
6	Phonological and orthographic processes of reading and spelling in young adolescents and adults with and without dyslexia in German and English: impact on foreign language learning	Artículo en otro idioma, solo encuentro resumen en español. Podría ser útil pero tienes la barrera del idioma. Estaba días veces en la base de datos.	SÍ
8	Use of an Orton-Gillingham Approach to Teach a Foreign Language to Dyslexic/Learning Disabled Students: Explicit Teaching of Phonology in a Second Language.	Metodología propia. Buena contextualización, más apuntes en metodología.	SÍ
3	Examining the Linguistic Coding Differences Hypothesis to Explain Individual Differences in Foreign Language Learning.	La dislexia solo se nombra en el nombre de la revista.	NO
1	Part IV- Reading and foreign language learning: Individuals differences in word recognition skills of ESL children.	Presentación, no está. Además aparecen como diferentes pero son iguales cuando se ven al servicio.	NO
11	Facing the challenges of learning English as		

revision - Excel

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
3		Examining the Linguistic Coding Differences Hypothesis to Explain Individual Differences in Foreign Language Learning	La diálexia solo se nombra en el nombre de la revista.	NO															
5		Part IV: Reading and foreign language learning	Presentación, no está	NO															
6		Part IV: Reading and foreign language learning: individual differences in word recognition skills of ESL children.	Presentación, no está. Además aparecen como diferentes pero son iguales cuando accedes al texto	NO															
12		Facing the challenges of learning English as a foreign language in Israel: In response to Ganschow, Sparks and Schneider	No puedes acceder al recurso	NO															
13		Commentary on "Facing the challenges of learning English as a foreign language in Israel: In response to Ganschow, Sparks and Schneider"	No puedes acceder al recurso	NO															
14		Reflections on foreign language study for students with language learning problems: research, issues, and challenges.	Duplicado aunque no lo había reconocido la herramienta																
15		Foreign Language Learning, Hyperlexia, and Early Word Recognition	Duplicado aunque no lo había reconocido la herramienta aquí lo pro la herramienta del año en Anual.																
16		Reflections on foreign language study for students with language learning problems: research, issues, and challenges.	Repetición de la posición de que la muestra es bibliográfica. Duplicado de Reflections- artículo 8																
18		Relationships between operationalizations of dyslexia an attitudes and perceptions of learning a foreign language.	Lo tienes aquí pero está en la lista de duplicados y no lo tienes en las referencias.																
22				0	SI														
23				7	SI														
24				5	NO														
25				12	total														

Totales-conParámetros Duplicados All Resultados Dyslexia Anual JSTOR&Springer WOS UBEB Mezquita SCOPUS ProQuest Totales ...

Accesibilidad: es necesario investigar