

# UCUENCA

## Universidad de Cuenca

Facultad de Filosofía, Letras y Ciencias de la Educación

Carrera de Pedagogía de los Idiomas Nacionales y Extranjeros

### **Appropriate Strategies for Teaching English as a FL to Children with ADHD**

Trabajo de titulación previo a la  
obtención del título de Licenciada  
en Pedagogía del Idioma Inglés


#### **Autores:**

Karina Elizabeth Ochoa Carrion

Verónica Dayanna Sinchi Barrera

#### **Tutor:**

Cynthia Soledad Hidalgo Camacho

ORCID:  0000-0002-2848-3687

**Cuenca, Ecuador**

2023-08-22

## Resumen

El Trastorno por déficit de atención e hiperactividad (TDAH) es un trastorno neurológico que afecta al desarrollo de diferentes habilidades, entre ellas, las necesarias para el aprendizaje del idioma inglés en los niños; sin embargo, hay ciertas estrategias que los docentes pueden usar para ayudarlos. Esta síntesis de investigación se enfoca en analizar las estrategias más apropiadas para enseñar inglés a niños con esta condición médica y descubrir cuáles son sus ventajas y desventajas. Este estudio fue exploratorio para obtener la información más relevante y útil sobre el tema. Se analizaron 21 artículos de acuerdo a diferentes criterios como el año de publicación, la edad de los participantes, el idioma del artículo, el lugar donde se realizó el estudio, ente otros. Los artículos fueron analizados de acuerdo a cinco categorías. Los resultados más relevantes fueron que las actividades computarizadas, el movimiento corporal y las estrategias metacognitivas son las más apropiadas para enseñar inglés a niños con TDHA, ya que los ayudan a una mejor organización y concentración en su rutina diaria. También se pudo observar que el principal factor que afecta el proceso de enseñanza que involucra a estos niños es la falta de conocimiento que tienen los profesores en el tema. En consecuencia, la siguiente síntesis de investigación ofrece conclusiones y recomendaciones sobre la correcta selección y aplicación de estas estrategias, que, sin duda, serán de utilidad para los docentes de inglés como lengua extranjera.

*Palabras clave:* niños con TDAH, estrategias de enseñanza, EFL escenarios, procesos metacognitivos



El contenido de esta obra corresponde al derecho de expresión de los autores y no compromete el pensamiento institucional de la Universidad de Cuenca ni desata su responsabilidad frente a terceros. Los autores asumen la responsabilidad por la propiedad intelectual y los derechos de autor.

Repositorio Institucional: <https://dspace.ucuenca.edu.ec/>

### Abstract

Attention Deficit Hyperactivity Disorder (ADHD) is a neurological disorder that affects the development of different skills, including those necessary for English language learning in children. However, there are certain strategies that teachers can use to help these students. This research synthesis focuses on analyzing the most appropriate strategies to teach English to children with this medical condition, as well as discovering their advantages and disadvantages. This study was exploratory in order to obtain relevant and useful information about the topic. Twenty-one studies were analyzed according to different criteria such as the year of publication, the age of participants, the language of the study, the place where the study was conducted, among others. The studies were analyzed according to five categories. The most relevant results were that computer-based activities, body movement, and metacognitive strategies are the most appropriate to teach English as a Foreign Language (EFL) to children with ADHD, since they help children to be better organized and achieve concentration in their daily routines. It was also visible that the main factor affecting the teaching process involving these children is the lack of knowledge teachers have on the subject. Consequently, the following research synthesis offers conclusions and recommendations on how to apply and select these strategies, which will undoubtedly be useful in EFL classrooms.

*Keywords:* children with ADHD, teaching strategies, EFL settings, metacognitive process



The content of this work corresponds to the right of expression of the authors and does not compromise the institutional thinking of the University of Cuenca, nor does it release its responsibility before third parties. The authors assume responsibility for the intellectual property and copyrights.

**Institutional Repository:** <https://dspace.ucuenca.edu.ec/>

**General Index**

Resumen ..... 2

Abstract..... 3

General Index ..... 4

ACKNOWLEDGMENTS..... 7

DEDICATION..... 8

INTRODUCTION ..... 9

**CHAPTER I..... 11**

1 DESCRIPTION OF THE RESEARCH ..... 11

1.1 Background..... 11

1.2 Problem Statement ..... 12

1.3 Rationale ..... 13

1.4 Research questions ..... 14

1.5 Objectives..... 14

    General objective ..... 14

    Specific objectives ..... 14

**CHAPTER II..... 15**

2 THEORETICAL FRAMEWORK AND LITERATURE REVIEW ..... 15

2.1 Theoretical Framework ..... 15

    2.1.1 Difference between EFL Classrooms and ESL Classrooms ..... 15

    2.1.2 Attention Deficit and hyperactivity Disorder, types and prevalence..... 15

    2.1.3 Teaching Strategies for students with ADHD..... 17

2.2 Literature Review..... 18

    2.2.1 Location ..... 18

    2.2.2 Appropriate strategies to teach English as an FL to children with ADHD ..... 19

    2.2.3 Advantages of using these strategies in teaching English to children with ADHD. 22

**CHAPTER III..... 24**

3 METHODOLOGY..... 24

CHAPTER IV ..... 25

4 DATA ANALYSIS..... 25

4.1 Year of publication ..... 25

	5
4.2 Age of participants .....	27
4.3 Location .....	28
4.4 Strategies more commonly used for Teaching English as a FL to Children with ADHD 30	
4.5 Advantages and disadvantages of using these strategies.....	32
<b>CHAPTER V .....</b>	<b>36</b>
<b>5 CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>36</b>
5.1 Conclusions .....	36
5.2 Recommendations .....	38
References .....	39
Anexes.....	46

**List of tables**

Table 1 Year of publication .....	25
Table 2 Age of participants .....	27
Table 3 Location.....	28
Table 4 Strategies more commonly used for Teaching English as a FL to Children with ADHD .....	30
Table 5 Advantages of using these strategies .....	32
Table 6 Disadvantages of using these strategies.....	34

**ACKNOWLEDGMENTS**

We would like to express our deepest appreciation to our thesis tutor Mgst. Cynthia Hidalgo-Camacho for always supporting and guiding us during our research project. Also, we would like to thank the teachers of the major for giving us the knowledge to improve our skills in order to develop a good academic performance.

**DEDICATION**

I would to dedicate this thesis to my parents Patricio Ochoa and Karina Carrion and to my brother Josue Ochoa for supporting me during my academic life and for constantly making me feel better when I feel down.

Karina Ochoa.

**DEDICATION**

I would like to dedicate this thesis to God and to my parents María Barrera and Mesías Sinchi and to my sister Karina Sinchi for supporting me during these four years in my major.

Verónica Sinchi.



## INTRODUCTION

ADHD is a neurological disorder that is frequently diagnosed in children, especially when they start their academic life because their school performance seems to be affected; in other words, their grades are lower compared to children who do not suffer from this disorder. Also, children who have this diagnosis represent a great challenge for teachers because most of them struggle to select the correct teaching strategy due to the fact that they do not have enough information about this disorder and how to work with students with ADHD (Soroa et al., 2015). Since this neurological disorder affects directly the students' educational process because the symptoms disturb children's executive functions such as focusing, controlling self-behaviors, planning and thinking processes, and achieving school goals (National Institute of Mental Health (NHI), 2021), supporting the needs of these students is challenging for teachers, even more when they are not aware of their need for a different teaching approach, considering that their learning styles are not the same as their peers (Sfrisi et al., 2017).

Teaching English as a foreign language to children with ADHD implies many difficulties for teachers especially when they do not identify the symptoms of this disorder that students could present. Students who have this neurological disorder tend to have school problems because of their lack of organization and unfinished tasks, which has a great impact on their academic performance. However, according to Sabet et al. (2015), when there is an appropriate selection of the teaching strategy, children with this disorder acquire new information in a foreign language more easily; for example, learning new vocabulary through focus strategies. Furthermore, there are strategies that teachers can use to address the teaching-learning process and encourage learners in their academic development. In fact, there are strategies that are used by teachers in classrooms with children with ADHD to specifically enhance students' skills in EFL learning (Kałdonek-Crnjaković, 2020). Therefore, this paper analyzes strategies that could be appropriate in such situations.

This research synthesis is comprised of five chapters, which include significant information on the different research sections of this study. Chapter one involves the background, problem statement and rationale, which introduce a brief description of the topic and gaps that need to be investigated, as well as the research questions that arose in the course of this work. Chapter two presents the theoretical framework which includes some definitions that are essential to understand the topic of this work, and the literature review that exposes a brief analysis of various studies related to the subject of research. Chapter three details the methodology that was selected to carry out the collection and analysis of the data for this research. In Chapter four, there is an analysis of the collected data. According to the

categories in which the findings were divided, this section contains tables and a short interpretation of each one. Finally, the fifth chapter presents the conclusions and recommendations for future investigations, based on analyzed data.

## CHAPTER I

### 1 DESCRIPTION OF THE RESEARCH

#### 1.1 Background

Most of the time, ADHD has been considered a serious problem that affects the academic development of children in schools. Singh et al. (2015) state that that early childhood is the time when symptoms of ADHD first appear and that they continue into adolescence and adulthood. In a study conducted by Barkley (2005, as cited in Dilawari & Tripathi, 2014), it was observed that boys with a ratio of 9:1 are more probable to develop ADHD because boys are more energetic and restless than girls. Furthermore, the National Health Service (NHS) of England (2021) informs that this issue is frequently identified at a young age and may become more apparent as a child's surroundings change, such as when they start school.

According to Bulut (2005), some of the types of children with ADHD that may be found in an EFL classroom are: inattentive type, hyperactive/impulsive type, and combined type. Students with inattentive type may present difficulties in focusing on completing tasks, following directions, and keeping their scholar materials. Another type is the hyperactive/ impulsive children learners. These students need to be in constant movement, so they are not able to stay quiet in the same place for long periods of time. In addition, these students interrupt the work of their partners constantly because they like to talk excessively. Lastly, there is a combination of these two ADHD types that presents behaviors from the two types described.

According to Philippa Greathead (2013), children with this disorder present some language problems which can be seen in syntax, semantics, pragmatics, and metalinguistics. They may face difficulties while developing certain oral and written skills, but it does not mean that they do not have the same abilities to be as successful as their peers. Also, Ross and Randolph (2016) claim that children diagnosed with this neurological disorder perform poorly in EFL settings because these settings call for particular skills, such as concentration, attention, and self-control, which, generally speaking, these learners lack. For this reason, teachers need to be aware that catching the attention of children with this medical condition within an EFL classroom is a big challenge since their interest in common tasks is usually lost.

Sfrisi et al. (2017) state that finding the preferred learning style by students with ADHD during the first years of school would provide teachers with useful tools to teach English to them. Teachers should learn about the best strategies that can engage children that suffer from this disorder; therefore, the way they teach in their classrooms might have to be modified.

According to Liontou (2019), most of the inattentive children with ADHD are visual learners that are easily distracted. They may be unable to stay focused and concentrated for a long time on a specific task. As a result, teachers need to use different strategies that draw the attention of these students to help them complete the task.

Since dealing with children with ADHD is a huge challenge for teachers in the EFL classroom, many researchers have found some strategies to facilitate the teaching and learning process in those cases. According to Kajka and Kulik (2021), sketch-noting and mind-mapping are suitable strategies to teach children with this medical condition. On the one hand, sketch-noting strategy helps them improve the process of planning, visually recalling, memorizing, concentrating, and self-regulating. On the other hand, mind-mapping, or concept-mapping, is a useful strategy that teachers can employ in EFL settings because it not only improves the metacognitive process, but also the inhibition process, which allows getting a specific response through the prohibition of certain behaviors that cause difficulties for these children's academic development.

Most of the techniques described above have a relevant impact on the teaching-learning process involving teachers and children that have been diagnosed with this disorder. Children can improve their cognitive skills and subskills (memory, attention, control processing, reasoning, etc.) through distinctive strategies that teachers apply instead of traditional strategies. Furthermore, these new techniques help teachers to change their perspectives about themselves while working with these children. Thus, strategies well-chosen benefit teachers in acquiring new experiences in the EFL classroom.

The purpose of this study is to identify the most appropriate strategies found in the empirical studies that analyze what teachers can use to teach children with ADHD. A brief review of the most appropriate strategies, as well as their advantages, will be presented.

## **1.2 Problem Statement**

This study emerges from the analysis of academic literature that shows a lack of knowledge that teachers have about the best strategies to teach children with ADHD in EFL settings. The research problem focuses on how teachers deal with these students in the classroom, and the possible consequences such as difficulties for the teacher to manage the classroom and low academic performance of children with this disorder (Sabet et al., 2015).

It seems to be common to hear that some teachers have problems in classroom management due to the negative behavior that is associated with students diagnosed with ADHD (David,

2013). These children have a chronic, long-term disorder and experience symptoms of inattention and impulsivity across settings. Barnett (2017) declares these kids are very energetic and loud, and they cannot focus on completing the task. According to Kałdonek-Crnjaković (2020), another issue for the teacher could be managing the behavior of children with ADHD and their cognition because it affects the processing of verbal material (pronunciation). For this reason, educators need to use different strategies to encourage positive behavior in the classroom.

Moreover, Ross and Randolph (2016) state that children with this neurological disorder frequently exhibit issues with focus, distraction, excessive movement and fidgeting, and poor impulse control. However, Sfrisi et al. (2017) mention that students with ADHD are more likely to be interested in what they are learning when they are actively participating in the lesson. In other terms, it is crucial for teachers to use different strategies in their classes and, by doing so, foster meaningful learning in their classrooms.

Sabet et al. (2015) state that teachers tend not to impose authority on these children because they feel that they are not trained enough to teach them. This factor sabotages the learning processes in schools since teachers perceive themselves as unprepared to manage a classroom. Undoubtedly, there are teachers who have limited knowledge about teaching children with ADHD; as a consequence, teachers continue using traditional strategies in the classroom. Soroa et al. (2015) agree that teachers need to take training programs to know how to deal with children who present this neurological disorder. Also, they mention that there is at least one student with ADHD per class. This means that teachers need to be prepared with enough knowledge of different strategies that could be used, if needed.

It has to be kept in mind that some teachers are not able to recognize this medical condition in children, neither the accurate strategies that may be used to teach them in the classroom context. For these reasons, especially beginning teachers seem to avoid using new strategies to engage, improve, and develop their students' cognitive, receptive, and productive skills; as a consequence, they get stuck in traditional teaching strategies.

### **1.3 Rationale**

Education is one of the most important areas within society because it allows future generations to enrich their knowledge and culture. Quality education offers many opportunities and it involves learning a new language, especially English, which has become one of the most widely used languages around the world. Educational processes are more challenging

when children with ADHD are not diagnosed on time; instead possibly mistakenly labeled as troublemaker, lazy, and undisciplined.

Dealing with children with ADHD is arduous work, and it becomes even more difficult when teachers do not have the knowledge about this disorder. Poznanski et al. (2018) mention that creating a learning environment that supports social-emotional, intellectual, and behavioral success is referred to as classroom management. The importance of creating a safe learning environment is well known. The process of learning English needs to be a gratifying experience where students and teachers feel optimistic and inspired. Teachers need to learn, among other things, what strategies can be applied to help students with special needs, so as to help everyone in the classroom improve their skills and handle their behavior.

However, teachers decrease their confidence when they try implementing new strategies for children with ADHD in their classrooms because these students frequently show a lack of effort, motivation, or simply they do not seem to do well, despite the teachers' efforts. Barnett (2017) agrees that these students typically struggle to finish their schoolwork in an organized manner. Thus, teachers are required to give them more time to understand and finish the task, as well as keep school material organized to optimize the students' learning process and reduce distractions.

#### **1.4 Research questions**

What are the most appropriate strategies to teach English to children with ADHD?

What are the advantages of using these strategies in teaching English to children with ADHD?

#### **1.5 Objectives**

##### **General objective**

To determine which strategies for teaching English to children with ADHD have been reported as the most effective in EFL settings.

##### **Specific objectives**

To analyze the most appropriate strategies for teaching EFL to children with ADHD, based on the literature found.

To identify the advantages of using these strategies that have been reported as the most effective in teaching English to children with ADHD.

## CHAPTER II

### 2 THEORETICAL FRAMEWORK AND LITERATURE REVIEW

#### 2.1 Theoretical Framework

Key concepts, which are important to understand the literature review, are provided in this section. This theoretical framework includes definitions taken from academic sources for the following topics: EFL classrooms and ESL classrooms, ADHD and its types, Causes and treatment of ADHD and Teaching strategies used with students diagnosed with ADHD.

##### 2.1.1 Difference between EFL Classrooms and ESL Classrooms

According to Oxford University Press (2011), in an EFL classroom, the dominant language of students is not English because the only exposure to the language that they have is the teacher. For example, students in Ecuador are considered EFL students because the country's official language is Spanish, not English. In addition to this, students only have a few opportunities to use the language outside the classroom. Furthermore, teachers in EFL classrooms try to change the perspective that English is not a set of rules that students need to memorize; instead, it is an opportunity to learn about the culture and communities around the world (Oxford University Press ELT, 2011).

On the other hand, in an English as a Second Language (ESL) classroom, the dominant language is English since it is the official language of the country (Oxford University Press ELT, 2011). In these classrooms, students are migrants or visitors; in other terms, they have different nationalities, and they do not share a common culture nor a native language. For instance, students who are from non-native English-speaking countries and go to England or USA for an extended time, learn English as a Second Language because they have more daily opportunities to use the language outside the classroom. Additionally, these classes are taught by teachers who received TESOL (Teaching English to Speakers of Other Languages) as part of their teacher education programs (Munk, 2016).

##### 2.1.2 Attention Deficit and hyperactivity Disorder, types and prevalence

Attention Deficit and Hyperactivity Disorder is a complex brain disorder characterized by impulsivity, inattention, and sometimes hyperactivity, which affects the attention and self-control of the individual that suffers from this disorder (Rodgers & Kalyn, 2022). The NHS of England (2021) states that this medical condition presents these symptoms in early childhood and persists into adulthood. Children or adults with this neurological disorder have problems



with impulsive control, focusing, organization, sleep, or anxiety. However, the NHS (2021) mentions that some children are not diagnosed with ADHD on time; as a result, they are diagnosed when they are adults making it more difficult to control the condition. According to Bulut (2005), there are three types of ADHD: inattentive, hyperactive/impulsive, and combined.

First, the inattentive type is characterized by inattention and distractibility without hyperactivity. Individuals with this type of ADHD are easily distracted; as a consequence, they do not follow instructions correctly and do not focus on the specifics mistakes that they make when completing their assignments for work or education. Also, since they do not effectively manage their duties, they have a tendency to forget items that are important for their daily routines, such as cell phones, school papers, wallets, etc. because they do not organize their tasks well. Another important aspect is that these individuals do not like tasks that require mental effort, such as completing forms or preparing reports (*What is ADHD?*, 2022).

Second, the hyperactive/impulsive type is characterized by excessive movement, energy, and talkativeness. It can be difficult for people with this kind of ADHD to remain sitting in the same place; for instance, in the classroom or workplace. Moreover, they tend to talk and interrupt others at inappropriate times. These people have trouble waiting their turn, paying attention to instructions, or refraining from taking items without asking first; as a consequence, these individuals feel tired most of the time. Finally, there is a third type, which is characterized by presenting symptoms of both types described above (*What is ADHD?*, 2022).

A rough estimate of the number of children who have ADHD in the world is 7,2% of the population of around 129 million people (*Children and Adults with Attention Deficit/Hyperactivity Disorder*, 2007). Clearly, this is a common childhood disorder; however, students need to be diagnosed by a professional specialized in the detection of special educational needs in order to find the most appropriate instruction modality (a specialized institution or a normal school) for them, so that teachers can provide them with the complementary attention and material for their learning.

In Ecuador, the Ministry of Education (2018) states that the offer of extraordinary specialized education is intended to ensure the right to education of students with Special Educational Needs and students with moderate, severe, or profound disabilities, governed under the principles of educational inclusion and the current national curriculum with an ecological, functional, and developmental perspective. According to the Art. 228 of the Regulation to the Intercultural Education Law, in Spanish: *Reglamento a la Ley Organica de Educación*

*Intercultural* (LOEI, 2017), “Students with special educational needs are those who require support or temporary or permanent adaptations that allow them to access a quality service according to their condition. These supports and adaptations can be for learning, accessibility, or communication” (p.64).

One of the most popular programs is the *Instituciones Educativas Especializadas* (IEE) program created to fulfill the right to education for every single child. According to the Ministry of Education (2022), there are 139 IEE for 10.181 students with Special Educational Needs (SEN), 7,918 of which are students with a diagnosis of ADHD in the public education system. These children receive classes with the rest of their classmates, but with curricular adaptations.

### **2.1.2.1 Causes and treatment.**

Although the causes of ADHD are unclear, some researchers agree that genetics and heredity play an important role in determining who gets ADHD (Thapar & Stergiakouli, 2008). Other factors that could cause ADHD is being born prematurely (before the 37th week of pregnancy), having a low birth weight, or a mother smoking, drinking alcohol, or using drugs during pregnancy (NHS, 2021). However, there is no reliable proof that ADHD is caused by bad parenting, eating a lot of sugar, food additives, allergies, or immunizations.

Even though there is no cure for this medical condition, nowadays there are treatments available that may help to control the symptoms of this disorder. One of the most popular treatments is medication. For many people, medication can help to reduce some symptoms of hyperactivity and impulsivity to improve their ability to focus, work and learn. There are two types of medicines that individuals with ADHD use for treating their condition and need to be prescribed and monitored by a doctor: stimulants and non-stimulants. According to the National Institute of Mental Health (NIH) (2022), stimulant medications are crucial for thinking and attention because they raise the levels of the brain chemicals dopamine and norepinephrine. Similarly, non-stimulant medications can also reduce impulsivity and attention deficits; but their effects take longer to manifest than those of stimulant medications.

### **2.1.3 Teaching Strategies for students with ADHD**

The methods, approaches, and procedures are defined as teaching strategies that teachers apply during the students’ learning process (*Teaching Strategies*, 2021). The effects of these strategies are based on how the teacher adapts and applies them according to the students’ needs and for them to achieve the goals of the class. According to the education department of the government of New South Wales (NSW) (2022), preplanning, creating learning

objectives, and offering feedback are part of these strategies. However, teachers who work with children with ADHD need to carefully select the strategies since these children present organizational problems that affect directly their academic performance. Langberg et al. (2011) state that it is clear that grades are correlated with homework completion; in other words, the disorganization that children with this disease typically have may impact their assignments completion and the organization of their school supplies. There are some interventions that teachers can do to help these children; for instance, the organizational-skills can be reinforced in class, which will definitely have a positive effect on reducing ADHD symptoms, and improving their school grades (Langberg et al., 2008).

Moreover, working memory intervention is required within applied strategies because it is directly related to the improvement of meta-cognitive functioning in children. As Kofler et al. (2020) expose, many children with ADHD present executive working memory deficits that are notable in their behavior. In an experimental study, Biederman et al. (2008) show that executive functions, which have to do with time management, planning, and organization abilities, are linked to the poor performance of children with ADHD in educational settings. For these reasons, it is important for the teacher to select strategies based on students' needs. Consequently, teachers' knowledge of ADHD is a key factor to help students with this disorder by providing them with appropriate strategies (Cabaroğlu & Tohma, 2021).

## **2.2 Literature Review**

The following description of this literature review provides a summary of the studies and academic documents analyzed to identify possible gaps that exist about this topic. These studies provide information about the appropriate strategies to teach EFL to children with ADHD, as well as the advantages of using these strategies.

### **2.2.1 Location**

ADHD is a common disorder that affects people around the world. This allowed having studies from different parts of the world to examine how the topic of ADHD is being addressed in schools and what teaching strategies or scholar materials are being used in different cultural contexts.

Khandelwal et al. (2004, as cited in David 2013) mention that in India, due to the cultural norms of its society, teachers and parents tend to ignore and label the behaviors of these students as inappropriate behaviors. For that reason, there are a significant number of students who have not been diagnosed, making it difficult for teachers to give them support in school

settings. In order to help children with this medical disorder, it is important to identify and treat ADHD using frameworks that are respectful to cultural differences.

Similarly, the American Psychiatric Association (2013, as cited in Capodieci et al., 2019) stated that in the United States 3-7% of children suffer from this neurological disorder which does not allow them to improve their working memory in the same way their classmates do. That is why countries around the world have developed new strategies according to their cultures to help these students to learn new vocabulary and be concentrated on what they are learning (Sabet et al., 2015).

Moreover, it has to be kept in mind that social skills also seem to be affected by these medical condition. For instance, these students experienced peer rejection; therefore, this made it extremely difficult for them to make friends in the class (Mikami, 2010). The fact that most kids with ADHD will get their academic formation in a general education environment should serve as a reminder that ADHD is not only a special education issue; instead, it should be seen as an opportunity for teachers to impact positively these children's lives.

### **2.2.2 Appropriate strategies to teach English as an FL to children with ADHD.**

The American Academy of Pediatrics (2000, as cited in Sabet et al., 2015) states that the most frequent neurobehavioral condition affecting children's academic performance is ADHD. Such prevalence requires teachers to learn the different strategies that can be used to teach and help to improve the academic performance of children with this medical condition.

Two important strategies to teach vocabulary are focus and metacognitive strategies. Sabet et al. (2015) carried out a study to determine if focus strategies, which are strategies to focus all the attention on a specific task, can help children with ADHD learn new English words. In this study, the authors integrated the use of four focus strategies: keyword, concentration, making sentences, and fold-over strategies which were applied to two focus groups. They found that students with ADHD who used two of these focus strategies (keyword and making sentences) learned eight new words per session. In a similar way, metacognitive strategies such as mind-mapping and sketch-noting are also used to teach vocabulary. These strategies involve a significant brain activity since the brain of a child with ADHD is adapted to learn visually, as it is demonstrated in brain neuroimaging studies (as cited in Kajka & Kulik, 2021). According to Kajka and Kulik (2021), mind-mapping is a suitable strategy to enhance the processes of planning, remembering, focusing, and self-regulation. They state that "Mind Maps are a visual-written form of a note. They consist of structuring and selecting the most important information that the child operates with" (p.2). This means that children who learn with mind maps tend to have better thought processes and task organization. However, there are some negative aspects of working with these strategies. For example, focus strategies did

not improve the academic performance of children with ADHD; instead, they improved the academic performance of students without the condition. Moreover, sketch-noting, a metacognitive strategy, is not recommended by the authors because children drew freely anywhere on the pages used, which made it difficult for them to organize their study material.

Furthermore, a study conducted by Kaldonek-Crnjaković (2020), found that multisensory strategies are appropriate to teach English to children with ADHD. Children with this medical condition need to be in constant movement because they can concentrate and process information more effectively by moving their bodies since they do not learn as much only from the activities that they can listen to or observe. In this study, the author says that in an EFL classroom, the teacher should not only read, trace, and show flashcards of the English vocabulary or grammar patterns, but also allow students with this neurological disorder to move their bodies while they are learning vocabulary, to touch their lips to learn the pronunciation of the words, to play interactive games to practice the grammar patterns or to follow the reading with their finger when they are reading. However, these strategies are not recommended for children that have the hyperactive/impulsive type because it would be harder for the teacher to manage and monitor their behavior during the learning process. The author concludes by saying that the activities should be balanced for all the students based on their academic needs, and not only prioritized the academic needs of children with ADHD.

An additional strategy that teachers can use to teach English to children with this neurological disorder is organizational strategies, such as color coding. Diachenko et al. (2022) state that the use of color coding aids in improving learners' academic achievement as well as memory training. This strategy has better results in learning settings because it has a direct effect on short-memory retention since the use of colors engages students with this disorder to remember more information easily. The author also mentions that activating memory can be related to the emotional perceptions of colors which allow children to develop their creativity and feel motivated when doing learning activities. In addition, Wichmann et al. (2002) demonstrate through a study that colors help the cognitive process to store information on memory; therefore, they advise using colored material instead of black and white.

Furthermore, the use of color coding strategy enhances the handwriting performance of children with ADHD since it provides extra stimulation for them. In an experimental study, second and third-grade children with this disorder obtained better results in their writing when they use colored paper than white paper, in contrast with children with learning disabilities (Imhof, 2004). The results showed there is an improvement in the coherence and neatness of their handwriting. However, while certain components, like size and shape, have significant

results, others, like spacing and alignment, do not seem to be affected at all.

These organizational strategies also include rewards to incentivize children with this medical condition to get better behaviors. Parents and teachers can use the incentive system as a tool to help children with ADHD become more motivated and alter their behavior (Jackson, 2022). Miranda et al. (2003) analyzed two empirical studies (Fabiano & Pelham, 2003; Van Lier et al., 2004) and stated that “In both cases, they basically applied reward procedures that proved to be effective in managing disruptive behaviors in the classroom”

Additionally, teachers can use instructional strategies such as peer tutoring to support students with ADHD in social interactions and social behaviors within the classroom. Peer tutoring strategy can be practical for constructed learning since it pairs students with high achievement and with lower achievement (*Using Peer Tutoring to Facilitate Access*, 2013). A study conducted by Shisler et al. (1986) showed that due to the subjectivity and unpredictability of the advantages, this strategy has a little impact on behaviors, attitudes, and social interactions. Moreover, some studies demonstrate that the results are not good in comparison with similar strategies, such as Class-wide Peer Tutoring (CWPT) and peer coaching.

In a study, Cook et al. (2017) analyzed wide evidence about the benefits of CWPT pointing out that it allows students to reach better academic performance. The authors did not find negative results in the examined studies; in contrast, they assert teachers who use this strategy noticed children got significant academic and social outcomes. According to Plumer (2005), the combination of CWPT and peer coaching interventions lead to the improvement of the positive social behaviors and social interactions of children with this neurological disorder in academic settings. The author in his empirical study states that the assignment of a peer coach helps students to achieve the selected goals at the end of the day. As a result, he suggests using both CWPT and peer coaching strategies to support the needs of children with ADHD.

Finally, computer based strategies could be applied by teachers to help students in maintaining their concentration and completing more assignments, as was demonstrated in a study conducted by Barnett in 2017. Teachers can create a fun environment where students can use various apps to meet their academic needs by planning, allocating time, or modeling some of the children's tasks using updated apps; however, he also states that students might use devices for purposes that are not related to the learning process. Kutscher and Rosin (2015) assert that given attractive visual graphics, stimulating sound effects, immediate feedback, and incentive of video games and other technology tools, children with ADHD may be particularly predisposed to excessive screen time. That is why, in order to make sure that



kids are using technology responsibly, teachers and parents need to keep monitor and limit their exposure to it.

### **2.2.3 Advantages of using these strategies in teaching English to children with ADHD.**

Pre-service teachers now receive sufficient instruction in a variety of topics related to classroom management, curriculum development, and formative and summative assessment methods (McCrimmon, 2015). However, future teachers face an enormous challenge when they need to work with children with ADHD because they have little or no knowledge about the techniques that can be applied with these types of students. That is why researchers have highlighted the advantages of using different strategies in those particular situations.

The advantages of working with focus, metacognitive, multisensory, organizational, instructional, and computer based strategies that are described as follows:

#### **Advantages of focus strategies**

- Improvement of vocabulary and help to retain a bunch of new words (Sabet et al., 2015).
- Improvement of children's learning attitude and increase their imagination (Sabet et al., 2015).

#### **Advantages of metacognitive strategies**

- Enhancement of students' learning process and time management (Kajka & Kulik, 2021).
- Improve these children's inhibition response (organize and correlate their thoughts (Kajka & Kulik, 2021)).
- Decrease of distractibility (remain engaged with the material and content (Jain, 2022)).
- More control over the information students' writing (Kajka & Kulik, 2021).

#### **Advantages of multisensory strategies**

- Motivation and concentration with the learning content (Kaldonek-Crnjaković, 2020).
- Logical sequence (the teacher introduces simpler material first before moving on to more difficult material (Kormos, 2017)).

**Advantages of organizational strategies**

- Physical organization of materials and task control (Langberg et al., 2008).
- Improved recognition memory (increase stimulus on the sensory perceptions and cognition process (Wichmann et al., 2002)).
- Improved handwriting (orthography and calligraphy (Imhof, 2004)).
- Acquisition of positive behaviors (using rewards to complete tasks (Jackson, 2022)).

**Advantages of instructional strategies**

- Decreased misbehavior and better social skills (influence of peers on self-confidence (Mikami, 2010)).
- Improved spelling accuracy and increased students' motivation (Burks, 2004)).
- CWPT and peer coaching have positive results on the development of behaviors (Plumer, 2005).

**Advantages of computer-based activities**

- Development of reading comprehension abilities (the information is supported with visual aids (Liontou, 2019)).
- Management of reading difficulties (use online dictionaries to look up the meaning of unknown words (Liontou, 2019)).
- Review of new lexical grammar and grammar structures through online lessons (Macaruso & Rodman, 2011).
- Immediate Feedback

## CHAPTER III

**3 METHODOLOGY**

This is a research synthesis, which has been defined by Wyborn et al. as the incorporation of information already in existence and relevant research discoveries (2018). This research synthesis is exploratory in order to obtain relevant information. A literature review was made up of 21 empirical articles found in academic databases such as: Google Scholar, ERIC: Educational Resource Information Center, Research Gate, ScienceDirect, and Semantic Scholar.

The articles used to support this research synthesis were chosen by taking into account inclusion criteria. First, articles were empirical studies containing research questions, objectives, participants, and instruments. Second, articles published in any of the academic sources were peer-reviewed articles. Third, articles had to be written in English since the problem identify involves EFL classrooms. Fourth, the articles selected were published since 2010 to ensure that up-to-date information was available for this work. Also, the following exclusion criteria were considered in accordance to the reviewed primary studies: unpublished studies, non-peer-reviewed studies and studies from secondary sources.

The keywords that were used in academic databases to facilitate the search for information were the following: a) children with ADHD, b) teaching strategies, c) EFL settings, d) metacognitive process. Finally, the studies used qualitative, quantitative, and mixed methods since there were no restrictions to the type of approach of the studies.

Some of the databases and journals that were revised were: JSTOR, SSRN: Social Science Research Network, Dialnet, Scielo, ProQuest Education Journals, and MLA International Bibliography, International Journal of Advanced Research, among others that were considered useful. Subsequently, a coding procedure was used to classify the articles according to the established criteria.

CHAPTER IV

4 DATA ANALYSIS

Twenty one empirical studies were analyzed and classified according to four categories: year of publication, age of participants, strategies more commonly used, and advantages and disadvantages of using those strategies. First, the year of publication was analyzed in order to obtain information about what strategies are currently being used to teach children with ADHD, and identify whether there has been changes in the strategies chosen for EFL teachers over the years. Second, the age of participants was considered because some strategies seem to be more suitable for certain ages. Third, the location of the study was taken in consideration to have a view of how different contexts address ADHD. Fourth, the strategies more commonly used is also a category, and finally, the advantages and disadvantages of using these strategies were also analyzed since some strategies seem to have more benefits than others.

4.1 Year of publication

Table 1

YEAR OF PUBLICATION	N. OF STUDIES	%	AUTHOR(S)
2010-2015	7	30%	Cain, K., & Bignell, S. (2014); David, N. (2013); Dilawari, K., & Tripathi, N. (2014); Macaruso, P., and Rodman, A. (2011); Mikami, A. Y., (2010); Sabet, M., Farhoumand, F., Zafarghandi, A., & Naseh, A. (2015); Soroa, M., Gorostiaga, A., & Balluerka, N. (2015).
2016-2020	10	50%	Abaoud, A. (2016); Barnett, J. (2017); Capodieci, A., Re, M., Fracca, A., Borella, E., & Carretti, B. (2019); Cook, S., Cook, B., Cook, L. (2017); Lontou, T. (2019); Ng, Q., Ho, C., Chan, H., Yong, B., & Yeo, W. (2017); Pezzica, S., Vezzani, C., & Pinto, G. (2018); Poznanski, B., Hart, K. C., & Cramer,

			E. (2018); Ross, P., & Randolph, J. (2016); Sfrisi, S. J., Deemer, S., Tamakloe, D., & Herr, O. (2017).
2020-2023	4	20%	Diachenko, I., Kalishchuk, S., Zhylin, M., Kyyko, A., & Volkova, Y. (2022); Kałdonek-Crnjaković, A. (2020); Kajka, N., & Kulik, A. (2021); Kajka, N., & Kulik, A. (2022).

Table 1 shows the studies organized according to their year of publication. Between 2010 and 2015, only seven articles were published on teaching strategies for children with ADHD. However, after 2016, there was an increase of interest in this topic with 10 articles reviewed. In reference to the later years, after 2020, it can be predicted that there will be an increase in the number of studies on the topic, since 4 have been published so far.

The first studies reported that most students with this neurological disorder struggled to get good grades in school. Mikami (2010) emphasized that one factor that affected their academic performance in a direct manner was the difficulty of establishing friendships within the classroom due to peer rejection. Although it was important to know the situations these children had to face, there were not many studies that focused on how to help them improve their social skills in order to be successful in school.

A study carried out by Soroa et al. (2015) showed that some teachers had hardly any knowledge of ADHD and others had no knowledge or interest in the topic. This implied that teachers who had to teach students with ADHD were not prepared to deal with these students or had no knowledge of what strategies could be applied. Even though few teachers were aware of ADHD symptoms, there was a lack of interest in addressing the needs of these children in academic settings. However, Sfrisi et al. (2017) mentioned the importance of knowing the learning preferences of children with this disorder; for instance, classroom environment, learning motivation, or favorite types of work. This information was required to enhance the academic success of students with ADHD. These students learn in a different way compared to the rest of the class; therefore, teachers needed to look for useful strategies and the proper way to apply them in order to get significant results in students' learning process.

Furthermore, a recent study developed by Kałdonek-Crnjaković (2020) discussed possible appropriate strategies, such as antecedent-based activities, color coding, or multisensory

stimulation to teach students with ADHD. The author indicated that teachers should focus on improving the production of L2, as well as controlling students' behavior to make them more concentrated and enhance their skills, such as reading and writing. Finally, Kajka and Kulik (2022) also mentioned that using metacognitive strategies that include sketch-noting and mind-mapping was essential to engage students' attention, increase their motivation, and reduce misbehaviors to support their needs in academic life.

#### 4.2 Age of participants

Table 2

AGE OF PARTICIPANTS	N. OF STUDIES	%	AUTHOR(S)
5-8 years old	2	10%	Capodieci, A., Re, M., Fracca, A., Borella, E., & Carretti, B. (2019); Pezzica, S., Vezzani, C., & Pinto, G. (2018);
6-12 years old	7	33%	Cain, K., & Bignell, S. (2014); David, N. (2013); Dilawari, K., & Tripathi, N. (2014); Liontou, T. (2019); Kajka, N., & Kulik, A. (2021); Ross, P., & Randolph, J. (2016); Sfrisi, S. J., Deemer, S., Tamakloe, D., & Herr, O. (2017)
12-14 years old	1	5%	Sabet, M., Farhoumand, F., Zafarghandi, A., & Naseh, A. (2015).

Unspecified	11	52%	Abaoud, A. (2016); Barnett, J. (2017); Cook, S., Cook, B., Cook, L. (2017); Diachenko, I., Kalishchuk, S., Zhylin, M., Kyyko, A., & Volkova, Y. (2022); Kajka, N., & Kulik, A. (2022); Kaldonek-Crnjaković, A. (2020); Mikami, A. Y., (2010); Macaruso, P., and Rodman, A. (2011); Ng, Q., Ho, C., Chan, H., Yong, B., & Yeo, W. (2017); Poznanski, B., Hart, K. C., & Cramer, E. (2018); Soroa, M., Gorostiaga, A., & Balluerka, N. (2015).
-------------	----	-----	--

Table 2 displays the studies according to the age of the participants. It includes 21 articles about some strategies to teach children with ADHD. This table was divided into four sections to show results at different age ranges. According to Pezzica et al. (2018), 5 to 8 year-old children with this disorder were easily distracted when performing a task and organizing their school materials, compared to children aged 8 to 11 years. It meant that the age difference is important when referring to the time needed for children to expand the ability to be concentrated and develop better metacognitive awareness. Likewise, Ross and Randolph (2014) showed in their study that second- and fifth-year school students with this condition tended to lose their attention while performing tasks that require a complex metacognitive process, even if there was a person helping them to finish homework. The reason might be that these students could not be quiet while doing the same activity or were not able to finish it if they were asked to remain in the same position for a long time. As a result, they would focus on everything around them but the task at hand. In addition, misbehavior was another factor that affected the academic life of students with this disorder; Kajka and Kulik (2021) stated that using metacognitive strategies, such as mind-mapping, helped to reduce inadequate behaviors but also improved the thinking and comprehension skills of children aged 9-12 years. This might be useful for teachers to support students with this diagnosis in their school achievement.

Given that some strategies were focused on behavior control there were other strategies that helped to get better results in the academic development of students with ADHD, especially around the age of 12-14 years. For instance, Sabet et al. (2015) asserted that different focus strategies made a difference in the academic scores of students with this neurological disorder

compared to students without it, especially when one of these types of strategies, called fold overs, was used to learn new vocabulary. Finally, this table shows that some studies did not indicate the specific age of the participants involved; however, they presented relevant results when applying strategies to teach children with this diagnosis. As an example, Barnett (2017) mentioned that children with ADHD improved their memory and concentration, as well as their organization skills through the use of digital tools, as long as teachers and parents monitor the screen time.

**4.3 Location**

Table 3

LOCATION	N. OF STUDIES	%	AUTHOR(S)
Asia	3	14%	Abaoud, A. (2016); David, N. (2013); Sabet, M., Farhoumand, F., Zafarghandi, A., & Naseh, A. (2015).
North America	6	24%	Barnett, J. (2017); Cook, S. Co., Cook, B. G., Cook, L. (2017); Macaruso, P., and Rodman, A. (2011); Poznanski, B., Hart, K., & Cramer, E. (2018); Soroa, M., Gorostiaga, A., & Balluerka, N. (2015); Ross, P., & Randolph, J. (2016).
Europe	3	14%	Cain, K., & Bignell, S. (2014); Capodiecici, A., Re, A., Fracca, A., Borella, E., & Carretti, B. (2019); Diachenko, I., Kalishchuk, S., Zhylin, M., Kyyko, A., & Volkova, Y. (2022);
Unspecified	9	48%	Dilawari, K., & Tripathi, N. (2014); Kajka, N., & Kulik, A. (2021); Kajka, N., & Kulik, A. (2022); Kaldonek-Crnjaković, A. (2020); Liontou, T. (2019); Mikami, A. Y., (2010); Ng, Q. X., Ho, C. Y. X., Chan, H. W., Yong, B. Z. J., & Yeo, W. S. (2017); Pezzica, S., Vezzani, C., & Pinto, G. (2018); Sfrisi, S., Deemer, S., Tamakloe, D., & Herr, O. (2017).

Table 3 illustrates the studies organized according to the location in which they were carried out: North America, Europa, and Asia. For this analysis, 21 articles were considered, with



some similarities among them such as lack of knowledge about the topic, cultural context, and socioeconomic status as factors that influence the results of those studies.

Five studies in Table 3 indicated that North America, especially the United States, was a popular location where researchers had conducted their research projects. These findings suggested that US children with ADHD make up a significant percentage of the students' community (Barnett, 2017). These results are similar to those reported by Ross and Randolph (2016) who found in the American Psychiatric Association that 7% of students in the educational system in the US had a diagnosis of ADHD making it one of the most expensive disorders costing \$31.6 billion across the country. Moreover, Poznanski et al. (2018) stated that teachers in the US should have a training program in college about common psychological disorders to develop an accurate understanding of them and find ways to manage the cases effectively, especially because 66% of teachers wanted to quit their jobs in the first year of teaching.

Another continent with significant research in this field was Asia, mainly in the countries of India, Iran and Saudi Arabia. In India, it is reported that ADHD affects 5-10% of the population, mainly in boys, and parents and teachers preferred not to consult doctors about this disorder since they thought that inappropriate behaviors were part of human nature. These results seem to suggest that in India more importance is given to academic problems than to mental or physical ones because in their culture education is an important tool for gaining socioeconomic status (David, 2013). Likewise, in Iran, 5% of children are diagnosed with ADHD and sometimes labeled as trouble students because teachers cannot identify this medical condition (Sabet et al., 2015). In fact, most schools were unable to provide these students with the necessary attention and assistance because teachers did not apply the correct strategy to improve their academic performance; therefore, the students' life at school, at home and in the society in general was affected. These students expressed feelings of frustration and low self-esteem. Furthermore, in Saudi Arabia, these students did not develop good social skills, since they did not have the opportunity to share with peers of the other gender, particularly because boys and girls attend separate schools in accordance with cultural norms and Saudi educational regulations (Abaoud, 2016).

In the same way, Europe is a continent with vast investigation on the topic, as it can be seen in Table 3. In countries such as Italy or the United Kingdom, they started to look for modern teaching strategies instead of the traditional ones to improve the way this condition is addressed. According to Cain et al. (2014), in the United Kingdom, it is believed that 2-5% of

kids suffer with ADHD. In this country, the researchers wanted to see the effects of this neurological condition on reading ability, because these children find it difficult to pay attention to something if they do not have a visual stimulus. Both word reading and reading comprehension performance were analyzed since these two could be affected by this medical disorder. It was proven that the use of visual aids could improve memory retention and reading comprehension, as children with this condition remembered objects or shapes on colored backgrounds.

#### 4.4 Strategies more commonly used for Teaching English as a FL to Children with ADHD

Table 4

STRATEGIES	N. OF STUDIES	%	AUTHOR(s)
Keyword	2	11%	Sabet, M., Farhoumand, F., Zafarghandi, A., & Naseh, A. (2015); Sfrisi, S. J., Deemer, S., Tamakloe, D., & Herr, O. E. (2017).
Making sentences	2	11%	Cain, K., & Bignell, S. (2014); Sabet, M., Farhoumand, F., Zafarghandi, A., & Naseh, A. (2015).
Metacognitive strategies (Mind-mapping and sketch-noting)	2	11%	Kajka, N., & Kulik, A. (2021); Kajka, N., & Kulik, A. (2022).
Body moving	3	16%	Každonek-Crnjaković, A. (2020); Ng, Q., Ho, C., Chan, H., Yong, B., & Yeo, W. (2017); Sfrisi, S. J., Deemer, S., Tamakloe, D., & Herr, O. E. (2017).
Color coding	2	11%	Capodieci, A., Re, A. M., Fracca, A., Borella, E., & Carretti, B. (2019); Diachenko, I., Kalishchuk, S., Zhylin, M., Kyyko, A., & Volkova, Y. (2022).

Reward system	1	6%	David, N. (2013).
Classwide peer tutoring	1	6%	Cook, S., Cook, B., Cook, L. (2017).
Computer-based activities	5	28%	Barnett, J. E. (2017); Capodiecici, A., Re, A. M., Fracca, A., Borella, E., & Carretti, B. (2019); Dilawari, K., & Tripathi, N. (2014); Liontou, T. (2019); Macaruso, P., and Rodman, A. (2011).

Table 4 shows the strategies more commonly used for Teaching English as a FL to Children with ADHD. For this category, 18 out of 21 studies were examined since they focused on reviewed information about the different strategies that teachers could consider and their benefits. The three articles that were not considered for this category focused on the perceptions and knowledge that teachers have about this medical disorder; therefore, they were excluded from this analysis.

As presented in Table 4, one of the most useful and researched strategies were those related to computer-based activities because teachers could use colorful visual aids which called the attention of students with this neurological disorder. According to Dilawari and Tripathi (2014), teachers could benefit from the use of this strategy because they could develop personalized tasks for their students, empowering them to participate more actively while also boosting their self-confidence and motivation. Similarly, Lontou (2019) found that students with this medical condition agreed with the use of online activities mainly because they believed that such academic environments made learning a new language easier.

As it can be seen in Table 4, another strategy is the use of activities that involve body movement, which implied the use of different sensory channels, such as visual, tactile, and auditory. A study conducted by Sfrisi et al. (2017) found that teachers should include body movement in their lessons to ensure students could get up and move around the room while they were learning new content. Kałdonek-Crnjaković (2020) agreed with this finding adding that children with ADHD naturally and frequently needed to interact through movement and by touching since they were unable to learn just from what they heard or read. However, Table 3 indicated that CWP and reward system were the least researched strategies due to the limitations that teachers had in their classrooms, such as having to deal with the behavior of students with this medical condition and their restricted knowledge of the class's topic. In regards to CWP, David (2013) stated that teachers were aware of the many behaviors that kids with this neurological disorder experience. Therefore, they used the reward system to reinforce and recognize good behavior in the classroom. Additionally, Cook et al. (2017) found that CWP could improve the academic performance of children with ADHD since their participants increased their ability to spell new and old words.

#### **4.5 Advantages and disadvantages of using these strategies**

##### **Table 5 Advantages of using these strategies**

ADVANTAGES	N. OF STUDIES	%	AUTHOR(s)
Improve reading abilities	3	16%	Cain, K., & Bignell, S. (2014); Dilawari, K., & Tripathi, N. (2014); Liontou, T. (2019).
Reduced distractibility	5	26%	Barnett, J. E. (2017); Kaldonek-Crnjaković, A. (2020); Ng, Q. X., Ho, C. Y. X., Chan, H. W., Yong, B. Z. J., & Yeo, W. S. (2017); Ross, P., & Randolph, J. (2016); Sfrisi, S. J., Deemer, S., Tamakloe, D., & Herr, O. E. (2017).
Positive behavior	7	37%	Capodiecici, A., Re, A. M., Fracca, A., Borella, E., & Carretti, B. (2019); David, N. (2013); Diachenko, I., Kalishchuk, S., Zhylin, M., Kyyko, A., & Volkova, Y. (2022); Kajka, N., & Kulik, A. (2022); Ng, Q. X., Ho, C. Y. X., Chan, H. W., Yong, B. Z. J., & Yeo, W. S. (2017); Pezzica, S., Vezzani, C., & Pinto, G. (2018); Sfrisi, S. J., Deemer, S., Tamakloe, D., & Herr, O. E. (2017).
Social skills	4	21%	Abaoud, A. A. (2016); Dilawari, K., & Tripathi, N. (2014); Mikami, A. Y., (2010); Cook, S., Cook, B., Cook, L. (2017).

Table 5 exhibits the advantages of using the strategies listed in Table 4. In this category, 19 out of 21 studies were analyzed to learn the benefits of applying these strategies in an EFL classroom. The two remaining studies were not taken into consideration for this category because they focused on disadvantages of using some of these strategies, rather than on the advantages.

One of the most important advantages that were presented in Table 5 was that activities that involve body movement, computer use, and keyword focus reduced distractibility in children with ADHD. According to Kaldonek-Crnjaković (2020), students with this medical condition needed movement and touch to assimilate information and control their behavior without interrupting their classmates. This finding agreed with a study conducted by Ng et al. (2017), who stated that body movement enhanced attention and concentration since it increased the

levels of dopamine and norepinephrine neurotransmitters, which function similarly to medicines employed for treating ADHD, to minimize the symptoms in these students.

Another advantage of most of these strategies was enhancing the positive behavior of these students in the English classroom. Capodieci et al. (2019) argued that metacognitive strategies could train working memory, which developed good observable behavior in everyday life. Also, Kajka and Kulik (2022) claimed that metacognitive strategies pointed out clearly what these students needed to do since every learning session had a specific goal and activities that they were required to work on. Similarly, Pezzica et al. (2018) declared that combining metacognitive and behavior strategies could develop autonomy in these students when reinforcing positive behavior in an EFL classroom.

**Table 6 Disadvantages of using these strategies**

DISADVANTAGES	N. OF STUDIES	%	AUTHOR(s)
Negative emotions	2	15%	Pezzica, S., Vezzani, C., & Pinto, G. (2018); Diachenko, I., Kalishchuk, S., Zhylin, M., Kyyko, A., & Volkova, Y. (2022).
Lack of organization	1	8%	Kajka, N., & Kulik, A. (2021).
No improvement of the vocabulary	1	8%	Sabet, M., Farhoumand, F., Zafarghandi, A., & Naseh, A. (2015).
Bad Behavior	2	15%	David, N. (2013); Kałdonek-Crnjaković, A. (2020).
Teachers do not know how to apply the strategy	3	24%	Abaoud, A. A. (2016); Poznanski, B., Hart, K. C., & Cramer, E. (2018); Soroa, M., Gorostiaga, A., & Balluerka, N. (2015).
Easily distracted	4	30%	Barnett, J. E. (2017); Dilawari, K., & Tripathi, N. (2014); Liontou, T. (2019); Ross, P., & Randolph, J. (2016).

Table 6 demonstrates the disadvantages of working with the strategies presented in Table 4. For this category, 13 out of 21 studies were analyzed because they demonstrated the

drawbacks, such as the lack of development of social skills, misbehavior, and more, that teachers and students could face while they were using those strategies. Eight studies were not considered for this category because they displayed the positive effects of working with those strategies, including improving organization, motivation, etc.

One of the disadvantages that Table 6 shows is that teachers did not know how to apply certain strategies in the classroom. Poznanski et al. (2018) found that teachers did not have enough knowledge about ADHD and the strategies that they needed to apply. In their research work, teachers had to react to the statements of the Knowledge and Opinion about ADHD (KOAD) test. They needed to answer with True, False or I do not know to statements like this one: "ADHD is frequently present more in girls than boys"; however, in most answers the option chosen was "I don't know". The author said that this lack of knowledge could lead to negative interactions between teachers and students with ADHD. Abaoud (2016) agreed with this finding since the author found that most teachers required special education, teachers' assistance or an instructional book on how to use these strategies in the classroom.

Another disadvantage that could be seen in Table 6 is that some strategies provoked negative emotions in children with ADHD. According to Diachenko et al. (2022), colors had a connection with emotions. That is why teachers needed to avoid using certain colors, such as black or gray, because those colors elicited a feeling of sadness or boredom. Even though using colors to improve the concentration and enhance memory of these students helped to get good results in their academic development, teachers had to be aware that each color is linked to a positive or negative function; for instance, red helped to retain key information (Diachenko et al. 2022). For this reason, if the color strategy was not applied correctly by teachers within classrooms, it was not possible to enhance the metacognitive process of the students with or without ADHD.

## CHAPTER V

**5 CONCLUSIONS AND RECOMMENDATIONS****5.1 Conclusions**

The purpose of this research synthesis was to determine which strategies for teaching English to children with ADHD have been reported as the most effective in EFL settings, by analyzing their advantages, as well as their disadvantages of working with them. For that reason, the findings from 21 articles were explored to obtain the following conclusions:

Regarding the first category of data analysis, the results of 10 studies published between 2016 to 2020 showed that there is an increase in information about the topic compared to the previous years. One of the main factors that helped this rise was that teachers are taking into consideration students' learning styles more. Teachers are able to select the appropriate material to work with those students to improve their academic development. Teachers are also showing more interest in learning about this medical disorder. Furthermore, special attention has been given to social factors, such as bonds made in classrooms since reported cases indicate that some students faced peer rejection (Mikami, 2010). This author recommends teachers to help those students to establish social relationships because of their influence on academic performance.

In relation to the second category, the outcomes of seven articles demonstrated that some researchers obtain better results in their research projects with children between 6 and 12 years of age who have this diagnosis. Those children are more concentrated and complete tasks because they have greater metacognitive awareness that allows them to make correct decisions and think in a critical way, compared to five years old kids. Additionally, those students do not present inappropriate behaviors because they are aware that in a classroom there are certain norms that they need to follow in order to have a peaceful environment, in which they accomplish all their academic goals along with their peers.

In the third category, it can be seen that children diagnosed with ADHD are not always part of the official records or reports; and in fact, the place where the researchers conducted their investigative work has a significant impact on the number of studies done on the topic. The present results confirm that North America, Europe and Asia are the continents where most research on the topic has been carried out, especially the countries of USA, Italy, UK, India, Iran and Saudi Arabia. Children with this neurological disorder face a hard time in school because many educational institutions follow certain cultural or social ideologies, especially in



countries in which education is seen as a way to gain social status. In addition, parents and teachers do not pay sufficient attention to male children because they think that some of the behaviors they have are part of their nature, which causes these children to lose their self-esteem and confidence. Furthermore, these findings provide additional information on alternatives to the traditional way of teaching that these countries are offering, such as teacher training programs in this subject or differentiated school material to improve the academic performance of children with this diagnosis.

Respecting the fourth category, the findings of five studies concluded that the most appropriate strategy to help children with ADHD is the use of activities based on computer use because it reduces the symptoms of this disorder, for example, controlling misbehaviors, decreasing distractions, and enhancing the academic development of the students. This strategy has a direct effect on their memory (Capodiecici et al., 2019) because in some tasks students need to put more effort into understanding and finishing them. Additionally, the use of different apps helps students to enhance their organizational skills, since students can set alarms to complete or even practice the topic that they are learning (Barnett, 2017). Another appropriate strategy is to propose activities that involve body movement which influences positively the behavior of these students (Crnjakovic, 2020), allowing them to decrease their inappropriate behaviors, especially in the hyperactive type. Also, this strategy improves cognitive functions and memory because students tend to learn and develop better retention of new information through physical movements.

In the fifth category, the analyzed strategies show the advantages of using them to teaching English to children with ADHD. Some of the strategies improve the learning process and time management, reduce distractibility, promote good organization, among others. One way to improve the academic performance of students with this disorder is by using metacognitive strategies since they not only change the misbehavior of those students, but also develop the thinking and learning process through the use of mind-maps (Kajka & Kulik, 2021). In a similar way, sketch-noting is useful to minimize distractions and remember new information through drawings and notes (Jain, 2022). Nevertheless, using sketches can be difficult for these students because they do not offer good organization of the new content (Kajka & Kulik, 2021). Similarly, focus strategies, such as keywords and fold-overs strategies improve learning new vocabulary and remembering it, which has a positive impact on the academic development of children with this condition and of children without it (Sabet et al., 2015).

Lastly, the sixth category mentioned the disadvantages of using those strategies. The principal drawback related to strategy use is the lack of knowledge that a teacher could have on the

subject. Even though some teachers receive information about ADHD in some training courses, there is still a large number of teachers who do not have sufficient knowledge about this medical condition (Soroa et al., 2015). As a result, they are not able to support the needs of those students in the real classroom.

## **5.2 Recommendations.**

Based on the analysis and the outcomes found, the following recommendations could be made. Firstly, it is demonstrated that all of the strategies used to teach English to children with ADHD provide advantages such as avoiding misbehaviors and distractibility. However, in order to identify these students in the classroom and select the best method to meet their needs, teachers must have knowledge about this disorder. Therefore, it is advisable to offer training programs regarding ADHD and how to teach kids with this diagnosis in the EFL classroom.

Also, further research should be carried out in Ecuador since most of the information on this topic comes from countries that have a different education system and culture. It is necessary to obtain information related to this topic, in our context. Additionally, investigation should focus on measuring the teachers' knowledge about this topic to plan appropriate training courses based on the results of the research.

### References

- Abaoud, A. (2016). Implementation of Peer Tutoring Strategies in Teaching Students with ADHD: Teachers' Attitudes in Saudi Education. *Journal of education and practice*, 7(30), 52-59. <http://files.eric.ed.gov/fulltext/EJ1118899.pdf>
- Attention-deficit/hyperactivity disorder*. (2022, September). National Institute of Mental Health. <https://www.nimh.nih.gov/health/topics/attention-deficit-hyperactivity-disorder-adhd>
- Barkley, A. (2005). *Attention deficit hyperactivity disorder: a handbook for diagnosis and treatment*. (3rd ed.) New York, NY: Guilford Press.
- Barnett, J. (2017). Helping Students with ADHD in the Age of Digital Distraction. *Physical Disabilities: Education and Related Services*, 36(2), 1-7.  
doi:10.14434/pders.v36i2.23913
- Biederman, J., Petty, C. R., Fried, R., Black, S., Faneuil, A., Doyle, A. E., Seidman, L. J., & Faraone, S. V. (2008). Discordance Between Psychometric Testing and Questionnaire-Based Definitions of Executive Function Deficits in Individuals With ADHD. *Journal of Attention Disorders*, 12(1), 92-102.  
doi:10.1177/1087054707305111
- Bulut, S. (2005). Classroom Interventions for Children with Attention Deficit Hyperactivity Disorder. *Studia Psychologica*, 47(1), 51.  
[https://www.researchgate.net/publication/287349252\\_Classroom\\_interventions\\_for\\_children\\_with\\_attention\\_deficit\\_hyperactivity\\_disorder](https://www.researchgate.net/publication/287349252_Classroom_interventions_for_children_with_attention_deficit_hyperactivity_disorder)
- Burks, M. (2004). Effects of Classwide Peer Tutoring on the Number of Words Spelled Correctly by Students with LD. *Intervention in School and Clinic*, 39(5), 301-304. doi:10.1177/10534512040390050701

- Cabaroğlu, N., Tohma, M. (2021). English Language Teacher Educators' Knowledge and Classroom Practices of ADHD. In: Banegas, D.L., Beacon, G., Pérez Berbain, M. (eds), *International Perspectives on Diversity in ELT* (pp. 283- 300). Palgrave Macmillan, Cham. doi:10.1007/978-3-030-74981-1\_16
- Cain, K., & Bignell, S. (2014). Reading and listening comprehension and their relation to inattention and hyperactivity. *British journal of educational psychology*, *84*(1), 108-124. <https://doi.org/10.1111/bjep.12009>
- Capodieci, A., Re, A. M., Fracca, A., Borella, E., & Carretti, B. (2019). The efficacy of a training that combines activities on working memory and metacognition: Transfer and maintenance effects in children with ADHD and typical development. *Journal of clinical and experimental neuropsychology*, *41*(10), 1074-1087. <https://doi.org/10.1080/13803395.2019.1651827>
- Children and Adults with Attention Deficit/Hyperactivity Disorder*. (2007). General Prevalence of ADHD. <https://chadd.org/about-adhd/general-prevalence/>
- Cook, S. Co., Cook, B. G., & Cook, L. (2017). Classifying the Evidence Base of Classwide Peer Tutoring for Students with High-Incidence Disabilities. *Exceptionality*, *25*(1), 9-25. doi:10.1080/09362835.2016.1196448
- David, N. (2013). ADHD in Indian Elementary Classrooms: Understanding Teacher Perspectives. *International Journal of Special Education*, *28*(2), 4-16. <https://eric.ed.gov/?id=EJ1023228>
- Diachenko, I., Kalishchuk, S., Zhylin, M., Kyyko, A., & Volkova, Y. (2022). Color education: A study on methods of influence on memory. *Heliyon*, *8*(11). doi:10.1016/j.heliyon.2022.e11607

- Dilawari, K., & Tripathi, N. (2014). Strategies to improvise teacher tasking for children suffering from attention deficit hyperactivity disorder (ADHD). *International Journal on Disability and Human Development*, 13(1), 19-24. doi:10.1515/ijdhhd-2013-0016
- Educacion Especial E Inclusiva. (2022). *Instituciones de Educación Especializada*. Ministerio de Educación. <https://educacion.gob.ec/instituciones-de-educacion-especializada/>
- Greathead, P. (2013). *Language disorders and attention deficit hyperactivity disorder*. ADDISS. <http://addiss.co.uk/languagedisorders.htm>
- Jackson, C. (2022, May 15). *How to Create a Reward System for Kids*. Joon. <https://www.joonapp.io/post/reward-system-for-kids>
- Imhof, M. (2004). Effects of color stimulation on handwriting performance of children with ADHD without and with additional learning disabilities. *European child & adolescent psychiatry*. 13:191-8. doi:10.1007/s00787-004-0371-5.
- Jain, A. (2022). *Distracted during lectures? Try Sketchnoting*. University College London. [https://ucl.ac.uk/content/2-study/4-current-taught-course/1-distinction-projects/16-22/jain\\_ashita\\_2022.pdf](https://ucl.ac.uk/content/2-study/4-current-taught-course/1-distinction-projects/16-22/jain_ashita_2022.pdf)
- Kajka, N., & Kulik, A. (2021). The Influence of Metacognitive Strategies on the Improvement of Reaction Inhibition Processes in Children with ADHD. *International Journal of Environmental Research and Public Health*, 18(3), 878. doi:10.3390/ijerph18030878
- Kaldonek-Crnjaković, A. (2020). Teaching an FL to students with ADHD. *Govor*, 37(2), 205-222. doi:10.22210/govor.2020.37.10
- Khandelwal, K., Jhingan, P., Ramesh, S., Gupta, R., & Srivastava, V. (2004). India mental health country profile. *International Review of Psychiatry*, 16(1-2), 126-141. doi:



- Kofler, M., Singh, L., Soto, E., Chan, E., Miller, C., Harmon, S., & Spiegel, J. (2020). Working memory and short-term memory deficits in ADHD: A bifactor modeling approach. *Neuropsychology, 34*(6), 686-698. doi:10.1037/neu0000641
- Kormos, J. (2017). *The second language processes of students with specific learning difficulties*. (1st ed.). Routledge. doi:10.4324/9781315692371
- Kutscher, M. & Rosin, N. (2015). *Too much screen time? When your child with ADHD over-connects*.  
[http://www.chadd.org/AttentionPDFs/ATTN\\_06\\_15\\_TooMuchScreenTime.pdf](http://www.chadd.org/AttentionPDFs/ATTN_06_15_TooMuchScreenTime.pdf)
- Langberg, J., Epstein, J., Girio-Herrera, E., Becker, S., Aaron J., Vaughn, A., & Altaye, M. (2011). Materials Organization, Planning, and Homework Completion in Middle-School Students with ADHD: Impact on Academic Performance. *School mental health, 3*(2), 93-101. doi:10.1007/s12310-011-9052-y
- Langberg, J. M., Epstein, J. N., & Graham, A. J., (2008). Organizational-skills interventions in the treatment of ADHD. *Expert Review of Neurotherapeutics, 8*(10), 1549-1561. doi:10.1586/14737175.8.10.1549
- Ley Orgánica de Educación Intercultural [LOEI]. Art. 228. May 19, 2017 (Ecuador).
- Liontou, T. (2019). Foreign language learning for children with ADHD: evidence from a technology-enhanced learning environment. *European Journal of Special Needs Education, 34*(2), 220-235. doi:10.1080/08856257.2019.1581403
- Macaruso, P., & Rodman, A. (2011). Benefits of Computer-Assisted Instruction to Support Reading Acquisition in English Language Learners. *Bilingual Research Journal, 34*(3), 301-315. doi:10.1080/15235882.2011.622829.

McCrimmon, A. W. (2015). Inclusive Education in Canada: Issues in Teacher Preparation.

*Intervention in School and Clinic*, 50(4), 234-237. doi:10.1177/1053451214546402

Mikami, A. (2010). The Importance of Friendship for Youth with Attention-Deficit/Hyperactivity

Disorder. *Clin Child Fam Psychol Rev*, 13(2), 181-198. doi:10.1007/s10567-010-0067-y

Miranda, A., Jarque, S., & Tarraga, R. (2006). Interventions in School Settings for Students

With ADHD. *Exceptionality*, 14(1), 35-52. doi:10.1207/s15327035ex1401\_4

Munk, J. (2016, April 21). *What Are ESL Classes?* Study.com.

<https://study.com/academy/popular/what-are-esl-classes.html>

National Health Service. (December 24, 2021). *Attention deficit hyperactivity disorder (ADHD)*.

NHS inform. <https://www.nhsinform.scot/illnesses-and-conditions/mental-health/attention-deficit-hyperactivity-disorder-adhd>

NSW Government Website. (2022, September 13). *Teaching strategies*. NSW Education

Department. <https://education.nsw.gov.au/student-wellbeing/tell-them-from-me/accessing-and-using-tell-them-from-me-data/tell-them-from-me-measures/teaching-strategies#Why1>

Oxford University Press ELT. (2011, July 12). *How ESL and EFL classrooms differ*.

<https://oupeltglobalblog.com/2011/07/12/how-esl-and-efl-classrooms-differ/>

Pezzica, S., Vezzani, C., & Pinto, G. (2018). Metacognitive knowledge of attention in children

with and without ADHD symptoms. *Research in Developmental Disabilities*, 83, 142-152. <https://doi.org/10.1016/j.ridd.2018.08.005>



- Poznanski, B., Hart, K., & Cramer, E. (2018). Are teachers ready? Preservice teacher knowledge of classroom management and ADHD. *School Mental Health, 10*(3), 301-313. doi:10.1007/s12310-018-9259-2
- Plumer, P. (2005). The Relative Effects of Classwide Peer Tutoring and Peer Coaching on the Positive Social Behaviors of Children With ADHD. *Journal of Attention Disorders, 9*(1), 290-300. doi:10.1177/1087054705280796
- Rodgers, A., & Kalyn, W. (2019). *What is ADHD? attention deficit hyperactivity disorder in children and adults*. ADDitude. <https://www.additudemag.com/what-is-adhd-symptoms-causes-treatments/>
- Ross, P., & Randolph, J. (2016). Differences between students with and without ADHD on task vigilance under conditions of distraction. *Journal of educational research and practice, 4*(1), 1-10. doi: 10.5590/JERAP.2014.04.1.01
- Sabet M., Farhoumand F., Zafarghandi A., & Naseh A. (2015). The Effect of Focus Strategies on ADHD Students' English Vocabulary Learning in Junior High School. *International Journal of Applied Linguistics & English Literature, 4*(1), 125. doi:10.7575/aiac.ijalel.v.4n.1p.125
- Sfrisi, S., Deemer, S., Tamakloe, D., & Herr, O. (2017). The Investigation of the Learning Style Preferences and Academic Performance of Elementary Students with ADHD. *Excellence in Education Journal, 6*(2), 32-49. <https://eric.ed.gov/?id=EJ1210169>
- Shisler, L., Top, B., & Osguthorpe, R. (1986). Behaviorally disordered students as reverse role tutors: Increasing social group acceptance and reading skills. *British Columbia Journal of Special Education, 10*, 101-11. <https://eric.ed.gov/?id=EJ343946>

Singh, A., Yeh, C. J., Verma, N., & Das, A. K. (2015). Overview of Attention Deficit Hyperactivity Disorder in Young Children. *Health Psychology Research*, 3(2), 2115-2115. doi:10.4081/hpr.2015.2115

Soroa, M., Gorostiaga, A., & Balluerka, N. (2015). Teachers' Knowledge of ADHD: Relevance of Training and Individual Perceptions // Conocimiento de los maestros sobre el TDAH: Relevancia de la formación y de las percepciones individuales. *Revista de Psicodidáctica / Journal of Psychodidactics*, 21(2), 205-226. doi:10.1387/revpsicodidact.14023

*Teaching strategies*. (2021, May 6). ECU Intranet. <https://intranet.ecu.edu.au/learning/curriculum-design/teaching-strategies#:~:text=Teaching%20strategies%20refer%20to%20the,in%20which%20they%20are%20applied>.

Thapar, A., & Stergiakouli, E. (2008). An Overview on the Genetics of ADHD. *Xin li xue bao. Acta psychologica Sinica*, 40(10), 1088. doi:10.3724/SP.J.1041.2008.01088

*Using Peer Tutoring to Facilitate Access*. (2013, November 7). Reading Rockets. <https://www.readingrockets.org/article/using-peer-tutoring-facilitate-access>

*What is ADHD?*. (2022, June). American Psychiatric Association. [https://www.psychiatry.org/patients-families/adhd/what-is-adhd#section\\_9](https://www.psychiatry.org/patients-families/adhd/what-is-adhd#section_9)

Wichmann, F. A., Sharpe, L. T., & Gegenfurtner, K. R. (2002). The contributions of color to recognition memory for natural scenes. *Journal of experimental psychology. Learning, memory, and cognition*, 28(3), 509-520. doi: 10.1037/0278-7393.28.3.509

Wyborn, C., Louder, E., Harrison, J., Montambault, J., Montana, J., Ryan, M.,.....& Hutton, J. (2018). Understanding the impacts of research synthesis. *Environmental Science & Policy*, 86, 72-84. <https://doi.org/10.1016/j.envsci.2018.04.013>

### Anexes

List of studies used for the analysis.

Abaoud, A. (2016). Implementation of Peer Tutoring Strategies in Teaching Students with ADHD: Teachers' Attitudes in Saudi Education. *Journal of education and practice*, 7(30), 52-59.<http://files.eric.ed.gov/fulltext/EJ1118899.pdf>

Barnett, J. (2017). Helping Students with ADHD in the Age of Digital Distraction. *Physical Disabilities: Education and Related Services*, 36(2), 1-7. <https://doi.org/10.14434/pders.v36i2.23913>

Cain, K., & Bignell, S. (2014). Reading and listening comprehension and their relation to inattention and hyperactivity. *British journal of educational psychology*, 84(1), 108-124. <https://doi.org/10.1111/bjep.12009>

Capodieci, A., Re, A., Fracca, A., Borella, E., & Carretti, B. (2019). The efficacy of a training that combines activities on working memory and metacognition: Transfer and maintenance effects in children with ADHD and typical development. *Journal of clinical and experimental neuropsychology*, 41(10), 1074-1087. <https://doi.org/10.1080/13803395.2019.1651827>

Cook, S. Co., Cook, B. G., Cook, L. (2017). Classifying the Evidence Base of Classwide Peer Tutoring for Students with High-Incidence Disabilities. *Exceptionality*, 25(1), 9-25. [doi:10.1080/09362835.2016.1196448](https://doi.org/10.1080/09362835.2016.1196448)

- David, N. (2013). ADHD in Indian Elementary Classrooms: Understanding Teacher Perspectives. *International Journal of Special Education*, 28(2), 4-16. <https://eric.ed.gov/?id=EJ1023228>
- Dilawari, K., & Tripathi, N. (2014). Strategies to improvise teacher tasking for children suffering from attention deficit hyperactivity disorder (ADHD). *International Journal on Disability and Human Development*, 13(1), 19-24. <https://doi.org/10.1515/ijdh-2013-0016>
- Diachenko, I., Kalishchuk, S., Zhylin, M., Kyyko, A., & Volkova, Y. (2022). Color education: A study on methods of influence on memory. *Heliyon*, 8(11). [doi:10.1016/j.heliyon.2022.e11607](https://doi.org/10.1016/j.heliyon.2022.e11607)
- Kajka, N., & Kulik, A. (2021). The influence of metacognitive strategies on the improvement of reaction inhibition processes in children with ADHD. *International Journal of Environmental Research and Public Health*, 18(3), 878. <https://doi.org/10.3390/ijerph18030878>
- Kajka, N., & Kulik, A. (2022). The Assessment of the Impact of Training With Various Metacognitive Interventions on the Enhancement of Verbal Fluency in School-Age Children With ADHD. *Journal of Attention Disorders*, 27(1), 89-97. <https://doi.org/10.1177/10870547221121289>
- Kaldonek-Crnjaković, A. (2020). Teaching an FL to students with ADHD. *Govor*, 37(2), 205-222. [doi:10.22210/govor.2020.37.10](https://doi.org/10.22210/govor.2020.37.10)
- Liontou, T. (2019). Foreign language learning for children with ADHD: evidence from a technology-enhanced learning environment. *European Journal of Special Needs Education*, 34(2), 220-235. [doi:10.1080/08856257.2019.1581403](https://doi.org/10.1080/08856257.2019.1581403)

- Macaruso, P., and Rodman, A. (2011). Benefits of Computer-Assisted Instruction to Support Reading Acquisition in English Language Learners. *Bilingual Research Journal*, 34(3), 301-315. doi:10.1080/15235882.2011.622829.
- Mikami, A. Y., (2010). The Importance of Friendship for Youth with Attention-Deficit/Hyperactivity Disorder. *Clin Child Fam Psychol Rev*, 13(2), 181-198. doi:10.1007/s10567-010-0067-y
- Ng, Q. X., Ho, C. Y. X., Chan, H. W., Yong, B. Z. J., & Yeo, W. S. (2017). Managing childhood and adolescent attention-deficit/hyperactivity disorder (ADHD) with exercise: A systematic review. *Complementary therapies in medicine*, 34, 123-128. <https://doi.org/10.1016/j.ctim.2017.08.018>
- Pezzica, S., Vezzani, C., & Pinto, G. (2018). Metacognitive knowledge of attention in children with and without ADHD symptoms. *Research in Developmental Disabilities*, 83, 142-152. <https://doi.org/10.1016/j.ridd.2018.08.005>
- Poznanski, B., Hart, K., & Cramer, E. (2018). Are teachers ready? Preservice teacher knowledge of classroom management and ADHD. *School Mental Health*, 10(3), 301-313. <https://doi.org/10.1007/s12310-018-9259-2>
- Ross, P., & Randolph, J. (2016). Differences between students with and without ADHD on task vigilance under conditions of distraction. *Journal of educational research and practice*, 4(1), 1-10. doi: 10.5590/JERAP.2014.04.1.01
- Sabet, M., Farhoumand, F., Zafarghandi, A., & Naseh, A. (2015). The Effect of Focus Strategies on ADHD Students' English Vocabulary Learning in Junior High School. *International Journal of Applied Linguistics & English Literature*, 4(1), 125. <https://doi.org/10.7575/aiac.ijalel.v.4n.1p.125>

Sfrisi, S., Deemer, S., Tamakloe, D., & Herr, O. (2017). The Investigation of the Learning Style Preferences and Academic Performance of Elementary Students with ADHD. *Excellence in Education Journal*, 6(2), 32-49. <https://eric.ed.gov/?id=EJ1210169>

Soroa, M., Gorostiaga, A., & Balluerka, N. (2015). Teachers' Knowledge of ADHD: Relevance of Training and Individual Perceptions // Conocimiento de los maestros sobre el TDAH: Relevancia de la formación y de las percepciones individuales. *Revista de Psicodidactica / Journal of Psychodidactics*, 21(2), 205-226. <https://doi.org/10.1387/revpsicodidact.14023>