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FORDYSVAR EBOOK:
Best practices and technological resources for students with Specific Learning Difficulties (SpLDs)

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Fostering Inclusive Learning
for Children with Dyslexia

UNIVERSIDAD
DE BURGOS

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Fostering Inclusive Learning for Children with Dyslexia

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Introduction

Dyslexia is a Specific Learning Difficulty (SpLD) that primarily affects reading ability, although it can also manifest itself in writing. Its worldwide prevalence is estimated to be between 5% and 15%. In Spain, it has a 5- to 10-percentage-point impact on primary and secondary education. To be effective educators, teachers and parents must have a thorough understanding of dyslexia and how it affects their students/children. Most importantly, locating resources that can be used with dyslexic children would be extremely helpful. Therefore, this reports aims at such an endeavor. It starts with a brief explanation of what dyslexia is and how it manifests itself. The report then goes on to describe the findings of a Delphi study on the use of technology in the treatment and support of dyslexic children. Finally, it includes a list of resources for students with dyslexia who need assistance with literacy.

What is dyslexia?

Dyslexia is derived from the Greek words dys (which means badly or difficultly) and lexis (which means word), implying difficulties with words (Cedeno, Persia and Puelles, 2018).

Dyslexia is defined by the International Dyslexia Association (IDA, 2002) as a neurological learning disability characterized by difficulty with precision and/or fluency in word identification, as well as problems with spelling, spelling, and decoding. These difficulties are caused by a phonological component of language deficiency, which is usually unnoticed in relation to other cognitive abilities. Reading comprehension issues and a reduced reading experience are common side effects, making it difficult to expand one's vocabulary and basic knowledge.

Dyslexia, on the other hand, is classified as a Specific Learning Disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSMV-5), and is characterized by difficulties in accurately or fluently recognizing words, misspelling, and poor spelling ability (APA, 2013).

In this sense, dyslexia is defined by inaccurate or slow reading that necessitates a lot of effort on the part of the reader. When these people read, they usually omit letters or syllables (omission), substitute one letter for another (substitution), invert the order of the letters or syllables (inversions), add letters or syllables, or change them at the end of the word while keeping the root (addition), and make corrections and validations as they go. Furthermore, people with dyslexia frequently have difficulty comprehending what they read (Dhers, 2019).

On the investigated causes of dyslexia's origin, three levels predominate: biological, cognitive, and behavioral (Tamayo, 2017). The biological level is a neurological problem with a genetic basis, which means it starts at birth and gets worse over time. This biological level has an impact on cognition by causing a phonological deficit, which makes it difficult to form grapheme-phoneme connections.

On a behavioral level, the phonological deficit causes dyslexics to struggle with reading, have poor metaphonological development, and have problems with reading speed and phonological memory (Carrillo, 2012).

As we learn more about dyslexia, we notice that it has a particularly negative impact on learning to read, though it can also be seen in writing. It affects people who have a normal or high level of cognitive development, have no perceptible sensory changes, and/or have received adequate education (Manzano, Aguilera, Lozano, Casiano and Aguilar, 2017).

Although dyslexia is a lifelong condition, it can be managed with the right treatment (Rello, 2018). According to recent research (Forteza et al. 2019), between 5% and 15% of the school population suffers from this disorder. It has a 5% to 10% impact in primary and secondary education in Spain (De la Pea and Bernabéu, 2018). As a result, we discover that this disorder affects a sizable number of male and female students in the educational system.

Characteristics of dyslexia

People with dyslexia have phonological awareness, verbal memory, and verbal processing speed deficits that do not correspond to the person's developmental stage (Protopapas, 2019) and that persist over time, despite the person's good cognitive abilities and high performance (Cuetos, Soriano & Rello, 2019). They also have trouble distinguishing between sounds and words, memorizing, converting isolated sounds into words, and remembering letters and their sound equivalents (Dymora and Niemiec, 2019). This is because there is a change in the functionality of reading behavior that makes it impossible for the person to correctly and effectively extract written information, which has an impact on their academic, personal, and social adaptation (Cuetos et al., 2012).

Dyslexia is a lifelong condition, but it can be managed with the help of recovery and adaptation therapy. It is usually noticed for the first time in the first few years of school, but there are early antecedents that are precursors of this disorder because skill acquisition patterns are altered from the very beginning (Ardila, Rosselli, & Villaseor, 2005).

Students with dyslexia may exhibit **the following characteristics** throughout their educational careers:

- In terms of *speech*, they express themselves better orally than in writing, but they may still have difficulty accessing vocabulary, problems following a series of instructions, evocation errors in some words, and difficulties finding appropriate words and looking for synonyms.
- In relation to *cognitive aspects* (memory, attention and concentration, perception, sequencing and planning), different aspects are observed:

  - Difficulties with automating the alphabet, using dictionaries, and so on.
  - Vocabulary and concepts related to spatial orientation are unclear.
  - Poor memory for data, formulas, definitions, and instructions, among other things.
  - Difficulty in coming to a conclusion.
  - Issues with serialization and series retention.
  - Having trouble remembering what they have learned.
  - Limitations in their ability to combine information that they understand separately without having to globalize it.
  - Inattentive behaviors as a result of information processing difficulties.
  - Issues relating new knowledge to previously acquired knowledge, causing a delay in response, if not complete blockage.
  - Abundant ability to recall distant facts, situations, or data, even if they are objectively irrelevant.
  - Difficulties concentrating while reading or writing.

- In terms of *coordination*, they tend to have problems with grasping (holding the pencil), motor coordination deficits, making mistakes as a result of this, poor spelling and line spacing, confusion between right and left, and difficulty performing certain movements (cycling, jumping rope, etc.), though this does not occur in all cases.
- They have trouble learning to use the clock, control their time, and understand sequential tasks due to a lack of *understanding of temporal concepts*.

- In terms of *personal and social aspects*, they may struggle to organize themselves, have little autonomy in their personal work, have difficulties studying and/or completing tasks on time, pay attention to the teacher's explanations, have low motivation for learning (especially in writing and reading), be emotionally sensitive, and insecure at the expense of maintaining social relationships.

Dyslexia treatment and support

In recent years, research has yielded a slew of recommendations for teachers and parents. The following stand out (Hudson et al., 2007):

- Conducting an *appropriate assessment* of language processing is critical in determining why students struggle to learn to read. To determine the type of instruction that best meets the needs of each student, specific information on the types of weaknesses that exist is required.
- *Simple tasks can be used to assess dyslexia risk more accurately*. It is critical to begin assessment and progress monitoring procedures with children as soon as possible after birth in order to assess their understanding of speech sounds, letter sounds in words, and word recognition fluently.
- Dyslexic readers require *explicit, intensive, and systematic instruction* in language sound structure (phonemic awareness), as well as the relationship between sounds and letters (phonetics).
- It's critical to *recognize the role of motivation and fear of failure* when discussing reading difficulties. Students do not struggle solely due to a lack of effort. To accommodate their learning differences, they may require a more intensive teaching style than their peers. Students may experience low motivation as a result of their attempts to avoid completing a difficult and painful task in the absence of intensive intervention.
- Teachers must assist students in *identifying their reading and language strengths and weaknesses*. It may be necessary to educate students and their parents about how they process language differently than their peers in order to alleviate some of the negative feelings associated with something that no one else seems to have a problem with.

- *Educators should communicate with parents* about their child's specific strengths and weaknesses, as well as assist them in determining the root causes of the problems.
- *Including parents in the early stages* of determining the best programs and services for their children ensures greater success and cooperation between home and school.

Educational needs

Students diagnosed with dyslexia face several educational difficulties, including the following:

- Language needs

  When discussing dyslexia, phonology is frequently mentioned because tasks like spelling, which can be simple for someone neurotypical, can be the most tedious and embarrassing experiences a person with dyslexia can have.

  This could be due to a difficulty segmenting words both visually and phonetically, which can lead to social issues and make them feel bad when they need to communicate using language.
- Reading needs

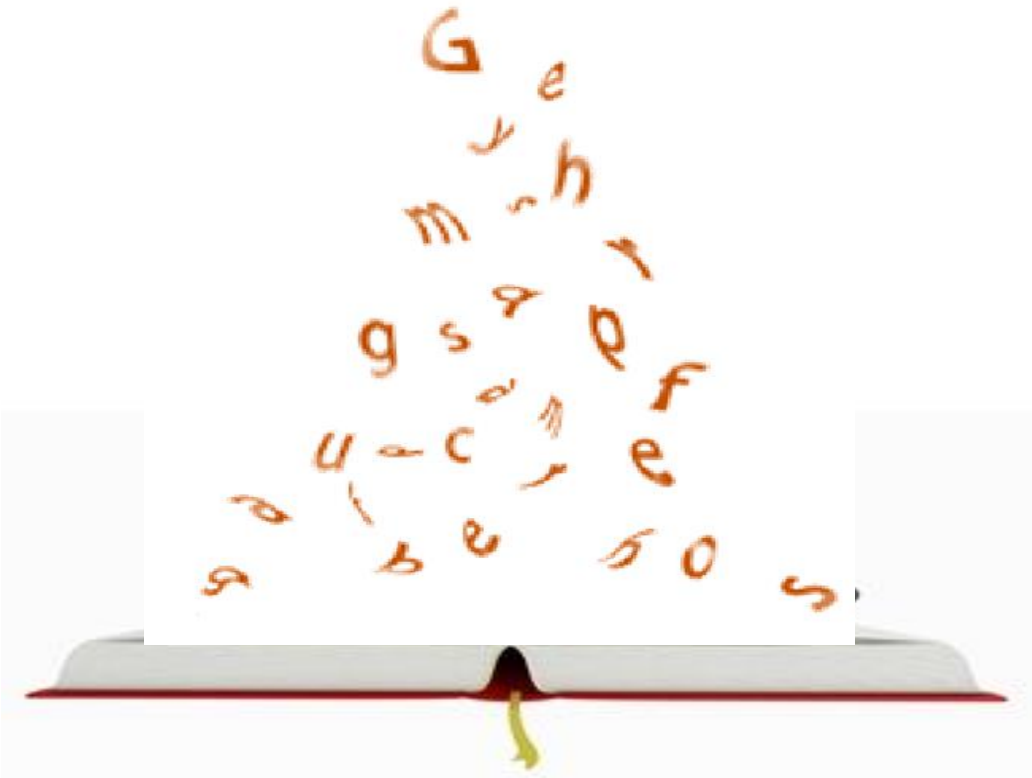
  The most important aspect of reading is comprehension, and these characteristics can have a negative impact.

  The effort required to decode the text prevents cognitive resources from being allocated to text comprehension. As a result, reading while comprehending words and keeping punctuation marks in mind is a difficult task for someone with dyslexia.
- Phonological needs

  One of the most difficult aspects of dyslexia phonology is that the division of words is visible when reading written texts but disappears when speaking.

As a result, the auditory system must perform the difficult task of segmenting that phrase into the words that make it up in order to comprehend the meaning of each word and, ultimately, the phrase's overall meaning.

This is a process that a person with dyslexia has trouble with. Another feature is prosodic alterations, which means they have problems with word intonation, which can cause them to completely change their meaning. If this need is not met quickly, the same thing that happens when learning a second language can happen: learning a mispronunciation of a word makes it difficult or impossible to correct.



Good practices for the use of technology in intervention and support for students with dyslexia: Delphi study

The main objective of this study, in the context of the European project Fordys-Var (https://fordysvar.eu/), is to define international "good practices" on the use of technologies for intervention to support dyslexia or Specific Learning Disabilities (DEA) in children and adolescents. The ultimate goal is to improve the learning of people with dyslexia through technology, specifically Virtual Reality (VR) and Augmented Reality (AR). The study has been carried out in the 3 different European countries participating in the project, specifically Italy, Romania, and Spain.

An online survey was conducted to gather consensus on the recommendations using the Delphi method. The Delphi method, created in the 1950s by the Rand Corporation (Hasson, Kenney & McKenna, 2000) is a group facilitation process whose objective is to obtain consensus on the opinions of experts through multiple rounds of questionnaires. After each round, the anonymous responses are added and shared with the group. A carefully selected panel of participants who demonstrate participation and expertise in the research-related field, participate in a multi-stage process designed to combine opinion in group consensus (Hasson, Kenney & McKenna, 2000; Von der Gracht, 2012).

Some studies include fewer than 20 participants (Boulkedid, Abdoul, Loustau, Sibony & Alberti, 2011; Shinners, Aggar, Grace & Smith, 2021), as also suggested by Murphy et al. (1998). The expert panel receives an initial Delphi questionnaire that may include open-ended questions and qualitative feedback is encouraged,

After the comments of the whole group, they are sent to the participants quantitatively through a second questionnaire. The experts rate each statement in the questionnaire and then provide feedback to show the comparison between the individual's ratings and the entire distribution. Subsequently, the statements concerning the feedback can be modified and a third quantitative questionnaire is formulated. This process is repeated until an adequate degree of consensus is reached among the experts.

The comments of the whole group are sent to the participants quantitatively through a second questionnaire. This process is repeated until an adequate degree of consensus is reached among the experts.

A three-round Delphi survey was conducted for this study. In particular, the digital method, called the e-Delphi method, was used, which consists of an online survey platform to collect data (Gill, Leslie, Grech, Latour, 2013). An agreement of more than or greater than 75% was proposed in each question to define the consensus.

The online questionnaire was sent to a group of 18 psychologists, child neuropsychiatrists, and speech-language pathologists who are among the most recognized Italian experts in the field of dyslexia intervention and who, according to the authors, had at least some experience with intervention tools based on new technologies. Most of the selected experts are part of the main Italian scientific associations involved in the study and clinical practice of reading disorders: AIRIPA (Associazione Italiana per la Ricerca e l'Intervento in Psicopatologia dell'Apprendimento / Italian Research Society and Intervention in Psychopathology of learning processes) and AID (Associazione Italiana Dislessia / Italian Association of Dyslexia).

Data from three rounds of the e-Delphi survey were collected between September 2020 and February 2021. Before starting the online survey, participants were informed (both in the first contact email and in the online questionnaire) that their responses would be recorded completely anonymously with no possibility of retrieving the identities of the respondents.

They were further informed that the completion of the questionnaire implied that they agreed with the collection and processing of their responses in this anonymous form, as well as its use for scientific purposes and future publications.

Round 1

The Round 1 questionnaire consisted of 21 questions on technology applied to dyslexia, 12 multiple-choice questions, and 9 open-ended questions. The questions and response options were formulated based on the previous literature and in a way that represents the most controversial issues for clinical use.

Since the literature did not always provide specific information, some of the questions were based on the authors' direct clinical experience with technology for the rehabilitation of reading disorders or their own opinions, always providing answers that could confirm or refute your hypotheses. The panel could provide comments and suggestions for the questionnaire.

The responses were analyzed and summarized to formulate the statements that had to be qualified by the same group of experts in the second step of the Delphi procedure.

Round 2

At the end of Round 1, 39 statements based on the previous survey were sent to the same group of experts. Added open space to suggest improvements to the statements. The experts were asked to express their degree of agreement with each statement, while 75% group consensus was the target required to determine a positive result and stop the process.

Round 3

The questionnaire was revised again after Round 2, providing alternative wording for statements that had not reached the 75% consensus limit in the previous Round. Participants were asked to express their agreement only with the new statements. This was sent to all panel members and their responses were collected. Figure 1 shows the flow diagram of the Delphi process.

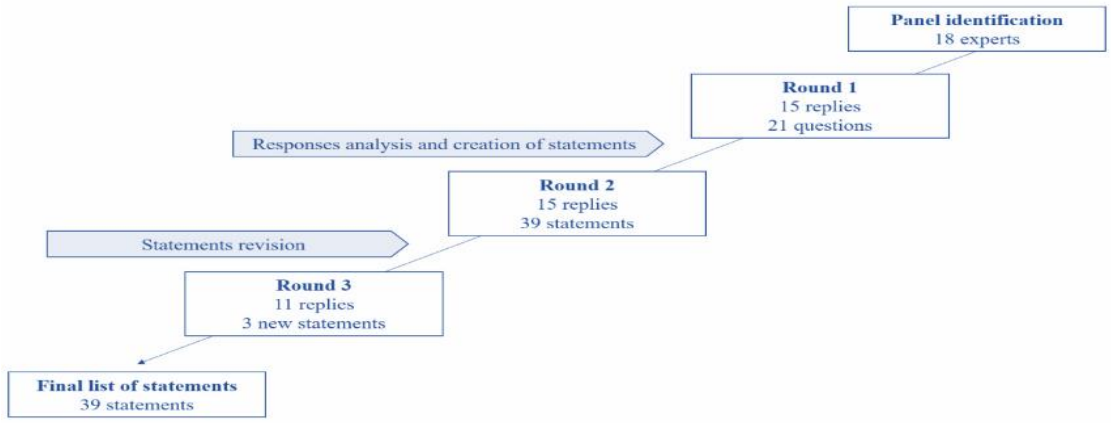


Figure 1. Delphi process flow diagram

Analysis of data

The data collected in the three rounds of the Delphi survey were qualitatively analyzed. Questions in Round 2 and Round 3 provided answers that could be scaled with four ordinal levels. Possible responses were "totally disagree, disagree, agree, totally agree."

“I don't know” was also collected as a possible answer (corresponding to a score of 3) but it was not included in the count of the degree of agreement.

Therefore, the agreement was calculated as the percentage of scores above 3 (4 = agree, 5 = strongly agree) out of the total number of responses, excluding 3 (= I don't know).

Results

Results: Round 1

They were invited to participate in the survey by email. Both in the email and the online form, the questionnaire was entered with the following instructions:

The **data collection instrument** used is titled "Good practices for the use of assistive technologies in the treatment of dyslexia".

Before starting the questionnaire, the following introduction is made:

> "Good morning, you have been selected as the representative of a group of national experts in the treatment of DEA (Specific Learning Disability), in particular dyslexia. The objective of the questionnaire is to define a series of international "good practices" on the use of technologies for the intervention of support for dyslexia (DA) in children and adolescents, in the context of the European project Fordys-Var (*https://fordysvar.eu*). *Please answer the questions below. Some of them are multiple-choice: you must answer by choosing one or more answers. Other questions require an open answer. Answer concisely but clearly and completely. Responses will be recorded anonymously. Your answers are very important because, based on the answers obtained, statements will be defined that will be submitted again to the judgment of the same group of experts, in order to evaluate the degree of agreement and consensus that each of them will reach. The process will be repeated, modifying the statements if necessary, until there is sufficient consensus from all the experts. Subsequently, the statements thus defined will be submitted to the judgment of experts from other European countries, who will express their degree of agreement.*".

Below are 21 questions (12 multiple-choice and 9 open-ended questions). For each of the questions, it is possible to add comments. The questions asked in the questionnaire as well as the answers obtained are shown in the Table 1.

Table 1. Round 1 questions and possible answers for each question

Questions	Answers
1) In your opinion, can ICT technology support the treatment of dyslexia?	-Yes, I think it could be as good as other treatment methods. -Yes, I think it could be as good as other treatment methods. -Yes, but not as significant as other methods. -No
2) Do you know any system based on ICT technologies applied to LD rehabilitation?	-Yes, I currently use them in clinical practice. -Yes, but I don't use them -No
3) What kind of software / systems did you use?	Open question
4) In your opinion, what are the advantages of using ICT tools for the treatment of dyslexia? (You can choose more than one answer)	-Easy to use -The opportunity to be performed daily and several times a week -Cost effectiveness -The practicality of being done at different times of the day or in different environments (at home, at school) -It is more motivating / attractive
5) Do you think that dyslexia treatment is more effective with software that improves: (you can choose more than one answer)	-Grapheme-phoneme conversion processes -Assembly processes of the phonological structure -Lexical processes -Visual analysis processes
6) In your opinion, what is the ideal duration of a treatment carried out with ICT tools?	-One month -2 to 3 months -3 to 6 months -More than 6 months
7) At what age do you think it is more appropriate to start a treatment with ICT tools?	-Before the start of primary school -First two years of primary school -From the third year of primary school -Middle School -High school

8) In your opinion, does the use of ICT in rehabilitation support motivation to learn?	-Yes -No -I'm skeptical
9) In your opinion, can Augmented Reality be used to create treatment tools for children and / or adolescents with dyslexia?	-Yes -No -I'm skeptical
10) If so, how?	Open question
11) If yes, from what age?	Open question
12) If yes, for what purpose?	Open question
13) In your opinion, can Virtual Reality be used to create treatment tools for children and / or adolescents with dyslexia?	-Yes -No -I'm skeptical
14) If so, how?	Open question
15) If yes, from what age?	Open question
16) If so, for what purpose?	Open question
17) What limits do you see in the use of ICT tools for the treatment of dyslexia?	Open question
18) In your opinion, can ICT tools facilitate the learning of school content in children and / or adolescents with dyslexia?	-Yes -No -I'm skeptical
19) If so, how do you imagine the proposal for an ICT-based learning activity?	Open question
20) Do you think Virtual Reality is suitable for this purpose?	-Yes -No -I'm skeptical -I dont know
21) Do you think Augmented Reality is suitable for this purpose?	-Yes -No -I'm skeptical -I don't know

The responses collected in the first round are presented below. Fifteen experts completed the survey. All respondents declared that Information and Communication Technologies (ICT) can support the treatment of dyslexia, in particular, 46.7% indicated that it could play a preeminent role compared to other intervention methods, 40% indicated which could be as good as other methods and 13% stated that its contribution could not be as significant as that of other methods (Figure 2a).

The experts declared that they knew some systems based on technologies applied to the rehabilitation of dyslexia, 60% would use them in clinical practice and 40% would not use them (Figure 2b). Specifically, experts who use ICT are familiar with different types of software and systems widely used in Italy, such as Ridinet (n = 5), Tachidino (n = 2), WinABC (n = 2), Dyslexia Evolutiva (n = 2).

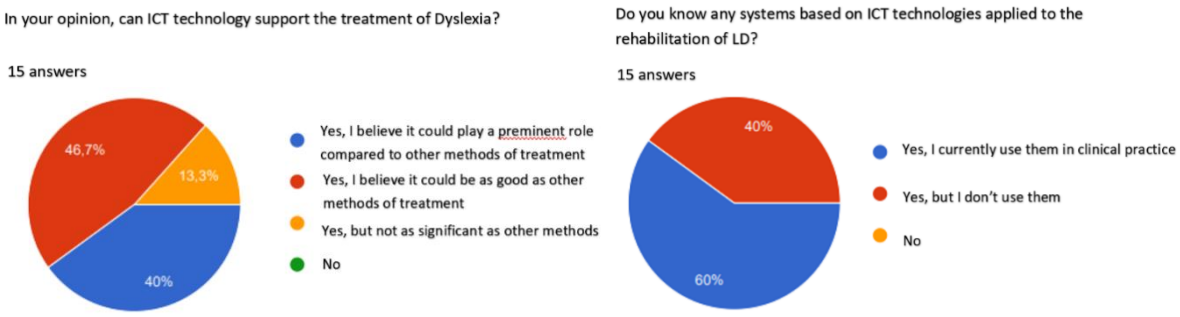


Figure 2. *Distribution of responses to question 1 (a) and question 2 (b)*

The advantage of using ICT tools for intervention in dyslexia appears to be ease of use (46.7%), the possibility of intensive use (100%), cost-effectiveness (46.7%), the possibility of using them in different environments and at different times of the day (73.3%) and their motivating and attractive characteristics (46.7%) (Figure 3a). The treatment of dyslexia is considered more effective if it is based on software that improves phonological assembly processes (66.7%), lexical processes (53.3%), visual analysis processes (53.3%), and the grapheme-phoneme conversion processes (46.7%) (Figure 3b).

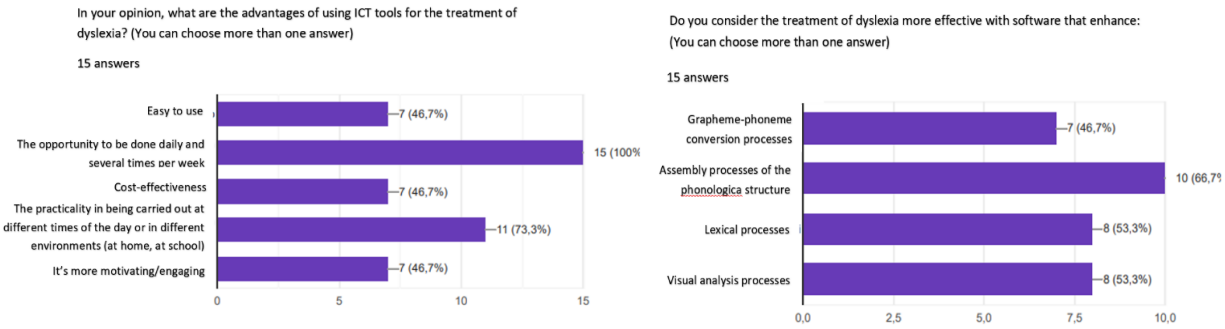


Figure 3. Distribution of responses to question 4 (a) and question 5 (b)

Regarding the question about the optimal duration of treatment, 46.7% believe that the ideal duration is 2 to 3 months, 46.7% 3 to 6 months, and only 6.6% indicated one month (Figure 4a).

The most appropriate age to start treatment with ICT tools was considered to be during the first two years of primary school (66.7%) or from the third year of primary school (33.3%) (Figure 4b).

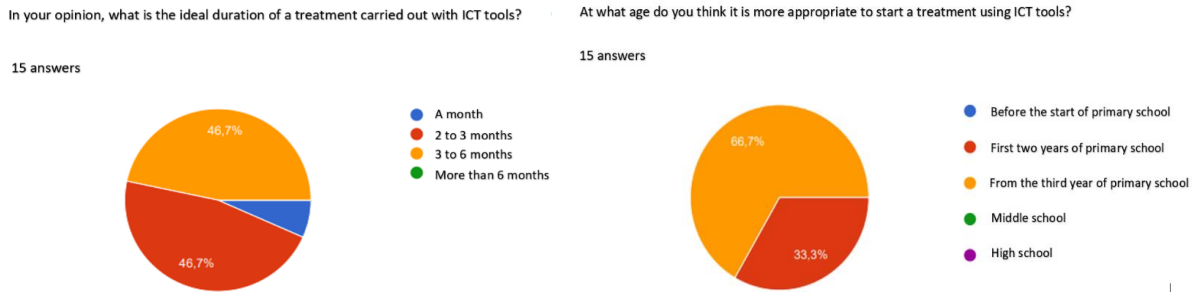


Figure 4. Distribution of responses to question 6 a) and question 7 b)

Almost all respondents stated that the use of ICT tools in treatment supports the child's motivation to learn (93.3%), while the remaining were skeptical (6.7%) (Figure 5a). Augmented reality can be properly used to design treatment tools for children with dyslexia according to 60% of the respondents, 33.3% of them were skeptical while 6.7% did not agree (Figure 5b).

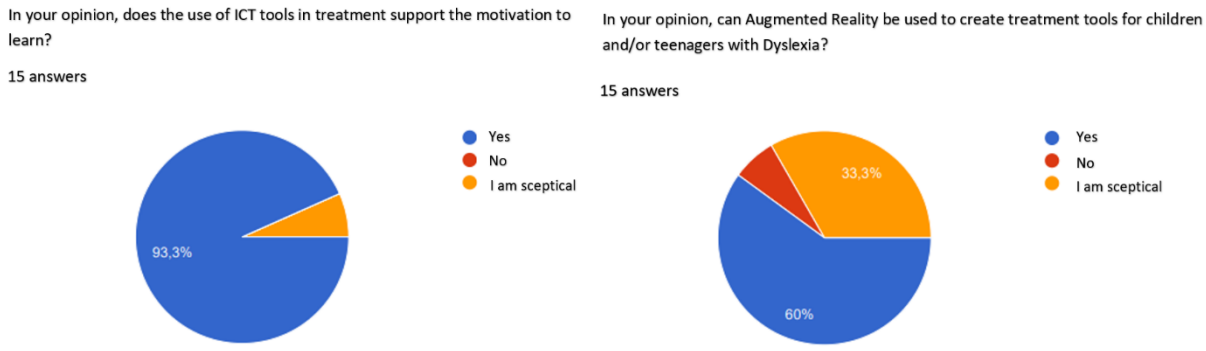


Figure 5. *Distribution of responses to question 8 a) and question 9 b)*

Regarding the open question about how AR could be used in the design of treatment tools, two experts stated that AR could be used to create a more attractive interface, for example, using the voice in rehabilitation tasks that are often boring and exhausting for people with dyslexia, in an enriched context.

Other respondents suggested that AR could provide reinforcement through multimodal channels and facilitate learning through more dynamic images (for example, AR could support mathematical learning by directly providing the formulas to apply or facilitating the visual representation of the problem), expanding the range of proposed learning experiences or amplification of stimuli to improve deficient functions and provide guidelines for the identification of difficulties or errors.

When asked to indicate from what age the use of AR should be recommended, three experts answered that the ideal age is from 8 years, three indicated the period of primary school (at the beginning or from the third grade), one respondent suggested the use of 4 years later, one stated that AR could be used from the moment of diagnosis and another suggested that the type of task should be taken into account.

Other experts pointed out that among the objectives of AR-based treatments could be the automation of metaphonological processes and global reading skills, the improvement of critical areas, the facilitation of the use of compensatory tools, the treatment of focused attention and displacement. of attention, or more. generally to support learning and motivation (n = 2).

Virtual reality can be used to create intervention tools for children with dyslexia according to 60% of the respondents, 33.3% of them were skeptical and 6.7% did not agree (Figure 6)

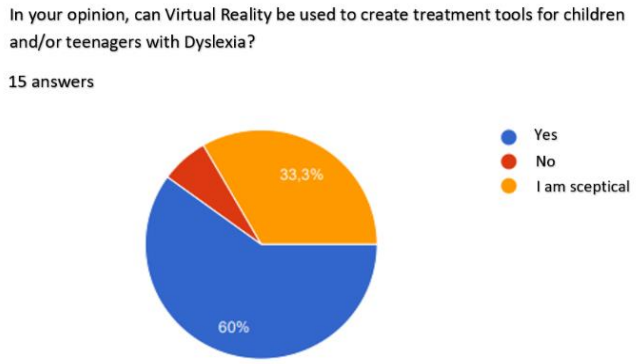


Figure 6. Distribution of responses to question 13

Respondents stated that VR could be used to create learning environments to generalize acquired skills (n = 1) and activate deficient skills through structured tasks in a game situation (n = 1).

Some experts suggested that virtual reality could be used to improve visual, spatial, and motor functions (n = 1); which could be included in an integrated intervention program (n = 1) or in ecological contexts to facilitate learning through role-playing activities (n = 1).

When asked from what age the use of VR could be recommended, the experts answered that the ideal age is from 8 years of age or even before 8 in subclinical or risk situations (n = 3). Other experts said that it could be used from primary school in (n = 2), from the time of diagnosis, or according to the type of task (n = 2).

Among the objectives of the use of VR, respondents listed increasing participation and active involvement (n = 1), activating deficient skills through exercises in the form of games, enhancing learning, motivation, and concentration, facilitating lexical access, attentional control, perceptual discrimination.

Regarding the open question on the limitations in the use of ICT tools for the treatment of dyslexia, respondents said that it is difficult to integrate into a comprehensive rehabilitation plan, may not be available at home, and requires family participation if operated remotely.

The child's level of satisfaction, the risk of using the potential of digital technologies by simply proposing repetitive activities, the use of programs that involve the child through visual activities but do not stimulate the decoding process, the possibility of feeding the dependence on subjects at risk, the reduction of social interactions and content exchange, economic issues and the absence of mediation by the human expert (rehabilitator) were other reasons described by the experts.

ICT tools can facilitate the learning of school content in children with dyslexia for 93.3% of those surveyed, while the rest were skeptical (Figure 7).

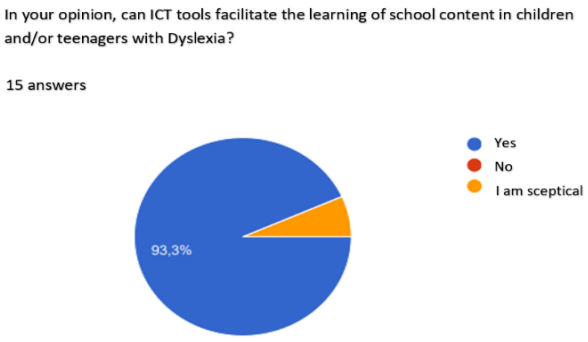


Figure 7. Distribution of responses to question 18

When asked to imagine possible examples of ICT-based learning activities, the experts offered different types of a proposal, such as 3.0 classes, promoting online understanding for content research, creation of study materials, the possibility of proposing the same multimedia content in different forms and with different degrees of complexity, promoting creative and non-mnemonic learning, a different type of organization of activities, setting the time for a certain task, personal searches and Internet searches for study topics.

According to 53.3% of those surveyed, VR may be suitable for this purpose; 33.3% of them were skeptical and 33.3% did not know (Figure 8a). As for AR, it may be adequate for this purpose for 53.3% of the respondents, 20% were skeptical and the remaining 26.7% did not know (Figure 8b).

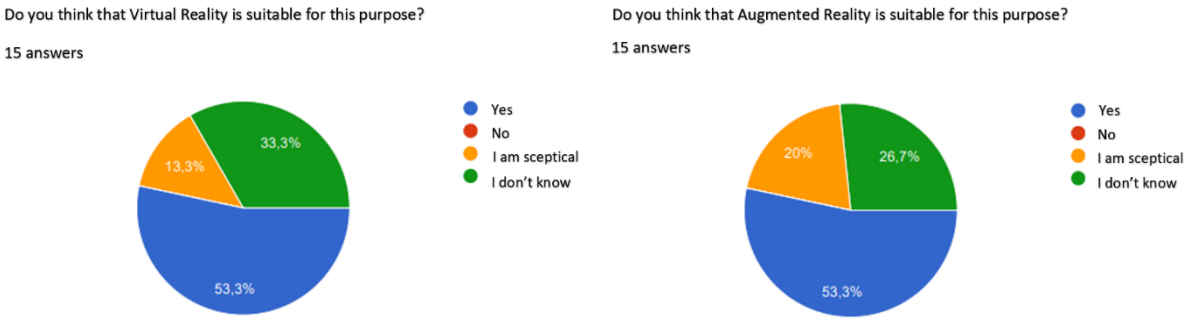


Figure 8. Distribution of responses to questions 20 and to question 21

Results: Round 2

Based on the responses collected in Round 1 and presented previously, the survey used in Round 2 was created.

For Round 2 we received responses from 15 of the 18-panel members (83.33%). Two of them submitted their responses at the end of Round 2 when statement 6 and statement 8 of the second survey had already been modified for Round 3. For that reason, statements 6 and 8 have 13 responses while all of the Remaining sentences have 15 answers.

The experts provided ratings for each statement and qualitative data in the form of comments. There was a high level of agreement for most of the statements (mean 84.67%). Taking into account the requirement of 75% group consensus, all items reached at least 76% agreement, except statement 6 (69.09%), statement 8 (50%), and statement 12 (70%).

Qualitative data from previous statements made it possible to understand the reasons for the low degree of agreement. Regarding statement 6 "ICT training should mainly address the processes involved in assembling the phonological structure of words", experts who expressed a low level of agreement or chose an answer of "I don't know" suggested that the ICT training can address various processes involved in reading, not just the process involved in the phonological structure of words.

Regarding statement 8 "The processes of conversion from grapheme to phoneme (and vice versa) can be addressed in ICT training, but should not be considered as outstanding objectives of the intervention", three experts who expressed a low level of the agreement argued that the process Grapheme-to-phoneme conversion should be considered an important goal of the intervention, and another panel member specified that this process depends on the age of the children.

Finally, question 12 "Augmented reality can be used in the design of ICT training for dyslexia, but it should not play a prominent role" did not receive comments from experts who expressed a low level of agreement. Five members of the panel (33.33%) declared they did not know the subject, without adding further comments or suggestions.

For that reason, it was not possible to modify the statement for Round 3 based on the experts' comments.

Statement 3 "The main advantage of ICT approaches for the treatment of dyslexia is their flexibility, which entails the possibility of repeatedly proposing the treatment several times a week, at the most appropriate times for children and their families" received a high level of agreement (87.69%) and comment on the importance of the quality of the intervention, so it was decided to add a new statement in the Round 3 survey to learn more about the quality and appropriateness of the intervention in the level of performance.

The list of statements with the degree of agreement expressed on each of them by the Italian experts in Round 2 is presented in Table 2.

Table 2. Round 2 statements and general degree of agreement (expressing the percentage of "agree" and "totally agree" responses over the total number of responses excluding "I don't know" responses). The number of responses and the percentages for each option is reported.

	Strongly disagree n (%)	Disagree n (%)	Agree n (%)	Totally agree n (%)	I dont know n (%)	Agreement (%)
1) ICT technology can support dyslexia treatment just as effectively as other methods.	-	2 (13.33)	4 (26.67)	6 (40)	3 (20)	83.33
2) ICT approaches can be seen as effective ways of integrating and, in some cases, replacing more traditional treatment methods for developmental dyslexia.	-	-	7 (46.67)	6 (40)	2 (13.33)	89.27
3) The main advantage of ICT approaches to the treatment of dyslexia is their flexibility, which entails the possibility of repeatedly proposing the treatment several times a week, at the most appropriate times for children and their families.	-	2 (13.33)	2 (13.33)	9 (60)	2 (13.33)	87.69
4) Other advantages of ICT training for dyslexia have to do with its ability to motivate and involve children and its ease of use. These features allow children to work harder with less effort.	-	1 (6.67)	1 (6.67)	6 (40)	7 (46.67)	90
5) Among the advantages of ICT training is profitability, although it is not considered a prominent factor for choosing the training to be proposed.	1 (6.67)	-	4 (26.67)	6 (40)	4 (26.67)	85.45
6) ICT training should mainly address the processes involved in assembling the phonological structure of words.	1 (7.69)	3 (23.08)	4 (30.77)	3 (23.08)	2 (15.38)	69.09
7) Other secondary objectives of ICT training for dyslexia should be to improve both visual analysis and lexical retrieval skills.	1 (6.67)	-	5 (33.33)	7 (46.67)	2 (13.33)	86.15
8) The processes of conversion from grapheme to phoneme (and vice versa) may be involved in ICT training, but should not be considered as outstanding objectives of the intervention.	2 (15.38)	5 (38.46)	2 (15.38)	1 (7.69)	3 (23.08)	fifty
9) The optimal duration of training should be between 2 and 6 months.	-	3 (20)	7 (46.67)	5 (33.33)	-	78.67
10) The ideal time to start training with ICT tools is from the third year of primary school. In some cases, the onset can be anticipated in the first or second year of primary school.	-	3 (20)	7 (46.67)	4 (26.67)	1 (6.67)	77.14
11) The use of ICT training can help maintain motivation for learning in general.	-	2 (13.33)	3 (20)	7 (46.67)	3 (20)	85

12) Augmented reality can be used in the design of ICT training for dyslexia, but should not play a prominent role.	1 (6.67)	2 (13.33)	5 (33.33)	2 (13.33)	5 (33.33)	70
13) Training based on Augmented Reality could be introduced from 7-8 years old.	1 (6.67)	-	6 (40)	5 (33.33)	3 (20)	83.33
14) Augmented reality could be used to enhance the outstanding characteristics of the stimuli to be processed.	-	-	5 (33.33)	7 (46.67)	3 (20)	91.67
15) Augmented Reality could be used to provide a multisensory and multimodal environment during tasks, enriching the quality and quantity of information about stimuli.	-	-	6 (40)	6 (40)	3 (20)	90
16) Augmented Reality could be used to highlight difficult aspects of the stimuli to be processed, so that the child is alert and ready to activate and focus their resources during the task.	1 (6.67)	1 (6.67)	2 (13.33)	6 (40)	5 (33.33)	82
17) Augmented reality could be used to provide additional information for specific stimuli, according to the child's needs and requests.	-	-	6 (40)	6 (40)	3 (20)	90
18) Augmented reality could be used to add motivating elements to boring, repetitive tasks to make them more engaging.	-	1 (6.67)	5 (33.33)	8 (53.33)	1 (6.67)	88.57
19) Augmented reality could facilitate the automation of metaphonological skills by highlighting the processing units in words (phonemes, syllables, whole words).	-	2 (13.33)	5 (33.33)	4 (26.67)	4 (26.67)	80
20) Other applications of augmented reality could favor the processes of focus and shift of attention.	-	-	7 (46.67)	4 (26.67)	3 (20)	83.33
21) Additional applications of augmented reality in support of dyslexia extend to facilitating reading in everyday life contexts.	-	1 (6.67)	6 (40)	3 (20)	4 (26.67)	78.18
22) Virtual reality can be used in the design of ICT tools for the treatment of dyslexia.	-	2 (13.33)	7 (46.67)	4 (26.67)	1 (6.67)	77.14
23) Training based on Virtual Reality could be introduced from 7-8 years old.	-	1 (6.67)	6 (40)	5 (33.33)	3 (20)	85
24) Virtual Reality could be used to propose study topics in realistic contexts, emphasizing the links between these topics and real life.	-	-	5 (33.33)	6 (40)	4 (26.67)	90.91
25) Virtual reality could be used to provide integrated tasks in ecologically plausible and varied contexts, thus fostering processes of generalization.	-	-	6 (40)	6 (40)	3 (20)	90
26) Virtual reality could be used to work on the child's difficulties in a structured way through engaging and motivating tasks and games.	-	-	8 (53.33)	4 (26.67)	3 (20)	86.67
27) Virtual reality could be used to train skills learned through simulations and role-play activities.	-	-	6 (40)	6 (40)	3 (20)	90
28) Virtual reality could be used to design integrated workouts that involve reading, as well as visual and motor functions simultaneously.	-	-	5 (33.33)	6 (40)	4 (26.67)	90.91

29) Virtual Reality could facilitate the automation of metaphonological skills, lexical access, perceptual discrimination.	-	1 (6.67)	5 (33.33)	3 (20)	5 (33.33)	78
30) Other applications of virtual reality could aim to improve attention processes and executive functions.	-	-	7 (46.67)	5 (33.33)	2 (13.33)	84.62
31) Additional applications of virtual reality could be extended to the training of a more effective management of negative emotions related to dyslexia and learning difficulties.	-	2 (13.33)	3 (20)	4 (26.67)	5 (33.33)	76
32) When using ICT tools for the treatment of dyslexia, the utmost attention should be paid to avoiding the risk of addiction.	-	4 (26.67)	3 (20)	7 (46.67)	1 (6.67)	78.57
33) The use of ICT tools for the treatment of dyslexia should be proposed only after verifying that users have adequate devices, connections and family support.	-	-	2 (13.33)	13 (86.67)	-	97.33
34) The use of ICT tools for the treatment of dyslexia should always be monitored by human supervisors who also ensure that the child's needs, opinions and feelings are taken into account.	-	-	-	15 (100)	-	100
35) The use of ICT tools should be designed in a way that provides activities that are not only attractive, but also meaningful to children / adolescents with dyslexia.	-	-	2 (13.33)	12 (80)	1 (6.67)	97.14
36) ICT tools, including virtual and augmented reality, can also be used to support the learning of school contents in children / adolescents with dyslexia.	-	-	5 (33.33)	6 (40)	4 (26.67)	90.91
37) Support for general content learning in students with dyslexia could be achieved through ad-hoc activities with increasing levels of difficulty and complexity, emphasizing real understanding and assimilation of meanings.	-	-	4 (26.67)	9 (60)	2 (13.33)	93.85
38) ICT tools for students with dyslexia could provide training for web surfing and search skills, and for creative and responsible use of internet sources and tools.	-	1 (6.67)	3 (20)	6 (40)	5 (33.33)	88
39) ICT tools could support general learning in students with dyslexia by providing a series of orderly activities where the organization of study materials is required, based on the integration of reading (possibly facilitated) and other multimedia information sources.	-	1 (6.67)	4 (26.67)	7 (46.67)	3 (20)	88.33

Results: Round 3

Based on the comments provided by the panel to the Round 2 statements, some additional modifications were made to the survey. The revised set of modified statements was sent to the panel for further comment, with 11 experts grading their agreement with the three new statements (statement 3b was added based on comments from statement 3, statements 6 and 8 to replace the previous ones). Table 2 presents the degree of agreement obtained on the three new statements.

Table 2. Agreement scores for the three statements added in Round 3 and the different scores collected in Round 2 and Round 3. The number of responses and percentages are reported for each option.

		Strongly disagree n (%)	Disagree n (%)	Agree n (%)	Totally agree n (%)	I dont know n (%)	Agreement (%)
Statement 6							
Round 2	ICT training should mainly address the processes involved in assembling the phonological structure of words.	1 (7.69)	3 (23.08)	4 (30.77)	3 (23.08)	2 (15.38)	69.09
Round 3	ICT trainings can address the processes involved in assembling the phonological structure of words.	0	1 (9.09)	4 (36.36)	3 (27.27)	3 (27.27)	82.5
Statement 8							
Round 2	The processes of conversion from grapheme to phoneme (and vice versa) may be involved in ICT training, but should not be considered as prominent objectives of the intervention.	2 (15.38)	5 (38.46)	2 (15.38)	1 (7.69)	3 (23.08)	fifty
Round 3	Conversion processes from grapheme to phoneme (and vice versa) may be involved in ICT training.	-	1 (9.09)	4 (36.36)	5 (45.45)	1 (9.09)	86
Statement 3b							
Round 3	Another advantage linked to flexibility is the possibility of implementing algorithms adapting the requests to the level of performance.	-	-	5 (45.45)	6 (54.55)	-	90.91

All items reached at least 82.5% agreement, obtaining a high level of agreement. Based on the results of Round 3, the final agreed version of the survey consisted of 40 statements, 37 belonging to the Round 2 survey, and the three new statements from Round 3.

Conclusions

Almost all statements received a higher level of agreement, above 75%. Two statements that did not reach an adequate consensus were modified for the last survey based on the comments provided by the experts.

Round 3 of the survey, with the changes applied thanks to the qualitative data of the second round, reached a 75% consensus for all the statements, becoming the final survey.

Among the limitations of the present study is the low level of experience declared by many of the panel members concerning the clinical applications of Virtual Reality and, in particular, Augmented Reality. In fact, for some of the statements, the experts did not provide an answer in agreement, with a high percentage of "I don't know" answers.

The experts had been identified as leading academics in their discipline and experts in the use of technology for dyslexia rehabilitation, but they were not necessarily experts in the use of advanced technologies such as Virtual Reality and Augmented Reality. This confirmed the expectation that the use of ICT for the rehabilitation of reading disorders is, in Italy at least, limited almost exclusively to more traditional forms of technology, such as computer games and exercises, and possibly text-to-text conversion. speech or speech to text to support school activities, while newer and more advanced technologies are rarely known and used.

However, we believe that the panel was representative of the state of knowledge and experience at the national level, and that similar (and possibly less informative) results could have been obtained by contacting a different group of professionals. While it would have been possible to include ICT experts with more technical training in the panel, this would have meant reducing the experience required on the specific characteristics of learning disorders in children.

Final step:

Compilation of information between professionals who are experts in the field

In the context of the European Erasmus + FORDYSVAR project, the final set of statements was sent to a group of psychologists, child neuropsychiatrists and speech and language pathologists, teachers, and school professionals from the three different participating countries to define a set of recommendations and best practices to be shared at the European level. Therefore, the identification of a set of statements that can reach a high degree of consensus among a panel of experts in the field of dyslexia rehabilitation is the starting point to reach the final goal. 35 responses were received from Italian operators (19 speech and language therapists, 15 psychologists, and 1 educational specialist); 13 responses were received from Spanish professionals (6 teachers,

Italy

A first analysis of the sample of Italian experts highlighted a high degree of agreement for most of the items, with a mean of 95.3% (Figure 9). All statements examined achieved at least 81.3% agreement, except statements 31 (65%) and 32 (65.4%) that did not meet the requirement of 75% group consensus.

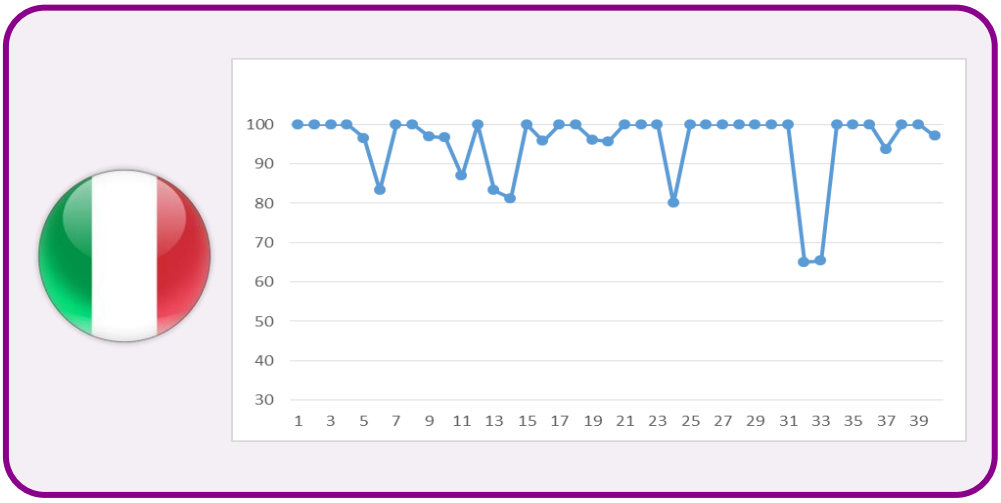


Figure 9. *Percentage of the agreement for each statement in the Italian sample.*

There was no consensus of the group on the possible application of additional Virtual Reality tools for the management of negative emotions related to dyslexia and learning difficulties (statement 31): only 37.1% of the respondents took this into account potential. One participant suggested that the training should be assisted by psychologists. On the contrary, 20% of the respondents did not agree but did not add any additional comments.

Similarly, no clear consensus was reached on the risk of addiction when using technology for the treatment of dyslexia (statement 32). Almost half of the sample (48.5%) claimed to perceive a similar risk, but 25.7% of the participants did not.

Therefore, this should not be interpreted as a negative result, but rather as an indication that the respondents were not particularly concerned about this issue and did not consider it relevant.

Presumably, the level of experience and knowledge about new technologies such as AR and VR can affect both the idea about the possible uses and areas of application and the risks that they may imply. The Italian sample showed poorer knowledge of VR and AR, with an average of 2.3 mean on a 5-point scale. More than half of the participants declared they had no experience with these technologies (54.3%).

Spain

Regarding the survey on the Spanish sample, a high level of agreement was reached for most of the statements, with an average of 97% agreement (Figure 10). Taking into account the 75% cut-off by group consensus, all the elements analyzed obtained a concordance of at least 80%, except for statement 13 “Training based on Augmented Reality could be introduced from 7-8 years” for the which agreement was not reached (67%).

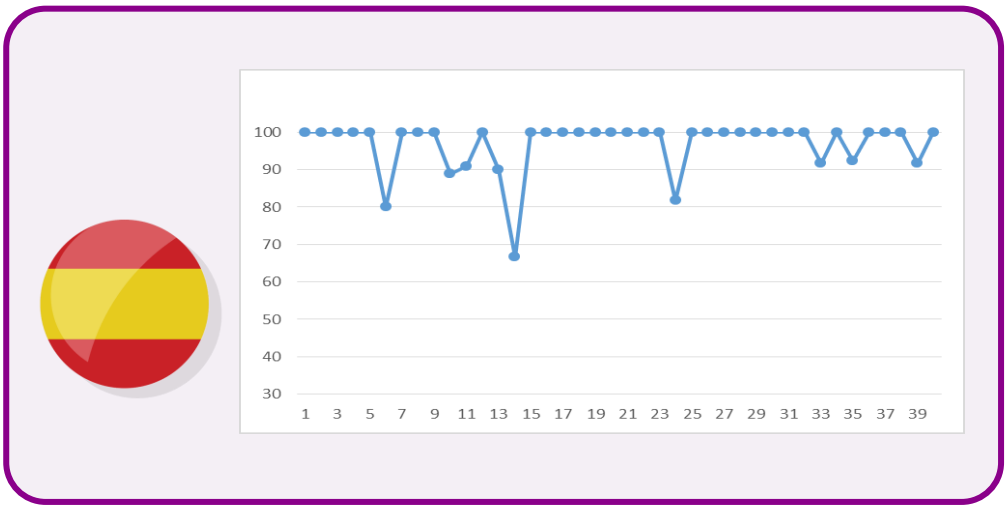


Figure 10. *Percentage of the agreement for each statement in the Spanish sample.*

A qualitative analysis of the data showed that there was no consensus among the experts in considering 7/8 years as an appropriate age to introduce augmented reality training. In the current group of experts, 66.6% of the participants agreed to consider 7/8 years as the appropriate age, while 25% of the respondents did not agree. Only one representative added a qualifying comment that said "I don't know."

Again, the degree of knowledge about augmented reality and virtual reality technologies seems to affect the assessment and identification of the appropriate minimum age for training with augmented reality and virtual reality.

It is also possible that some of the Spanish respondents, many of whom did not declare their occupation, were experts in the field of technology rather than in fields related to health or education, and for this reason, they were not convinced. have enough experience to judge statements about the characteristics and development of the child. Due to the anonymous nature of the survey, it is not possible to obtain more precise information on this topic.

The Spanish sample expressed an intermediate level of confidence (not as low as the Italian group but not very high) with these new technologies, with an average value of 3.6.

Romania

The analysis of the Romanian sample highlighted the highest degree of agreement, with an average of 97.5% (Figure 11). In this case, all declarations reached the minimum limit of 75% required to obtain a group agreement. It should be noted that low variability in agreement values may depend on low sample size.

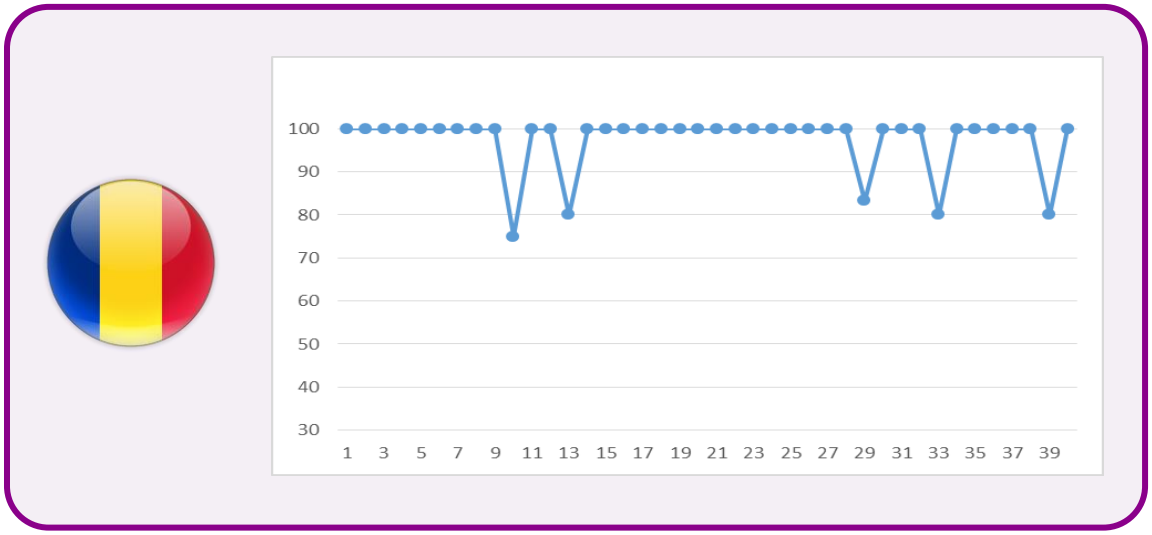
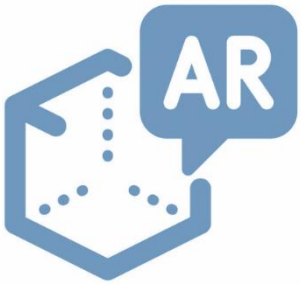


Figure 11. *Percentage of the agreement for each statement in the Romanian sample.*

Like the Spanish sample, the group of Romanian experts also showed an intermediate degree of knowledge related to augmented reality and virtual reality technologies with an average mean value of 3.6.



The final list of declarations

TIC
1) ICT technology can support dyslexia treatment just as effectively as other methods.
2) ICT approaches can be seen as effective ways of integrating and, in some cases, replacing more traditional treatment methods for developmental dyslexia.
3a) The main advantage of ICT approaches for the treatment of dyslexia is their flexibility, which entails the possibility of repeatedly proposing the treatment several times a week, at the most appropriate times for children and their families.
3b) Another advantage linked to flexibility is the possibility of implementing algorithms adapting the requests to the level of performance.
4) Other advantages of ICT training for dyslexia have to do with its ability to motivate and involve children and its ease of use. These features allow children to work harder with less effort.
5) Among the advantages of ICT training is profitability, although it is not considered a prominent factor for choosing the training to be proposed.
6) ICT training can address the processes involved in assembling the phonological structure of words.
7) Other secondary objectives of ICT training for dyslexia should be to improve both visual analysis and lexical retrieval skills.
8) The processes of conversion from grapheme to phoneme (and vice versa) may be involved in ICT training.
9) The optimal duration of training should be between 2 and 6 months.
10) The ideal time to start training with ICT tools is from the third year of primary school. In some cases, the onset can be anticipated in the first or second year of primary school.
11) The use of ICT training can help maintain motivation for learning in general.
32) When using ICT tools for the treatment of dyslexia, the utmost attention should be paid to avoiding the risk of addiction.
33) The use of ICT tools for the treatment of dyslexia should be proposed only after verifying that users have adequate devices, connections, and family support.
34) The use of ICT tools for the treatment of dyslexia should always be monitored by human supervisors who also ensure that the child's needs, opinions, and feelings are taken into account.
35) The use of ICT tools should be designed in a way that provides activities that are not only attractive but also meaningful to children/adolescents with dyslexia.
36) ICT tools, including virtual and augmented reality, can also be used to support the learning of school content in children/adolescents with dyslexia.
37) Support for general content learning in students with dyslexia could be achieved through ad-hoc activities with increasing levels of difficulty and complexity, emphasizing real understanding and assimilation of meanings.
38) ICT tools for students with dyslexia could provide training for web surfing and search skills and creative and responsible use of internet sources and tools.
39) ICT tools could support general learning in students with dyslexia by providing a series of orderly activities where the organization of study materials is required, based on the integration of reading (possibly facilitated) and other multimedia information sources.

RA
12) Augmented Reality (AR) can be used in the design of ICT training for dyslexia, but should not play a prominent role.
13) AR-based training could be introduced from 7-8 years.
14) AR could be used to enhance the outstanding characteristics of the stimuli to be processed.
15) AR could be used to provide a multisensory and multimodal environment during tasks, enriching the quality and quantity of information on stimuli.
16) AR could be used to highlight difficult aspects of the stimuli to be processed so that the child is alert and ready to activate and focus his resources during the task.
17) RA could be used to provide additional information for specific stimuli, according to the child's needs and requests.
18) AR could be used to add motivating elements to boring and repetitive tasks to make them more attractive.
19) AR could facilitate the automation of metaphonological skills by highlighting the processing units in words (phonemes, syllables, whole words).
20) Other applications of AR could favor the processes of focus and change of attention.
21) Additional applications of AR in support of dyslexia extend to facilitating reading in everyday life contexts.
RV
22) Virtual Reality (VR) can be used in the design of ICT tools for the treatment of dyslexia.
23) VR-based training could be introduced from 7-8 years.
24) VR could be used to propose study topics in realistic contexts, emphasizing the links between these topics and real life.
25) VR could be used to provide integrated tasks in ecologically plausible and varied contexts, thus fostering processes of generalization.
26) VR could be used to work on the child's difficulties in a structured way through engaging and motivating tasks and games.
27) VR could be used to train skills learned through simulations and role-play activities.
28) VR could be used to design integrated workouts that involve reading, as well as visual and motor functions simultaneously.
29) VR could facilitate the automation of metaphonological skills, lexical access, perceptual discrimination.
30) Other applications of VR could aim to improve attention processes and executive functions.
31) Additional applications of VR could be extended to the training of more effective management of negative emotions related to dyslexia and learning difficulties.

Educational resources

Resources for the Spanish context

I learn to read

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=com.hr.mauricehouke.ikleerlezen

Description: Different games, such as "guess the words," "guess the pictures," and "guess the letters," are used in this educational application to introduce children to reading.

Be and De Dyslexia

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=air.com.dunala.beydedislexia

Description: Be and De is a fun way for kids with dyslexia or literacy issues to practice distinguishing between the letters "be" and "de."

Learn to write ABC children

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=com.kindergarten.MathPreSchool3

Description: Learn to write and read the alphabet and numbers with the help of images, graphics, and interactive elements in this educational application.

RV On the skin of a child with dyslexia

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=net.smileandlearn.dyslexia

Description: The goal of this educational application was to raise awareness of dyslexia among children, teachers, and parents. It simulates a real-life situation for a dyslexic child, first in class and then at home. The various viewpoints from which a learning difficulty, in this case Dyslexia, can be comprehended are combined.

Kobi

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=si.hopalai.kobi.kobi

Description: Kobi is a reading aid designed for children with dyslexia and others who have trouble decoding words. It transmits a printed text to a tablet and customizes it for each child's needs.

Text vision

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=com.laghlam.textvisionp2

Description: The goal of this application is to make reading easier for people with language disorders. The application allows you to scan a text in order to better see the text in an appropriate font.

Read first

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=fundacion.crecer.primeroLee

Description: The Primero Lee application includes a variety of didactic games to help children develop skills related to reading acquisition, such as phonological awareness, letter learning, and word and text reading practice, with the goal of ensuring that all children can consolidate their reading and achieve the fluency levels expected for their level.

Eye games, dyslexia

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=com.pmqsoftware.mirroring

Description: An app that uses pictures, letters, shapes, and backgrounds to help the brain make connections. They can assist with reading difficulties.

Kataluga

Age: PEGI 3

Download link:
https://katamotz.net/kataluga/

Description: Kataluga is a program designed to help people with dyslexia and other reading and writing difficulties. It's a set of exercises designed to make the treatment more pleasurable.

Classroom PT

Age: PEGI 3

Download link:
https://www.aulapt.org/

Description: Aula PT is a website that allows users to share and download resources for working with students with special needs. Much of this information can be used to help any tutor in their classroom.

Read

Age: PEGI 3

Download link:
https://web.lecto.app/

Description: LectO is a free text editor that uses colors, pictograms, and listening resources to make reading and writing easier for people with dyslexia.

Dytective

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=org.changedyslexia.newdytective&hl=es

Description: Tool for improving reading and writing skills.

Leo with Grin: learning to read

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=air.educaplanet.grin.leo1.full

Description: 30 lessons to learn to read, starting with vowels and following the entire alphabet.

Galexia

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=com.PambuDev.galexia&hl=es

Description: Educational game to improve dyslexia, reading fluency and speech difficulties free for people of all ages: children and adults.

Ridit

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=com.masacre.ridit&hl=es

Description: Application that allows to customize any text according to preferences. Designed to help people with dyslexia and other reading difficulties.

Relexia

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=com.relexia.app&hl=es

Description: Application that presents a personalized exercise routine to improve the reading ability of students with reading difficulties.

CoLe

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=com.cognitionis.afanapp&hl=es

Description: Educational application with activities of phonological awareness, visual memory, rhythm, reading speed and visual discrimination.

Letris

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=com.cc_studios_cr.Letris&hl=es

Description:
Game to build words in the shortest time possible.

Voice dream - reader

Age: PEGI 3

Download link:
https://www.voicedream.com/reader/

Description:
Voice Dream Reader is a popular premium app that reads articles, documents, and books out loud. It is possible to adapt it to any level and style of reading thanks to advanced speech synthesis and a wide range of visualization configuration options.

Alphabetics

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=io.kodular.farhad26.alphabeticsabcs&hl=es

Description:
This application, which is based on the multisensory method for learning phonemes, includes games that include hearing, sight, tactile characteristics, and mouth pronunciation. It can be used as a reinforcement tool to help with dyslexia difficulties.

Visual Attention Therapy

Age: PEGI 3

Download link:
https://apps.apple.com/es/app/visual-attention-therapy-lite/id554546572

Description:
This application was designed to improve reading, concept recognition, concentration, memory, attention, and speed in professional therapy. Finding letters and symbols with varying degrees of difficulty is a skill.

Resources for the Romanian context

Timlogo platform for speech therapy

Age: Early Childhood Education and Primary Education

Download link:
https://www.agendadigitale.eu/scuola-digitale/app-per-i-disturbi-specifici-dellapprendimento-le-migliori-risorse-disponibili-in-rete/

Description: Timlogo is aimed at speech therapists, teachers, professionals, patients and / or families. It was developed by Ascendia, in collaboration with the University of Bucharest and the "Vasile Alecsandri" University of Bacau. The platform was created as part of a project funded by UEFISCDI through the PNCDI III program. Timlogo consists of 476 applications, 239 interactive games, 169 animated activities and 67 videos organized into 34 modules, each of which focuses on a problematic sound from the Romanian language.

Interactive game memorizes words

Age: +5 years

Download link:
https://www.logorici.ro/joc-interactiv-de-memorie-verbala/

Description:"Memorize words!" is an interactive verbal memory game designed to assess / practice children's verbal memory (+5) in a visual medium. The game contains 12 elements (image + written word). The child must memorize 6 words whose images will scroll randomly on the screen. After the 6 images have been scrolled, the list of 12 items will be displayed, from which the child must choose the 6 items previously viewed. The resource should be used by teachers and therapists in controlled settings.

Anagram

Age: Primary education

Download link:
https://www.logorici.ro/anagrame/

Description:"Anagrams" is an interactive game for schoolchildren, through which they practice phonological awareness and the lexia of words. The game contains 16 exercises (image + anagram), structured from simple to complex: from 3-letter words (CAL, LUP), to 10-letter words (LOCOMOTIVE). The child must order the letters to form the word designated by the image.

Speech therapy game: Differentiation of letters b, d, p

Age: Primary education

Download link:
https://www.logorici.ro/joc-logopedic-diferentierea-literelor-bdp/

Description: This game of differentiation of letters b, d, p aims to help children with reading and writing disorders, who often confuse these optically similar letters, both in writing and in reading. The game consists of 8 levels, in which the child must touch the ball with one of the letters b, d, p, to land on the corresponding wagon. It has a time limit, a score, and a ranking.

We're practicing the multiplication board!

Age: 8-10 years

Download link:
https://www.logorici.ro/exersam-tabla-inmultirii/

Description: Interactive game for schoolchildren (8-10 years old or older children with dyscalculia) whose objective is to practice / evaluate the multiplication table. The game contains 20 multiplication exercises. The child must fly the plane and go through the cloud in which the correct answer of the multiplication is written, avoiding the clouds with the incorrect answers.

Speech therapy materials

Age: Primary education

Download link:
https://materialelogopedie.com/2021/04/27/fisa-de-lucru-interactiva-citire-receptiva-la-nivel-de-propozitie/

Description: This site is aimed at specialists in the field of speech therapy, special education, teachers and parents, offering a variety of useful materials to stimulate language, develop vocabulary, correct pronunciation disorders and appropriate reading and writing skills. The materials are in pdf format and can be downloaded free of charge. The resource should be used by teachers and therapists in controlled settings.

Wordwall

Age: Premium Education
Download link:
https://wordwall.net/ro

Description: Teacher templates for personalized classroom activities. They can build games to learn to read, like math. The resource should be used by teachers and therapists in controlled settings.

Voci Vocalizer TTS (Romanian)

Age: Any age

Download link:
https://apk4k.fun/ro/app/es.codefactory.vocalizertts

Description: Text-to-speech software.

Onenote

Age: Primary Education and Secondary Education

Download link:
https://www.onenote.com/learningtools?omkt=ro-RO

Description: Immersive Reader, included in OneNote Learning Tools, is a full-screen reading experience to increase the readability of content in OneNote documents. Learning Tools is designed to help students with dyslexia and dysgraphia in the classroom, but it can help anyone who wants to make reading easier on their device.

Resources for the Italian context

Review of digital technologies to support people with SLD

Age: Primary Education and Secondary Education

Link: https://tempdsa.iprase.tn.it/ricerca.php
https://www.iprase.tn.it/documents/20178/264352/Tecnologie+digitali+e+DSA/a8a6c5da-9c6c-4ca0-b614-f4f4c253f2ac

Description: "The online list" (constantly updated) and its downloadable/printable volume (updated 2016) provide detailed information on a large number of available resources and applications. They are hosted on the site of the Italian Dyslexia Association (AID). For each digital tool/device, target capacity, operating system, language, and license to use are specified.

Digital Agenda

Age: Primary Education and Secondary Education

Link: https://www.agendadigitale.eu/scuola-digitale/app-per-i-disturbi-specifici-dellapprendimento-le-migliori-risorse-disponibili-in-rete/

Description: AGENDA DIGITALE is a platform that offers up-to-date application suggestions for the support and empowerment of reading/writing in children with reading disorders. Provides short but helpful descriptions and links to app stores and publishers where apps can be found, downloaded, or purchased.

Training cognitive.it

Age: +8 years

Download link:
http://www.trainingcognitivo.it/gamecenter/

Description: Cognitive training for working memory, attention, and other cognitive skills. Many exercises can be solved even without knowing Italian: image-based memory and attention games, non-verbal activities. The resource should be used by teachers and therapists in controlled settings.

Tachidino

Age: Primary Education and Secondary Education

Download link:
https://www.tachidino.com/

Description: Platform to strengthen reading ability. The program is based on the principles of neuropsychological intervention, with training in selective visual-spatial attention. It includes a free app (Tachidino-Free) for non-clinical use by families, professional educators, and another app for clinicians (Tachidino Labs) that requires training and supervised use. Tachidino Labs can be used by trained speech and language therapists and psychologists, the professionals who can provide clinical intervention for dyslexia following current Italian regulations. The training is provided by an online course.

Educational Arcipelago

Age: +5 years

Download link:
https://risorse.arcipelagoeducativo.it/

Description:ARCIPELAGO EDUCATIVO is a Save the Children Italia onlus project. Provides a great set of tips and activities to support children's education and learning, especially targeting children at risk of educational poverty as a result of the coronavirus pandemic. There are also specific suggestions for children with dyslexia and other specific learning disorders.

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ePro

Age: Children with AED or other difficulties

Download link:
https://www.erickson.it/it/servizi-digitali/epro/

Description: Online platform for in-office and distance rehabilitation of children with specific learning disabilities or other learning difficulties.

Developmental dyslexia

Age: Primary education

Download link:
https://www.erickson.it/it/dislessia-evolutiva

Description: Software for the recovery and rehabilitation of children with reading difficulties from the age of 6.

iWinABC DYSLEXIA

iWinABC

Age: 6-10 years

Download link:
https://www.impararegiocando.it/iwinabcdyslexia.htm

Description: iWinABC is an application based on sublexic treatment: automation of syllable recognition, from the letter to the complete word.

Impararefacile

Age: Primary education

Download link:
http://www.impararefacile.it

Description: Software to promote the development of basic school learning skills, such as reading and writing for children at risk or with Specific Learning Disabilities (DEA), but can be used to promote learning for all children.

SELEGGO
I LIONS ITALIANI PER LA DISLESSIA

Seleggo

Age: Primary Education and Secondary Education

Download link:
https://www.seleggo.org/

Description:SELEGGO is an online platform from Lions Italy, which provides textbooks for school books (through agreements with some of the main publishers) adapted visually (typeface, size, spacing) and auditory (text-to-speech: speed and tone). Various tools are also included: notes, maps, highlighting, dictionary, related images. The service is free for children with a diagnosis of specific reading difficulties. It is necessary to provide a clinical diagnosis and proof of purchase of the textbook. Schools can provide complete lists of adopted textbooks.

Ridinet

Age: Primary education

Download link:
https://www.anastasis.it/catalogo-generale/ridinet/

Description: Ridinet is a platform that provides different types of applications for the enhancement of various read / write and read-related functions. The online platform is accessed under the supervision of trained medical professionals. The training takes place at home with the supervision of parents and doctors. Each family can purchase access to the platform through a clinical professional who will supervise the child's work. On the site you can find a map with all the centers that provide this service.

Resources for the Portuguese context

Jogo Dom e as Letras

Age: PEGI 3 - 6 to 8 years

Download link:
https://www.domlexia.com.br/jogo-dom-e-as-letras

Description:
DOMLEXIA's online game "Dom e as Letras" works on phonological awareness (phoneme-grapheme relationship, sound writing) as a predictor of better literacy, in a super fun way. It offers a free version and has a premium version.

Graphogame

Age: PEGI 3 - 4 to 9 years

Download link:
https://www.graphogame.com/baixar.html

Description:
GraphoGame helps preschool and elementary students learn to read their first letters, syllables and words, with sounds and instructions in Brazilian Portuguese. The application presents a game based on scientific evidence to develop, for example, spelling and reading skills. Play is especially effective for children who are learning letter-sound relationships. Can be used completely offline!

João em Foco

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=org.godotengine.joao

Description:
João em Foco arose as a proposal for the completion of the final degree project in the Computer Engineering course. The game aims to spread information about dyslexia, so as to raise awareness in people about a Specific Learning Disorder that is so important.

Cerci

Age: PEGI 3

Download link:
http://cercifaf.org.pt/cerci/phocadownload/software/cd_ecr.zip

Description:
It is intended for children or adults with special educational needs or in neuropsychological rehabilitation who have difficulties in maintaining attention and concentration, visual-motor coordination, fine psychomotor coordination, memorization and vocabulary, including situations of dyslexia.

Lexicon

Age: PEGI 3

Download link:
http://cercifaf.org.pt/cerci/phocadownload/software/cd_lexicon.zip

Description:
It is a Learning Disabilities Prevention and Recovery program specifically focused on visual discrimination and phonological conversion of graphically similar letters, including dyslexia situations.

PEGI 3, especially for educators and teachers

Age:

Download link:
http://cercifaf.org.pt/cerci/phocadownload/software/cd_quid.zip

Description:
A program to create and perform multimedia exercises. It has several dozen exercises, on different topics, which are only examples of what it is possible to create with this software. The great interest and usefulness of QUID lies in the possibility of allowing the educator / trainer to produce exercises, tailored to their interests and needs of their students, without the need to know any programming language or "know a lot about computing".

PEGI 3 - 2 to 10 years

Age: PEGI 3 - 2 to 10 years

Download link:
https://gcompris.net/downloads-pt.html

Description:
GCompris is a high-quality educational application package, which includes a large number of activities for children. Some of the activities are presented as games, but are still educational.

Adapro

Age: PEGI 3

Download link:
http://adapro.iter.es/pt/#descargas

Description:
Adapro is a free word processor for people with learning difficulties such as dyslexia or autism. Its tailored, transparent and configurable interface provides an environment that inspires the user with enough security to hold their attention.

WebHelp

Age: PEGI 3

Download link:
https://chrome.google.com/webstore/detail/webhelp/pjnhjelpkdoihfjeeemmahpdbmgliboo

Description:
The WebHelpDyslexia extension allows you to help people with dyslexia when they read and surf the Web. It allows you to customize the page according to user needs, such as color scheme, spacing, font type, and size.

Open Dyslexic

Age: PEGI 3

Download link:
https://opendyslexic.org

Description:
It is a typeface designed against some common symptoms of dyslexia.

Dyslexic font

Age: PEGI 3

Download link:
https://play.google.com/store/apps/details?id=com.monotype.android.font.fontpack.flipfont.dyslexicfont

Description:
Allows all users to change the system font of their smartphone or tablet.

Araword

Age: PEGI 3

Download link:
http://adapro.iter.es/pt/#descargas

Description:
AraWord is a freely distributed computer application. Consisting of a word processor that allows the simultaneous writing of text and pictograms, facilitating the development of augmentative communication materials, the development of accessible curricular materials, and the adaptation of documents for people who have difficulties in the field of functional communication and of literacy. It can also be used in dyslexic situations.

Dyslexia Help

Download link:
http://dyslexiahelp.umich.edu/tools/apps

Description:
Website that includes an extensive and meticulously organized list of applications that may be useful for people with dyslexia, parents of dyslexics, or professionals who work with dyslexics (teachers, tutors, reading specialists, etc.). These applications allow working on the cognitive processes used when speaking, reading, spelling and writing.

Dyslexia Apps (App Store)

Download link:
https://www.apple.com/pt/search/dislexia?src=serp

Description:
Dyslexia apps developed for devices with iOS operating system.

CogniFit

Age: PEGI 3

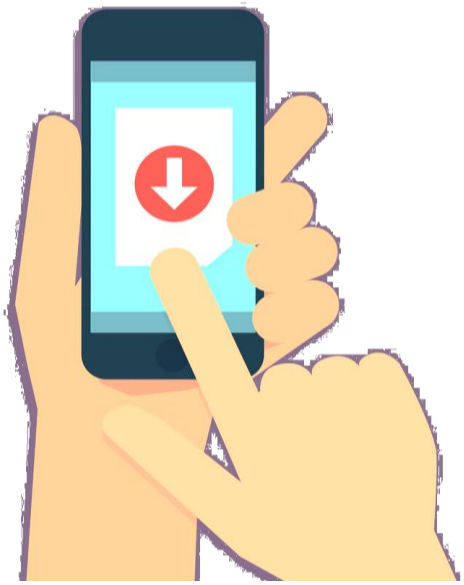
Download link:
https://play.google.com/store/apps/details?id=com.cognifit.android.dyslexia

Description:
This application was created for people who wish to participate in scientific studies related to dyslexia. This application aids scientific research by providing digital tools that help evaluate and treat people living with this disorder. Research on cognitive dyslexia is a trusted resource from the scientific community and universities around the world.

Open Dyslexic Applications

Download link:
https://opendyslexic.org/category/applications

Description:
A website that includes more than forty specific applications to deal with the difficulties that people with dyslexia present. Each App has a description and links for download.



Learning English for Children with Dyslexia

Dyslexia is “a neurobiological disorder in which the human brain functions or is structured differently. These differences interfere with the ability to think and remember. Learning disorders often affect a person's ability to speak, listen, read, write, spell, reason, remember, organize information, or learn mathematics ”. (Veiga, 2005, Cited by Gallego-Palomino, 2015).

Dyslexia is one of the most common learning disabilities, and because of its close link to poor school performance, it has sparked a slew of research. Furthermore, it is well known that as one progresses through the various educational stages, the demand for literacy increases, implying a constant struggle for students with dyslexia to achieve academic success (Martinez, 2016).

It is critical to understand that there are differences in learning a language based on its characteristics; for example, learning a transparent language is easier than learning an opaque one. In a transparent language, such as Spanish, there is a relationship between grapheme and morpheme, and the sound of each phoneme is consistent; however, in opaque languages, such as English, there is no such correspondence, and different phonemes may correspond to each grapheme (González-Coello, 2018).

Learning English is a task that has become essential in today's world; it is a task that needs not only the student's dedication, but also the teacher's role in teaching that foreign language. Furthermore, as previously stated, English is an opaque language, which means that the encodings in the phonology of the language are different from those of our mother tongue (Spanish), which is practically transparent, so students with dyslexia must put in more effort to improve their language skills.

Because Spanish is the first language we learn, it is easier to learn because we are immersed in it, which does not happen when we add a second language. (Moya-Martnez and Rivadeneira-Ramos, 2021).

According to Vizcano (2017), students with dyslexia or other learning disabilities appear to vanish in English class, becoming unmotivated, disoriented, and unwilling to participate. This is due to the fact that what is presented in the classroom is not written in a language that they are familiar with (Battagliero, 2016).

Nowadays, writing and spelling are given a lot of weight in the language classroom, which puts people with literacy issues at a disadvantage compared to the rest of the population. When this disparity is brought to the educational field, two things can happen: first, the dyslexic student may be penalized for spelling errors or for failing to complete a task on time, and second, there may be people who are not diagnosed, so they are treated unfairly. They are expected to perform at the same level as non-dyslexic students. Anxiety, stress, low self-esteem, and depression are all symptoms of this situation. (Roa-Gutiérrez, 2017).

Because the existing methodology in ordinary English classrooms is insufficient for students with learning disabilities, we must seek out new methods, strategies, and materials to work with our students in a way that allows them to succeed. This project investigates various methods for achieving the same goal: learning a foreign language.

We have students with Specific Learning Difficulties (DEA) and students who do not, so as a teacher, it is critical to be informed and able to guide our students in an inclusive manner to achieve the goal in a satisfactory way (Battagliero, 2016).

The Ministry of Education (2012) defines dyslexia as a “specific neurobiological-based reading learning disorder that persistently affects phonological decoding and / or word recognition, interfering with academic performance with a reading delay of at least minus two years. "

It is usually accompanied by problems in writing. This disorder is not caused by any type of disability, or by lack of opportunities for learning or sociocultural factors.

According to the International Dyslexia Association (IDA, 2002; Lyon, Shaywitz and Shaywitz, 2003) it is a “Specific Learning Difficulty (DEA), of neurobiological origin, characterized by difficulties in the precise and fluid recognition of words and by spelling and decoding problems. "

They are difficulties of a phonological nature that appear unexpectedly, while other cognitive abilities develop normally, and whose consequences are comprehension and vocabulary development problems.

We find the term dyslexia in the DSM-V, within neurodevelopmental disorders, defined as an “alternative term used to refer to a pattern of learning difficulties characterized by problems with the recognition of words accurately or fluently, misspelling and poor spelling ability. If dyslexia is used to specify this particular pattern of difficulties, it is also important to specify any additional difficulties present, such as difficulties with reading comprehension or mathematical reasoning”.

Bilingualism and dyslexia in Spain

According to Fombella, S, and Solis, P (2020), current society rewards people with a medium-high knowledge of a foreign language, especially in terms of English, since it has positioned itself as one of the most important languages in the world (Verplaetse and Migliacci, 2017) because it is present in practically all commercial relationships that are developed today. Thus, bilingual education has been an educational option in many countries for more than 50 years, although it remains controversial, especially regarding its suitability for all children (Bialystok, 2016).

Specifically in Spain, in 1996 the first Spanish-English bilingual project was signed at the national level thanks to an agreement between the Spanish Ministry of Education and the British Council, then the programs that integrate English in bilingual education in schools have proliferated. According to the figures provided to the British Council by the Spanish Autonomous Communities in 2013, nearly one million students from more than 5,000 Public Primary Schools and 2,000 Secondary Education were part of the bilingual panorama in our country. Currently, the number of centers offering bilingual education or CLIL (Content Integrated Learning and Foreign Languages) and the number of students learning in English continues to grow (British Council, 2015).

At the legislative level, the Organic Law of Education (LOE) 2/2006 in the section of Compulsory Higher Education (ESO) establishes among its general objectives that students must understand and express themselves in one or more foreign languages adequately at the end of said stage. However, these goals and the social importance attached to learning a foreign language do not affect all students equally. In this sense, there are students with situations that may find this learning difficult, as is the case of students with dyslexia, who are affected by their ability to process language, which inevitably manifests itself in the learning of a foreign language.

The English didactic guide for students with dyslexia and other learning difficulties prepared by the Ministry of Education, Youth and Sports of the Region of Murcia, highlights various risk indicators according to the educational stage (Table 3).

Table 3. Risk indicators from the English didactic guide for students with dyslexia and other learning difficulties-

Infant education	Primary education (1st cycle)	Primary education (2nd cycle)
Processing difficulties and phonological-syllabic awareness.	Risk indicators from the previous stage persist.	Risk indicators from the previous stage persist.
Difficulties in phonemic segmentation	Difficulties in acquiring the alphabetic code.	Difficulty and overexertion to automate reading, which is slow and laborious.
Difficulties in grapheme-phoneme correspondence (knowledge of the name of the letters).	Difficulties in grapheme-phoneme correspondence	Difficulty planning and drafting written compositions, including in the presentation and preparation of oral speeches. Poor command of the language in general.
Difficulty rhyming words.	Difficulties in automating automatic reading.	Grammatical inconsistencies and spelling errors.
Little ability to remember sequences and series (days of the week, numerical series, seasons of the year, etc.).	Difficulty remembering the alphabet.	Writing difficulties.
Difficulties in maintaining the sequential order in polysyllabic words.	Difficulties in the phonological structure (letters, syllables, or words).	Difficulties reading problem sentences, coupled with limited mastery of multiplication tables, sometimes cause poor math scores.
Difficulty learning the name of colors, letters, numbers, even in the evocation of the word of known objects.	Difficulty remembering visual spelling irregularities in English.	Difficulties in learning other second foreign languages that are incorporated later.
Starts late to speak.	Difficulties in English grammar structures that do not exist for Spanish. Both orally and in writing.	
Confusion when pronouncing similar words.	Difficulties in reading comprehension due to excessive effort to decode the signs.	
Family history of language problems and reading and writing disorders or impairment.		
Difficulties in the grammatical structures of English that do not exist for Spanish. Both orally and in writing.		
Difficulties in reading comprehension due to excessive effort to decode the signs		

The characteristics of a student's mother tongue, as well as the level of the phonological language of the language to be learned, will influence how difficult it is for them to learn it. French, Danish, English, Bulgarian (Slavic), Polish, and other languages are among the most difficult European languages.

Gender, silent letters, lack of uniformity, complex grammar rules, and other factors complicate these languages. As a result, dyslexic students face difficulties. Other EU languages, such as German, Italian, and Spanish are easier to learn for dyslexic people. These languages have fewer grammatical structures, lexicons, and other features (Broadbent, 2018). Consequently, Spanish students with dyslexia have more difficulties learning English since this language has a lot of opacity between phoneme-grapheme.

Among the difficulties that a dyslexic Spanish student may face while learning English, according to the Higher Institute of Psychological Studies (ISEP), are:

- Difficulty learning and remembering new vocabulary.
- Difficulty learning a new spelling and the rules that go with it. In English, it's difficult to remember spelling irregularities.
- Difficulties with English grammatical structures that do not exist in Spanish, both in writing and orally.
- Reading comprehension problems as a result of overworking to decode the signs.
- Learning different phonemes, graphemes, and digraphs in the two languages is difficult.
- Mispronunciation of words that are similar (foot-food, dry-try, shirt-skirt).
- Rhyming words is difficult.
- Having trouble remembering the alphabet.

In this regard, teachers play a critical role in helping dyslexic students learn English, and they must provide the structure, time, and practice necessary for students to meet their goals in reading, writing, and oral communication. Therefore, the adequacy of teachers and pedagogical methodologies to face the learning difficulties of these students is very relevant.

For Lorenzo Antonio Hernández Pallarés psychologist, psychotherapist, story therapy trainer and director of a team on learning difficulties, some of the guidelines to follow so that a child can learn a second language are (Change Dyslexia, 2021):

- Use oral and visual support in teaching the language.
- Make teaching very practical and start from topics of interest to the child, to awaken communicative interest.
- Don't force learning ahead of time.
- Watch movies and cartoons without dubbing.
- Participate in cultural exchanges with children of other nationalities or camps where they must express themselves in other languages or carry out exchanges in other countries.

By incorporating new guidelines, not only teachers and family members, but also the school, must adapt to the needs of students with dyslexia. Schools, for example, can use innovative methodologies to help students with dyslexia learn English in the classroom, such as using ICT as a resource. There is currently a lot of specialized educational software available to help these students, which can be a good way to overcome obstacles when it comes to learning a foreign language, especially since they are digital natives.

The use of ICT in the classroom can facilitate the learning of English in students with dyslexia by improving (Change Dyslexia, 2021):

- The motivation and self-esteem of the student.
- Learning literacy, communication and language.
- The social integration of the student.

According to the methodological guide on specific learning difficulties, these are the tools for a student with dyslexia to access content on an equal footing with the rest of their classmates, extrapolated to learning the English language for Spanish students:

- Computer
- Ipad
- Specific software
- reader
- concealer
- calculator
- Multiplication tables
- Tape recorder
- Visual schedules

The aforementioned guide also lists the main ICTs:

1. **Text converters:**

   They are called OCR (Optical Character Recognizers) or optical character recognizers, responsible for reading the texts in written format, to avoid errors in reading. Some examples of converters mentioned in the guide are:

   - Payment converters: ClaroRead, DiTres and TextAloud.
   - Network converters: Interactive Loquendo TTS and Read & Write.
   - Free converters: DSpeech and Read for me.

2. **ICT resources to make a text more readable and understandable:**

   DysWebxia It is a model that allows people with dyslexia to access the web, both in form and in content.

3. **Spell checkers:**

   Some examples of spell checkers are those included in Microsoft, which takes care of checking and correcting spelling errors.

4. **Mind Maps and Concept Maps:**

   Concept mapping helps students, who are used to learning by heart or learning superficially, to become deeper or more meaningful learners, that is, they help people learn to learn.
   Search and analysis tools facilitate access to the contents of the cognitive message.
   Some examples are: iMindMap, FreeMind, Wordle, POPPLET, Glogster, CmapTools.

In addition, the English Teaching Guide for Students with Dyslexia and Other Learning Disabilities also defines useful methods for teachers of English and for helping students with dyslexia to learn the language. The authors of the guide consider that traditional methods may not be effective in teaching English to children with dyslexia, so the following methodologies or guidelines are proposed to teach English to these children:

- Structured, enjoyable and fun, progressive and natural learning.
- Learning with multisensory methods: use touch, movement and color as a learning channel, in addition to sight and hearing, where teachers use visual or auditory reinforcements and supports in oral explanations and instructions, using PowerPoint presentations, concept maps or schematics.
- Practical, interactive and technological learning: favor the access and use of new technologies, allowing the student to use digital tools for taking notes, tape recorders or computer applications, as well as the use of processors and spell checkers.
- Learning to read and write a language should be based on two main methods:
  - Synthetic phonetic method (Phonetics).
    The synthetic phonetic method (Synthetic Phonetics), is a method of teaching reading that first teaches the sounds of the letters and then combines these sounds and achieve a complete pronunciation of the words.
  - Analytical method (Whole word approach).
    The "Whole Word Approach" method helps students recognize words as complete units without dividing them into sounds or groups of letters. It focuses on learning the word as the minimum unit of meaning and therefore the essential building block of reading. This methodology helps students with dyslexia to visually memorize language units.

Teachers should use the analytical method and the phonetic-synthetic method together.

On the other hand, Jolly Phonics is a working method to learn to read and write in English, through a multisensory methodology and using the synthetic phonetics method, which means that the sounds of the letters are taught first by themselves and are later taught combining such sounds to synthesize words.

There are five basic reading and writing skills, each of which is built into the Jolly Phonics method:

1) Learn the sounds of letters.

2) Learn the formation of letters.

3) Combine.

4) Identify the sounds of words.

5) Learn difficult words.

The secret of the success of this methodology lies in the fact that it is multisensory, with all children being capable of learning since they encompass all forms of learning.

Dyslexia and English

Learning English is important for the training of any person. Being a foreign language with different decoding in its phonology, it is presented as a great effort in the development of linguistic skills of the dyslexic student. Incorporating a new language requires a lot of work to integrate new phonemes, internalize and decode them. (Rivadeneira-Ramos and Moya-Martínez, 2020).

According to the Guide to Understanding Dyslexia-Madrid with dyslexia (2019), the difficulties for a correct learning of a foreign language are those of dyslexia: difficulties in those activities that involve grapheme-phoneme conversion (decoding), difficulties to visually remember the word (spelling) and difficulties in understanding and writing texts.

Knudsen (2012) makes an important appreciation saying that people with dyslexia have problems when learning a second language due to the way it is taught, targeting a student with ease to learn some languages.

In some educational centers, this second language is taught taking advantage of the knowledge of their mother tongue, which means that people who do not have a good knowledge of their language will not learn a second one, this being the case of dyslexic students, who present difficulties in information processing, writing and reading.

Some researchers identify problematic aspects for dyslexic people in learning a second language (Knudsen, 2012 cited by Roa Gutiérrez, 2017):

- Learn phonemes, graphemes and digraphs other than those of the mother tongue and the relationship between them.
    - Understand a new syntax.
    - Learn and remember vocabulary.

- Spelling new words with different rules from those of the mother tongue.
- Differentiate between similar phonemes.
- Pronounce words with silent letters.
- Intonating and accentuating words in a different way from the mother tongue.
- Understand a written text.

When acquiring a language, it is important to know the process of development of reading and writing, therefore, Silva (2011) explains the Utha Frith's model for the acquisition of literacy in the mother tongue, developing three stages and focusing on the lexical or word recognition process:

- Logographic stage: 3-5 years. Children are able to recognize some familiar words globally or by context before they are able to do the grapheme-phoneme conversion (visual or lexical path). It is the beginning of phonological awareness. The more similarities there are between the words, the more trouble the child will have to identify it. This stage fulfills a communicative function and prepares for reading (intentional teaching), through phonological decoding. In this phase, writing is a symbolic approach, based on the reproduction of drawings, using concepts that are important to them so that they are able to relate the word to its meaning. Writing will have a clearer intention than reading for the child (Gallego Palomino, 2015).
- Alphabetic stage: the child begins to use the grapheme-phoneme conversion. They learn the graphemes of the language and associate them with the phonemes they represent.

  In reading, the child will join the small units to form superior units (words) that will lead to the meaning. (Ramos, 2015).
- Spelling stage: the child in this phase writes words directly. The grapheme-phoneme conversion rules have been consolidated and automated, recognizing many words without resorting to deciphering graphemes (internal lexicon). The child progresses at the spelling level, improving both comprehension and accuracy and speed thanks to practice. This stage takes place earlier in reading than in writing (Navajas, 2019).

This internal lexicon in an opaque language such as English is totally necessary to be able to write accurately, so Spanish literacy teaching methods cannot work in the same way in English. Teachers must know these phases as a basis for designing methodological strategies that solve the problems that arise in teaching (Ramos, 2004).

Dyslexia in the English classroom

People with dyslexia transfer their difficulties to learning a second language, so they will have to make a greater effort, since learning a foreign language, and especially English, requires skills in which these students have difficulties (Arries, cited by Knudsen, 2012).

According to Jefferys (2017), in this last century, numerous methods have been used to teach the English language, such as:

- ✔ "Look and say method", in which students learn the form of whole words by seeing them written, they learn to recognize words or phrases using flashcards, which often have a picture associated with the word.
- ✔ “Sight-word method”, in which words known to the students are introduced and reinforced in each of the sessions based on stories in which they are constantly repeated.
- ✔ “Basal readers method”, a method for teaching reading that uses specific books in which exercises related to the story being told are introduced.

We can find other methods used for teaching English (McGuiness, cited by González-Coello, 2018):

- ✔ "Whole language method", in which the student is an active member of the classroom trying to learn to read naturally, the teacher is only a guide.
- ✔ "New eclecticism method", in which children learn complete words by visualizing them to gradually study them according to their syllables, to finish, classifying those words into families according to their endings. Its objective is to make students be aware of phonemes.

Difficulties in the Foreign Language classroom

According to Knudsen (2012), the methodologies used in the classroom are aimed at students who do not present difficulties of any kind, which discriminates against dyslexic students and therefore requires a greater effort to learn a foreign language. In addition, in many cases, the student's knowledge of their mother tongue is used, excluding people who do not have a solid knowledge of it, who will be committed to never learning the target language.

According to Martín, S. (2020), students with dyslexia have difficulties distinguishing and understanding new sounds that are very different from those of their mother tongue, which creates a dysfunctional situation on four levels: vocal recognition (auditory), visual identification, spatial orientation, and sequential problems, as well as difficulties in memorizing words.

Therefore, the teacher must know the skills with the greatest difficulty for dyslexic students to introduce strategies and tasks that stimulate and reinforce them. We can find:

- Difficulties in the grapheme-phoneme correspondence (what-that).
- Difficulty rhyming words.
- Poor ability to remember series and sequences (days of the week)
- Difficulties learning colors, letters, and numbers.
- Confusion in the pronunciation of similar words (shirt-skirt).
- Difficulty remembering the alphabet.
- Difficulties in the phonological structure.
- Difficulty remembering spelling irregularities in English.
- Difficulties in English grammatical structures that do not occur in their mother tongue, both orally and in writing.
- Reading comprehension difficulties due to his overexertion to decode the signs.
- Poor linguistic competence in general.

Intervention strategies in the English class

According to the DISFAM organization, in its detection and action protocol (2010), we can find the following guidelines:

- Indicate the minimum objectives of each unit regarding vocabulary and grammar.
- Reduce vocabulary.
- Do not correct spelling mistakes, allowing the phonetic transcription of words, prioritizing their oral integration.
- Allow having in the classroom and during the evaluation tests the grammatical structures of the sentences, as well as those of the different verb tenses.
- Reduce the number of reading books and adapt them to their level.
- Perform prepared dictations.

In addition to these general strategies, Martín, S. (2020) points out different strategies for the different skills that are intended in learning a foreign language such as English:

- Vocabulary: taking into account that the student will need more time, as well as different techniques to learn it, it is advisable not to use the mother tongue to introduce new words, but always supporting with visual material.
- Listening: so that the student does not stop paying attention, the listening time should be less than one minute, exercises of phonological awareness should be carried out, offering dyslexic students techniques that help them get involved in the task.
- Speaking: although it is the skill in which dyslexic students have the least difficulties, they have to deal with remembering words efficiently and quickly or remembering how words are pronounced, among other challenges, so the following strategies can be used:
    - Do many of the activities orally.
    - Use new technologies with interactive activities that improve pronunciation and intonation.
    - Design flashcards to help you remember vocabulary.
    - Learn the most frequently used words (high-frequency words).

- Reading: this skill requires specific reinforcement, helping dyslexic students to develop phonemic-phonetic awareness as follows:
    - Change the first phoneme of a word to form another (hat-cat).
    - Recognize words that begin with the same phoneme (boy-bike-book).
    - Rhymes in English (big-pig).

- Writing: once the student with dyslexia is familiarized with vocabulary and structures, it is time to start writing. For this, you can use:
    - Whiteboards for individual use to make dictations and copies of frequent words.
    - Word association games with pictures.
    - Visual dictionaries are customized for the words that present more difficulty.
    - Creation of books and simple stories.
    - Interactive writing.
    - Writing letters with a guide

Resources for the English classroom

	Busuu: language learning **Devices:** Android, iPhone, iPad **Download link:** https://www.educationalappstore.com/app/learn-languages-busuu **Description:** Busuu is one of the best English language apps available today and is highly recommended for learning English at a beginner level. This app is designed by linguists and combines human interaction and artificial intelligence-driven teaching to help you learn a language faster. The Busuu team regularly measures the effectiveness of the Busuu language learning methodology. They conducted an independent study with a research team from the City University of New York and the University of South Carolina to measure the learning outcomes of the product. The study found that 22 hours of Busuu is equivalent to a university semester of language learning. Busuu has been named the English learning app of the year at the 2020 EdTech Breakthrough Awards.

Duolingo - Learn Languages Free

Devices: Android, iPhone, iPad

Download link:
https://www.educationalappstore.com/app/duolingo-learn-languages-for-free

Description: Duolingo is effective for practicing the most important parts of English (speaking, listening, grammar). Duolingo lessons are made up of a series of activities and are tailored to the user's learning style. The app's gamified learning system helps you learn English quickly with just twenty minutes a day. Duolingo exercises are designed to help users learn new words and vocabulary effectively.

Improve English: word games

Devices: Android, iPhone, iPad

Download link:
https://www.educationalappstore.com/app/improve-english-word-games

Description: A popular application for learning English. For those who are learning English as an additional language, its short lessons will help you improve your English skills. It is one of the best English vocabulary builder apps for learning new words on the go. Our favorite feature of this app is the scientific algorithm that helps you learn and improve English effectively. This interesting word game helps you learn new words, grammar, spelling, and phrasal verbs. The application is designed for those who have established a basic knowledge of English and want to improve their vocabulary, reading, speaking, and writing.

Memrise: Learn Languages Free

Devices: Android, iPhone, iPad

Download link:
https://www.educationalappstore.com/app/memrise-learn-languages-free

Description: Memrise is one of the best English language learning apps that help you start your journey with some English lessons for beginners or if you are working on how to improve your English. Its intuitive language learning system is designed to make this process fun, easy, and addictive. This is a great app that is gaining more popularity among English learners. Their Basic English course combines practical vocabulary, grammar lessons, and useful phrases so that you can learn conversational English and apply it immediately in the real world.

Phrase Master Pro

Devices: Android, iPhone, iPad

Download link:
https://www.educationalappstore.com/app/sentence-master-pro

Description: Sentence Master Pro is one of the most interesting English learning apps. It is an interactive English learning application that progressively guides the user through the study of the language in immersive real-world contexts. Beginners can learn new English vocabulary in context or review using their SRS (Spaced Repetition System). One of the most attractive aspects of the application is the fact that it can be used by different people with different abilities in the English language. For example, it works great as an app for younger children who already have a certain level of proficiency in reading and writing to improve their comprehension, but older users can also access the app at a different level, especially if they have English as an additional language.

Learn Languages: Rosetta Stone

Devices: Android, iPhone, iPad, website

Download link:
https://www.educationalappstore.com/app/learn-languages-rosetta-stone

Description: Rosetta Stone is a simple English learning app designed very differently from most of the English learning apps currently found in app stores. In other words, it is trying to teach us English in the way that we would learn it if we were children beginning to learn the language. It has exercises designed to help you learn English words.
Rosetta Stone manages to teach you many new words and phrases without using your native language. In addition to the basic lessons and additional content, Hello English has optional tutorial sessions and a new live streaming feature. You can practice English by speaking to native speakers, which is a great additional feature. It is a very immersive method that makes it one of the best applications to learn English.

Learn English with Babbel

Devices: Android, iPhone, iPad

Download link:
https://www.educationalappstore.com/app/learn-english-with-babbel

Description: Babbel is one of the best apps for learning English that has a strong focus on vocabulary and grammar lessons. Babbel focuses more on helping English learners acquire basic speaking skills. Babbel also allows users to learn a new language by completing and repeating sentences. The lessons are divided into real-world topics - you'll learn how to introduce yourself, order food, and make travel arrangements so that every word and phrase you use can serve a logistical purpose. This, Babbel says, is to ensure that students can start having real, meaningful conversations as soon as possible.

LearnEnglish Grammar (UK Edition)

Devices: Android, iPhone, iPad

Download link:
https://www.educationalappstore.com/app/learnenglish-grammar-uk-ed

Description: Learn English Grammar is a simple and accessible app for learning English that is designed to help you improve your grammar. If you want to improve your English grammar in detail, it is a great English learning app that helps to cover 12 grammar topics with 20 activities per topic for English learners of all levels. But if you are looking to find grammar mistakes, Grammarly is your best option.

Beelinguapp: Learn Languages

Devices: Android, iPhone, iPad

Download link:
https://www.educationalappstore.com/app/beelinguapp-learn-languages

Description: This English storytelling app is great for reading practice. The application allows the user to read a mirrored text consecutively, but in two separate languages at the same time. The application also serves as an audiobook and uses what it calls "karaoke reading" to allow any user to follow the audio in the text on both sides. The stories are available in 10 languages, ranging from fairy tales, news, scientific articles, and novels. Mondly is another app for learning English using some effective learning methods.

LingoDeer - Learn languages

Devices: Android, iPhone, iPad and website

Download link:
https://www.educationalappstore.com/app/lingodeer-learn-languages

Description: LingoDeer is an interactive English language learning application that allows you to interact with it in a structured and contextualized way. Users can follow at their own pace and according to their own skill level. Through self-study, these English lessons and subsequent review exercises focus on reading, listening, and writing skills to gradually reveal key terms, language structures, and rules.
LingoDeer is a well-presented app with an organized selection of precise, everyday topics aimed at gradually increasing your familiarity with a new language. The app covers many Asian as well as European languages in which you are taught and you can explore prescribed subtopics with attached "reviews" and "tests" to ensure retention and understanding.
From an educator's perspective, the presented content means a very useful addition to the language learning classroom, with context-based vocabulary displayed in an entertaining, engaging and varied way. The real benefit of LingoDeer will be that younger students access it frequently and complete activities on their own time.

In addition to these applications for the English classroom, in the **Appendices** (Appendix 1-27), various self-made activities are presented to work in the English classroom with students with dyslexia or specific learning difficulties.

Bibliographic references

American Psychiatric Association APA. (2013).*Diagnostic and Statistical Manual of Mental Disorders*(5th ed.). Arlington, VA: Author

Ardila, A., Rosselli, M., & Villaseñor, EM (2005). *Neuropsychology of Learning Disorders*. Autonomous University of Mexico: Modern Manual Ed.

Bialystok, E. (2016).Bilingual Education for Young Children: Review of Effects and Consequences. International Journal of Bilingual Education and Bilingualism, 1-14.https: // doi.org/10.1080 / 13670050.2016.1203859

BOE (2006).Organic Law 2/2006, of May 3, on Education. Head of State "BOE" no. 106, of May 4, 2006 Reference: BOE-A-2006-7899. P27.

Boulkedid, R .; Abdoul, H .; Loustau, M .; Sibony, O. & Alberti, C. (2011). Using and reporting the Delphi Method for selecting healthcare quality indicators: A systematic review. PLOS One 6.

British Council (2015). *Initial training for teachers of bilingual programs in English: policies, practices and recommendations*. British Council.

Broadbent, R. (2018). *European dyslexia charter 2018*. Dyslexia Institute UK.https://www.eppgroup.eu/sites/default/files/attachments/2018/11/european-dyslexia-charter.pdf

Carrillo, M. (2012).Dyslexia: theoretical bases for efficient practice. Psychological Sciences, VI (2), 185-194.

Cedeño, C., Persia, LC & Puelles, RM (2018). Basic knowledge about dyslexia. In A, Cejudo and C, Corchuelo (Coord.), The psychopedagogical evaluation under debate. Reflections and experiences of professionals with educational qualifications (pp. 146-159). Seville: AFOE.

Cuetos, F., Defior, S., Fernández, A., Gallego, C. & Jiménez, J. (2012).Theoretical framework of dyslexia. In the Ministry of Education, Culture and Sports (Coord.), Attention to students with dyslexia in the educational system in the context of specific needs for educational support (pp. 23-43). Madrid: National Center for Educational Innovation and Research

Cuetos, F. & Domínguez, A. (2012).Language neurology. Bases and clinical implications. Madrid: Editorial Médica Panamericana

Change Dyslexia (2021). *Dyslexia in detail.* https://blog.changedyslexia.org/que-es-la-dislexia/

De la Peña, C & Bernabéu, E. (2018). Dyslexia and dyscalculia: a current systematic review from neurogenetics. Universitas Psychologica, 17 (3), 1-11. doi:https://doi.org/10.11144/Javeriana.upsy 17-3.ddrs

Dhers, P. (2019). Learning difficulties. Hologramatic Magazine, 3 (31), 3-31. Recovered from:http://www.cienciared.com.ar/ra/doc.php?n=2205

Dymora, P. & Niemiec, K. (2019). Gamification as a supportive tool for school children with dyslexia. Informatics, 6 (4), 48

Fombella, S & Solis, P (2020).Inclusive Methodological Applications for the Teaching of English as a Foreign Language in Students with Dyslexia. Journal of Education Sciences. Pedagogical Issues. https://doi.org/10.12795/CP.2020.i29.08.

Gill, FJ; Leslie, GD; Grech, C. & Latour, JM (2013).Using a web-based survey tool to undertake a Delphi study: application for nurse education research. Nurse Educ Today, 33, 1322–1328.

Guillén, N (2015). *Methodological guide on specific learning difficulties. Erasmus + program. Training in learning disabilities for parents and teachers. New strategies and methodologies and contribution of ICT*. 2015-1-ES01- KA201-015806, co-financed by the Erasmus + Program of the European Unionhttp: //helpdeskinld.com/images/downloads/GUIA-METODOLOGICA-SOBRE-DEA-SP.pdf

Hasson, F .; Keeney, S. & McKenna, H. (2000).Research guidelines for the Delphi survey technique. Journal of advanced nursing, 32 (4), 1008-1015.

Hernández, F; Hernandez, LA; Valencia, Mª.T; Ramírez & FJ; April, MA (2018).English teaching guide for students with dyslexia and other learning difficulties. Ministry of Education, Youth and Sports, Region of Murcia.https://programaseducativos.es/wp-content/uploads/2019/02/Gu%C3%ADa-aprendizaje-ingl%C3%A9s-dislexia-web.pdf

International Dyslexia Association. (2002).*Definition of Dyslexia*. Recovered from:https://dyslexiaida.org/definition-of-dyslexia/

Higher Institute of Psychological Studies (ISEP). *Learning disabilities: Dyslexia and teaching English.* https://www.isep.es/actualidad-neurociencias/dificultades-aprendizaje-dislexia-ensenanza-ingles/

Manzano, A., Aguilera, C., Lozano, MC, Casiano, C. & Aguilar, JM (2017).Connectivism and dyslexia. INFAD Journal of Psychology. International Journal of Developmental and Educational Psychology, 1 (3), 253-260. https://doi.org/10.17060/ijodaep.2017.n1.v4.1054

Murphy, MK; Black, NA; Lamping, DL; McKee, CM; Sanderson, CF; Askham & J. Marteau, T. (1998). Consensus development methods, and their use in clinical guideline development. Health Technol Assessment, 2 (3), 1–88.

Protopapas, A. (2019). Evolving Concepts of Dyslexia and Their Implications for Research and Remediation. Frontiers in Psychology, 10, 2873

Rello, L. (2018).Overcome dyslexia. A personal experience through research. Barcelona: Paidós

Shinners, L .; Aggar, C .; Grace, S. & Smith, S. (2021).Exploring healthcare professionals' perceptions of artificial intelligence: Validating a questionnaire using the e-Delphi method. Digital Health 2021, 7, 20552076211003433.

Tamayo, S. (2017). Dyslexia and difficulties in the acquisition of literacy. Faculty. Journal of curriculum and teacher training, 21 (1), 423-432.https://www.redalyc.org/pdf/567/56750681021.pdf

Verplaetse, LS & Migliacci, N. (2008).*Inclusive Pedagogy for English Learners: A Manual of Research-Based Practices*New York, NY: Lawrence Erlbaum Associates.

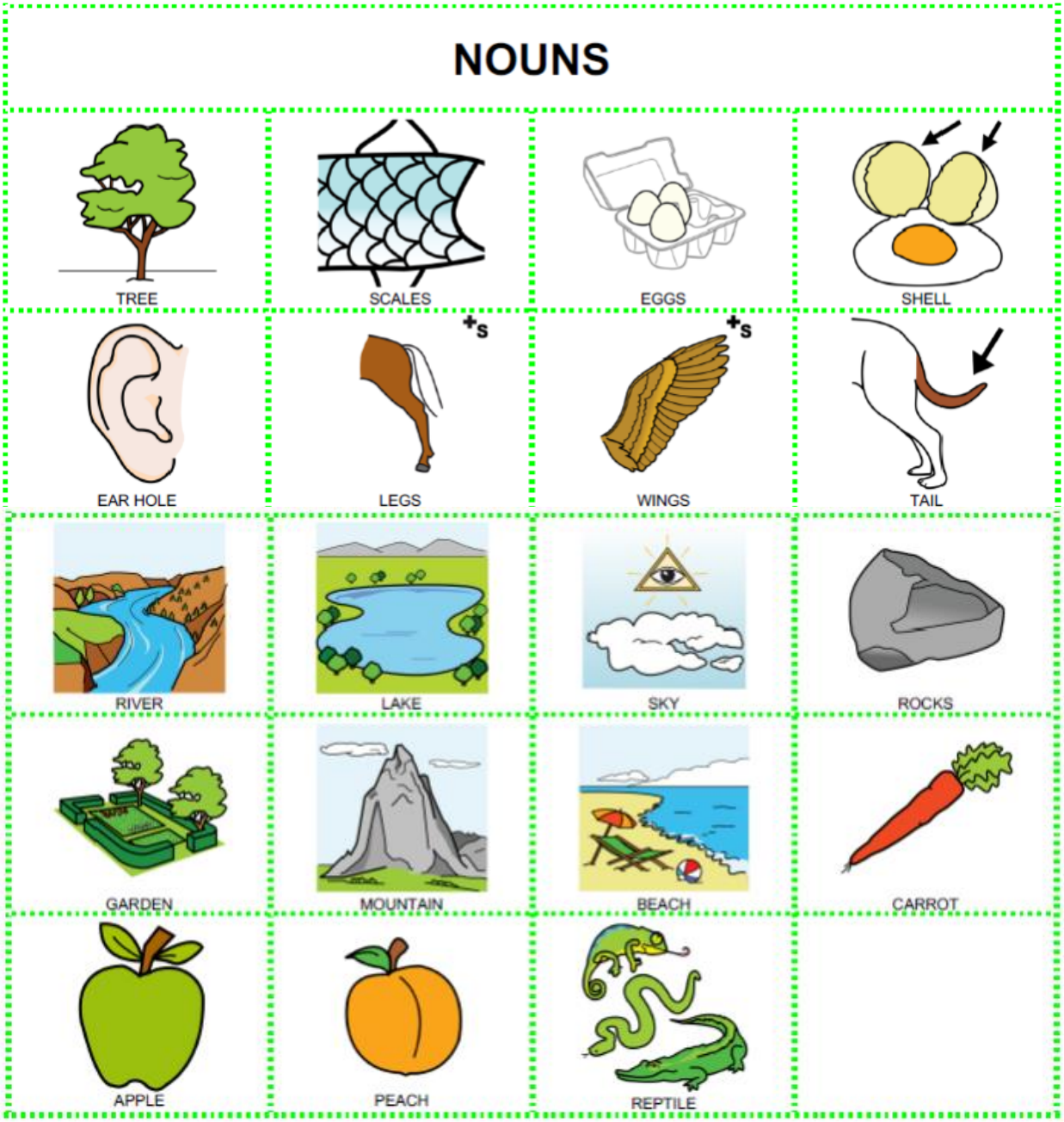
Von der Gracht, HA (2012). Consensus measurement in Delphi studies: review and implications for future quality assurance. Technol Forecast Soc Change, 79, 1525–1536.

Appendices

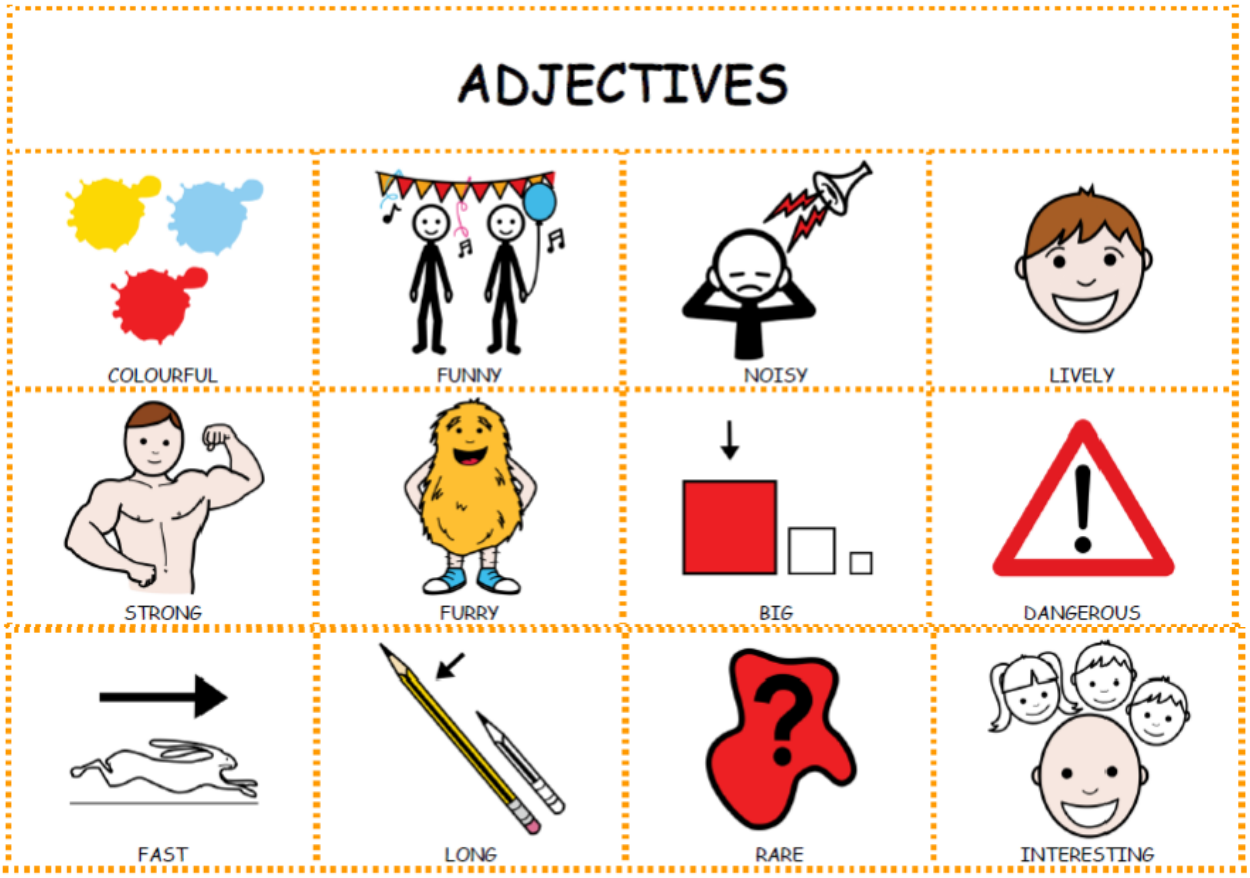
Appendix 1

ANIMALS			
 PENGUIN	 CROCODILE	 FLAMINGO	 SNAKE
 MONKEY	 GORILLA	 PARROT	 RHINO
 DEER	 CAMEL	 TORTOISE	 GIRAFFE
 BIRD	 IGUANA	 BEE	 FROG
 CONDOR			

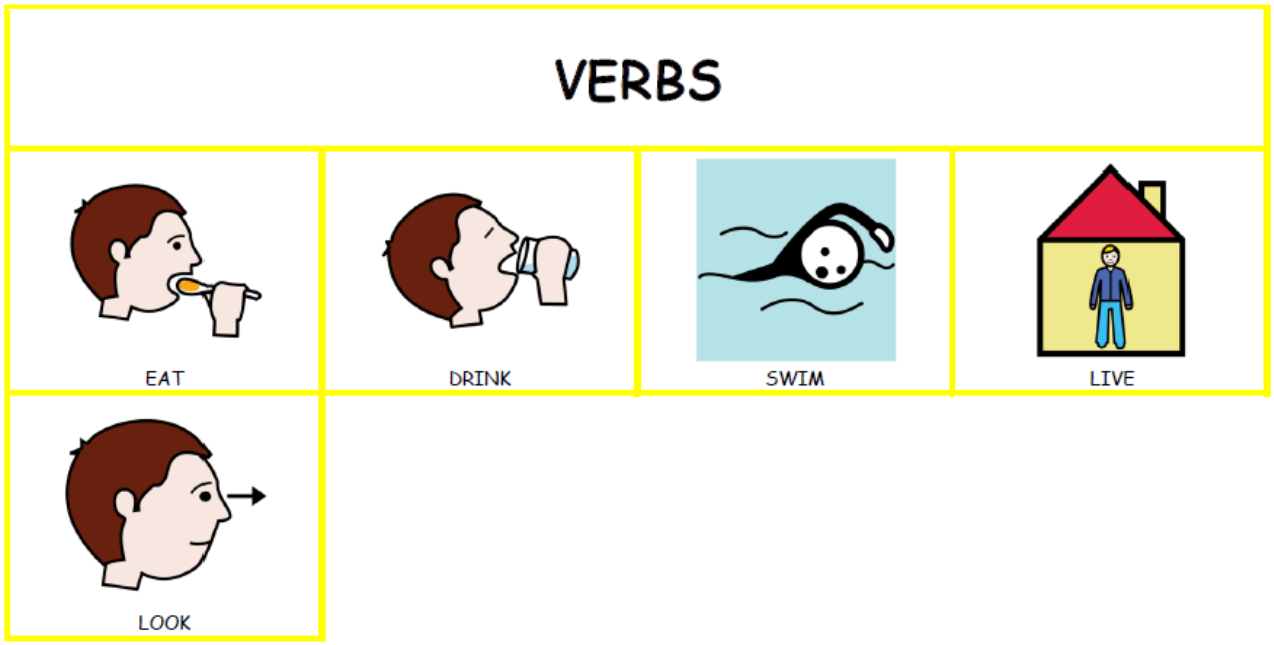
Appendix 2


NOUNS
TREE
SCALES
EGGS
SHELL
EAR HOLE
+S
LEGS
+S
WINGS
TAIL
RIVER
LAKE
SKY
ROCKS
GARDEN
MOUNTAIN
BEACH
CARROT
APPLE
PEACH
REPTILE

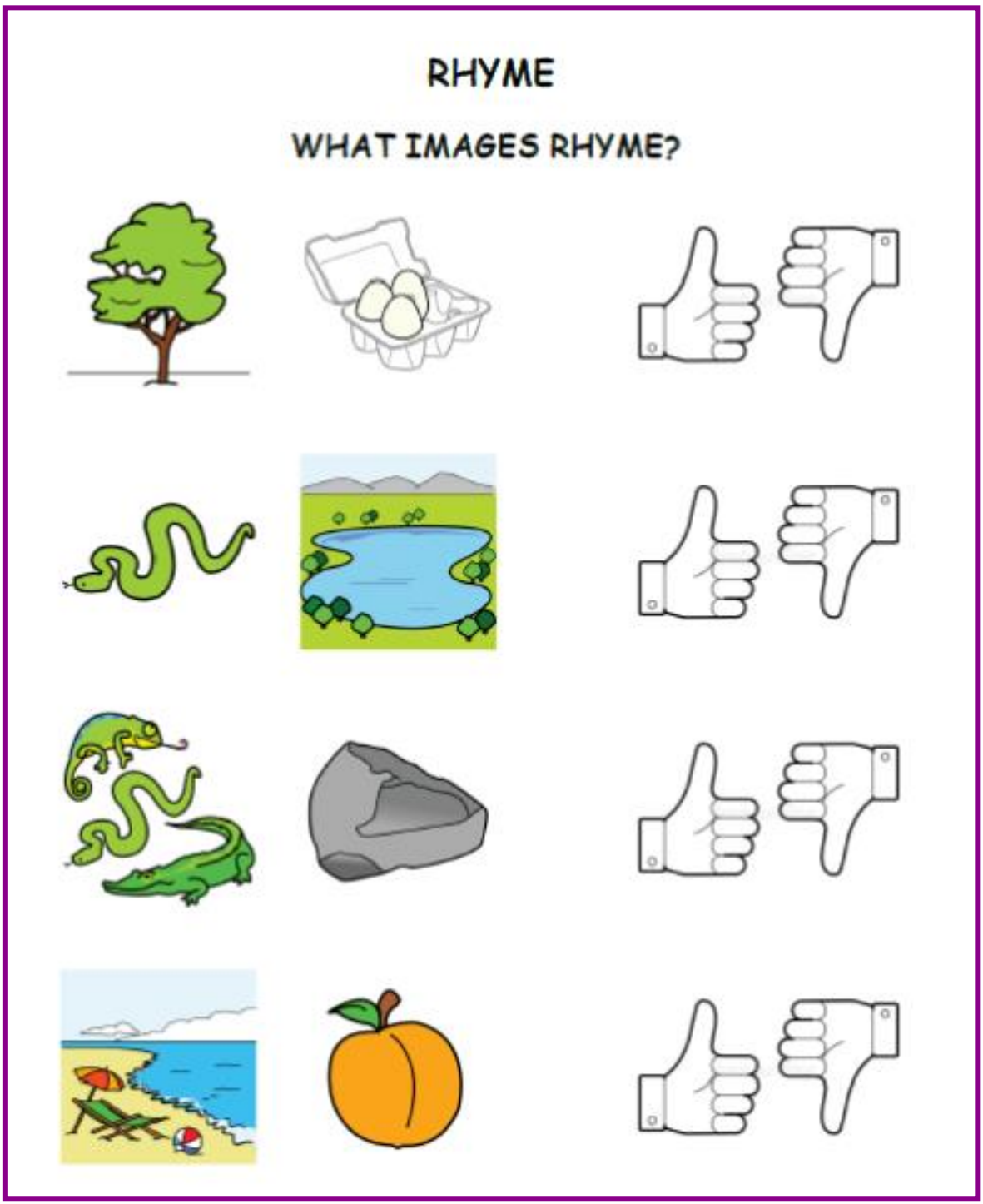
Appendix 3


ADJECTIVES
COLOURFUL
FUNNY
NOISY
LIVELY
STRONG
FURRY
BIG
DANGEROUS
FAST
LONG
RARE
INTERESTING

Appendix 4

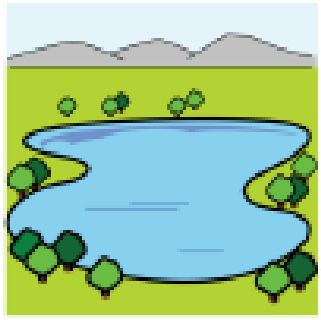
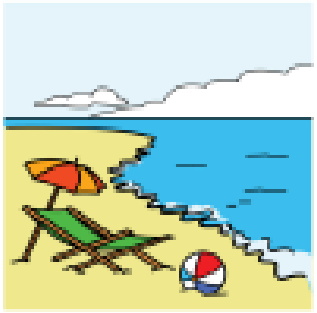
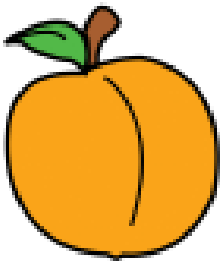


Appendix 5



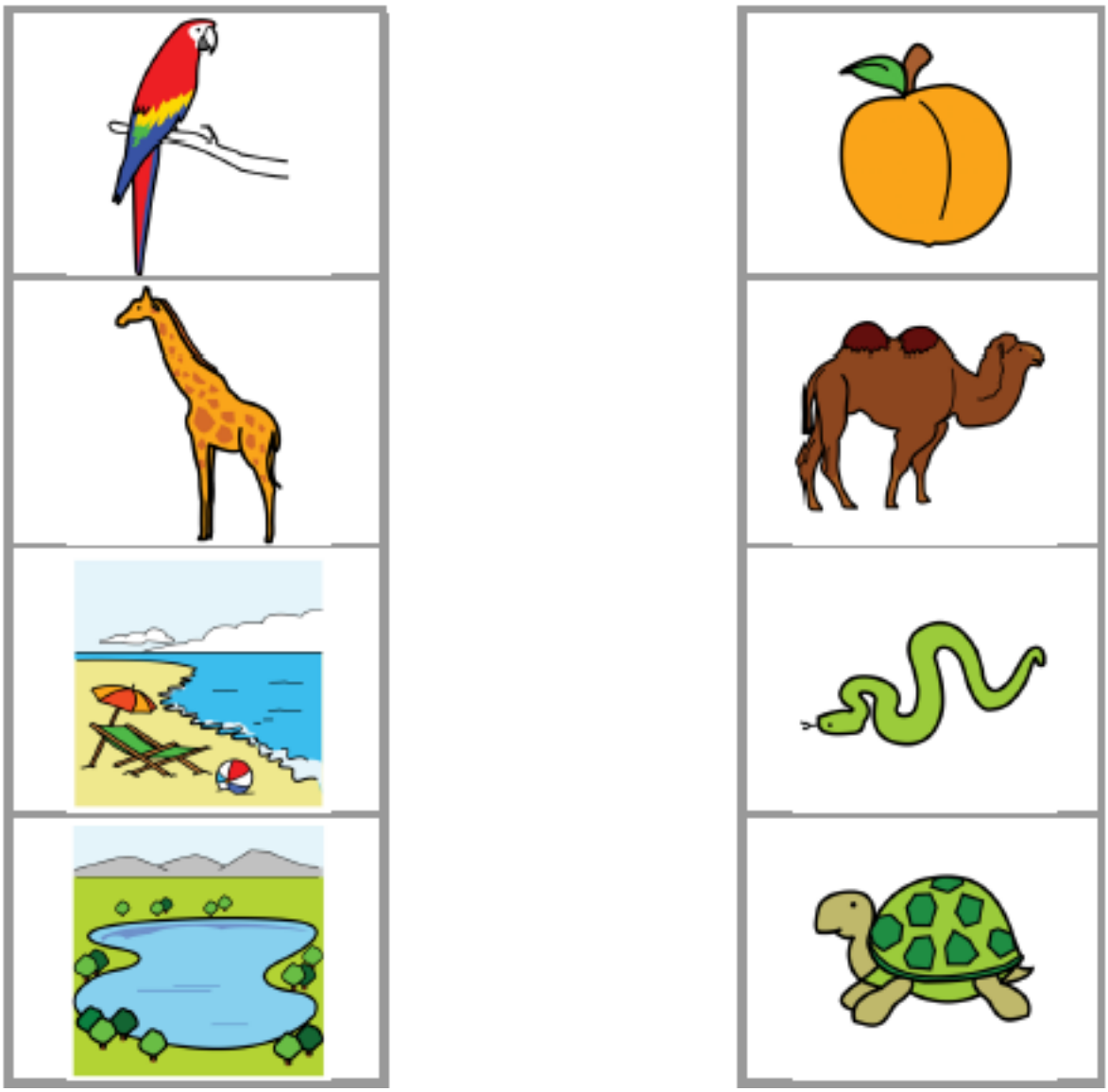
Appendix 6

WHAT IMAGE DOES NOT RHYME? CROSS IT OFF

RHYME		
		
		

Appendix 7

JOIN THE RHYMING WORDS



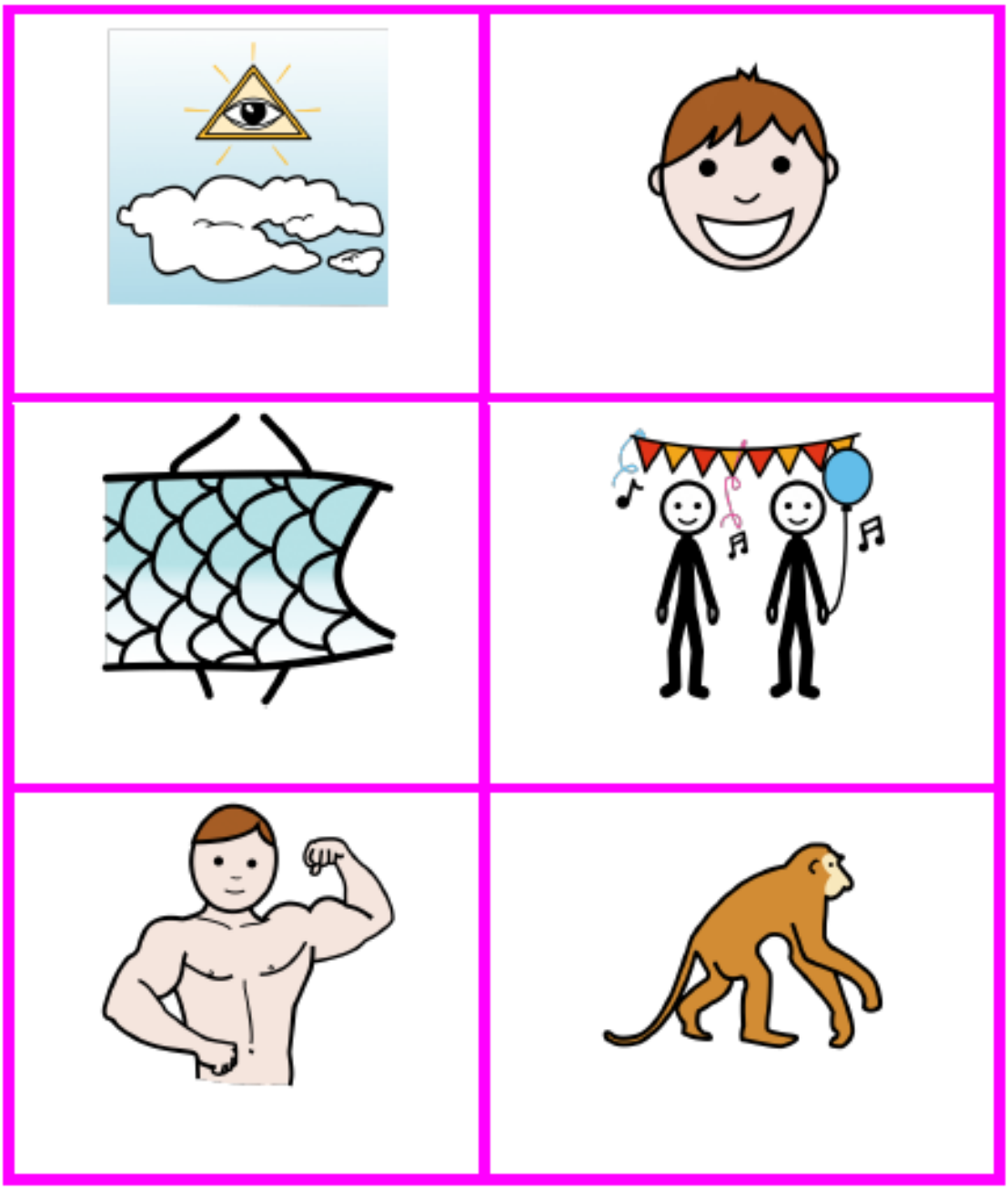
Appendix 8

MEMORY IMAGE-WORD

	PENGUIN		CROCODILE
	FLAMINGO		SNAKE
	MONKEY		GORILLA
	PARROT		RHINO
	DEER		CAMEL
	TORTOISE		GIRAFFE
	BIRD		IGUANA

Appendix 9

BINGO



Appendix 10

CLASSIFY THE WORDS YOU HAVE CROSSED OUT...

STARTING WTIH THE /S/ SOUND	ENDING WITH THE /Y/ SOUND

Appendix 11

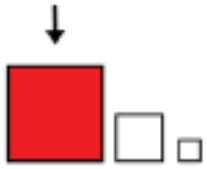
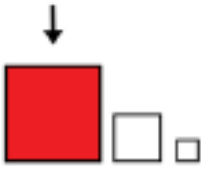
I BUILD WORDS

LOOK	BUILD	WRITE
	P E N G U I N	PENGUIN
		
		
		
		
		

C	R	O	C	O	D	I	L	E	F
L	A	M	I	N	G	O	S	N	A
K	E	M	O	N	K	E	Y	G	O
R	I	L	L	A					

Appendix 12

WHAT´S WRONG?

 crocodile	 crocobile
 dird	 bird
 dig	 big
 deach	 beach
 drink	 brink

 beer	 deer
 conbor	 condor
 dangerous	 bangerous
 garben	 garden
 bird	 birb

Appendix 13

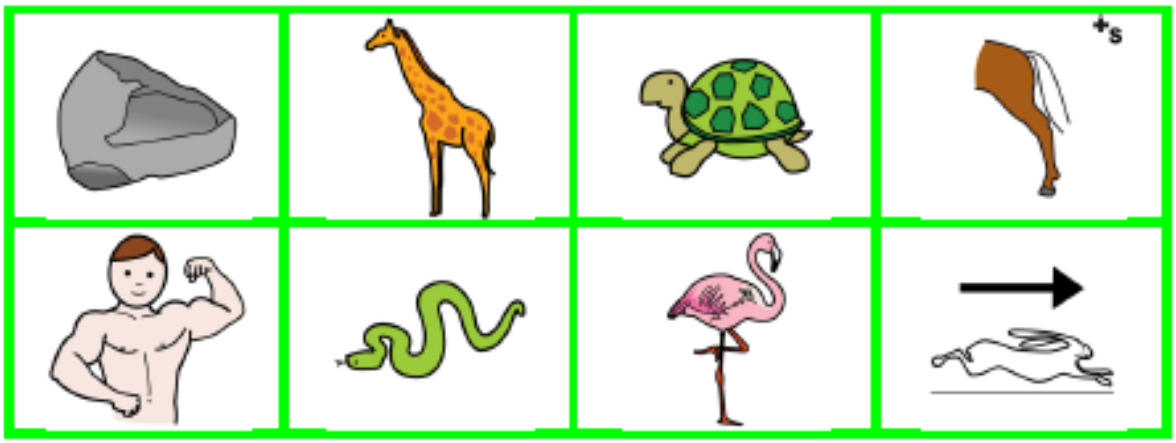
WHAT'S WRONG?

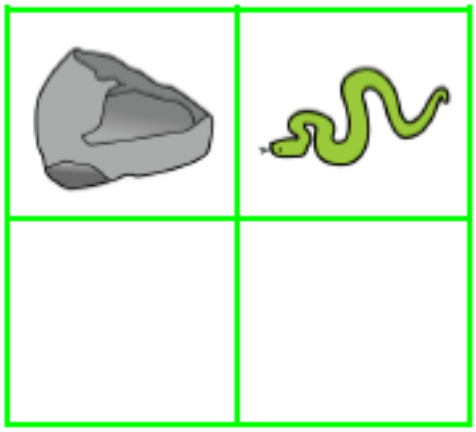
Crocodile	crocobile
Dird	bird
Dig	big
Deach	beach
Drink	brink

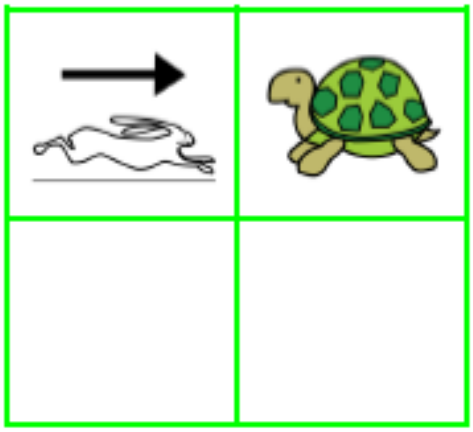
beer	deer
conbor	condor
dangerous	bangerous
garben	garden
bird	birb

Appendix 14

WORD CHAIN







Appendix 15

CHOOSE THE CORRECT WORD AND WRITE THE SENTENCE

They`re between/detween the river and the penguins.

_____

They`re dlack/black and white.

_____

He`s having a dink/bink.

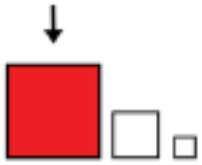
_____

Is it a penguin/qenguin?

_____

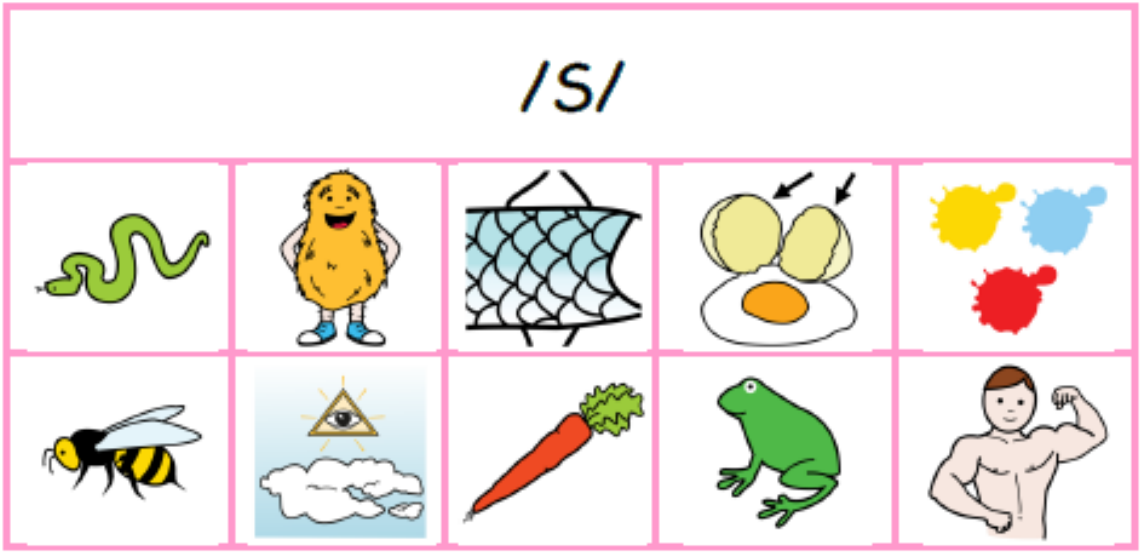
Appendix 16

DOMINO IMAGE-STARTING SOUND

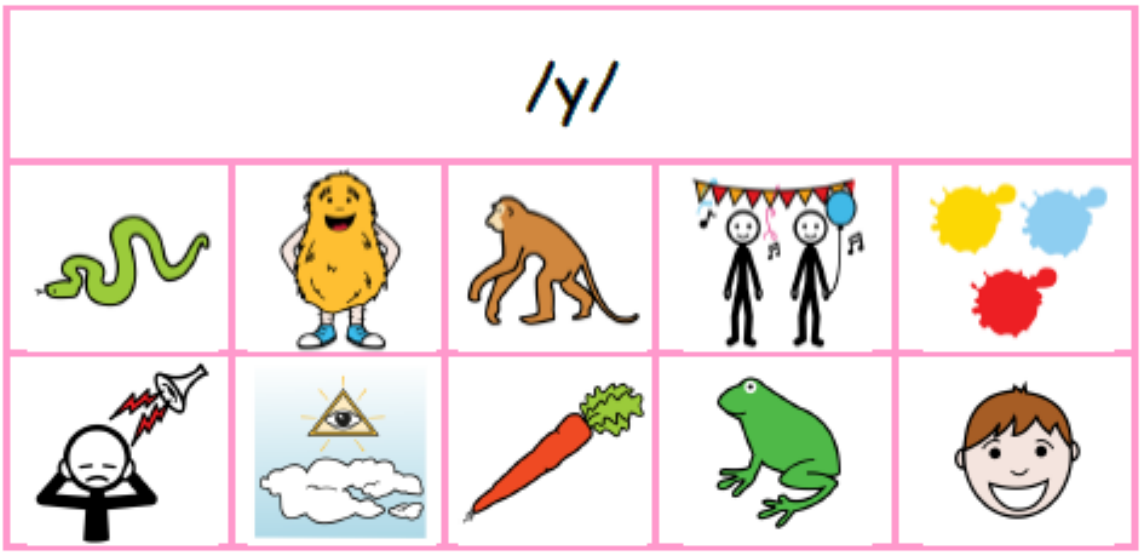
	/f/		/f/
	/d/		/n/
	/l/		/k/
	/f/		/r/
	/l/		/s/
	/i/		/b/

Appendix 17

CAN YOU HEAR THE WORDS THAT START WITH...?



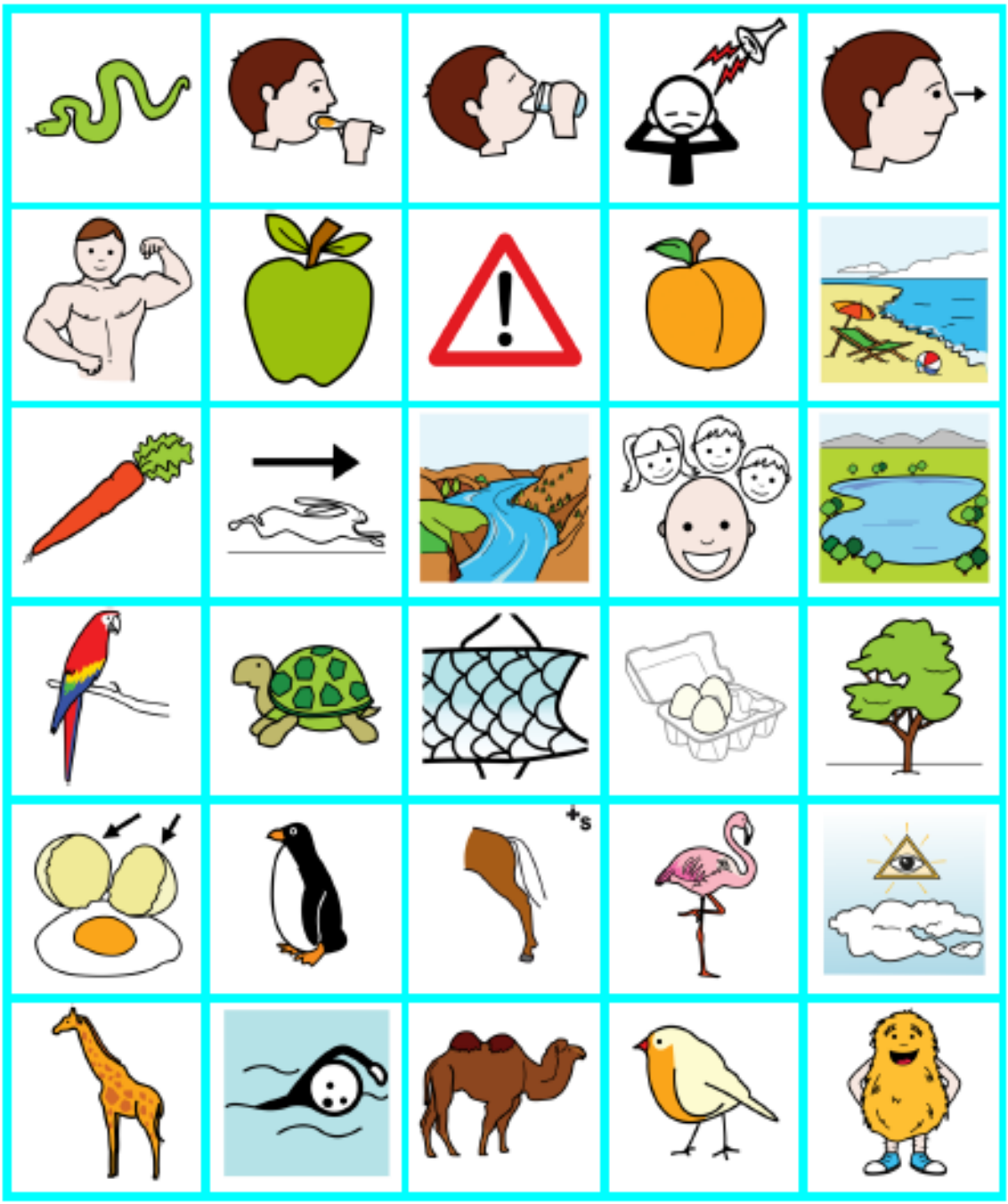
CAN YOU HEAR THE WORDS THAT END IN...?



Elaboración propia

Appendix 18

CROSS OUT THE IMAGES THAT CONTAIN THE SOUND /S/



Elaboración propia

Appendix 19

HOW MANY SOUNDS DOES THE WORD HAVE?

	1	2	3	4	5	6	7	8	9
									
									
									
									
									
									

Appendix 20

HOW MANY WORDS DOES THE SENTENCE HAVE?

ORACIÓN	1	2	3	4	5	6	7	8
They are eating leaves.								
There are lots of animals here.								
I like gorillas.								
Where is the monkey?								
Have you got a favourite animal?								
Is it noisy?								
It`s between the gorilla and the crocodile.								

Appendix 21

1. LOOK AT THE PICTURE. THINK A SENTENCE AND SAY.

2. COUNT THE WORDS IN YOUR SENTENCE AND MARK.

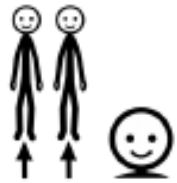
3. WRITE THE SENTENCE.

4. COUNT THE WORDS YOU HAVE WRITTEN AND CHECK THE MARKED CROSSES.

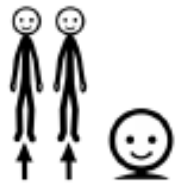
Appendix 22

ORDER THE WORDS AND WRITE SENTENCES

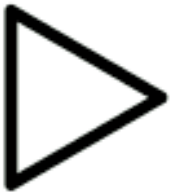
THEY	EATING	ARE	LEAVES.

 THEY	 EATING	 ARE	 LEAVES.

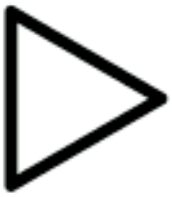
They	eating	are	leaves.

 They	 eating	 are	 leaves.

IS	WHERE	THE	MONKEY?

 IS	 WHERE	 THE	 MONKEY?

is	Where	the	monkey?

 is	 Where	 the	 monkey?

Appendix 23

WRITE SENTENCES ABOUT THE PICTURE THAT...

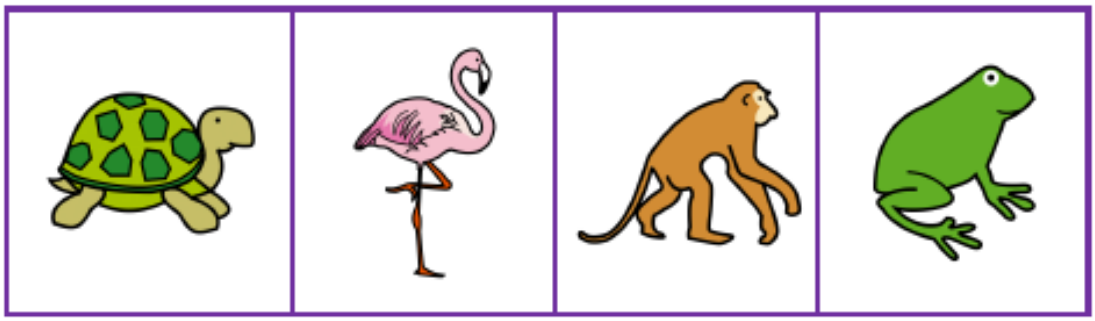
HAVE FIVE WORDS:

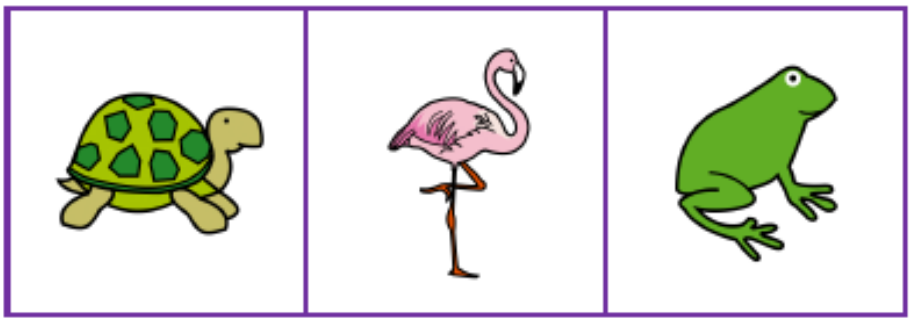
HAVE SIX WORDS:

HAVE EIGHT WORDS:

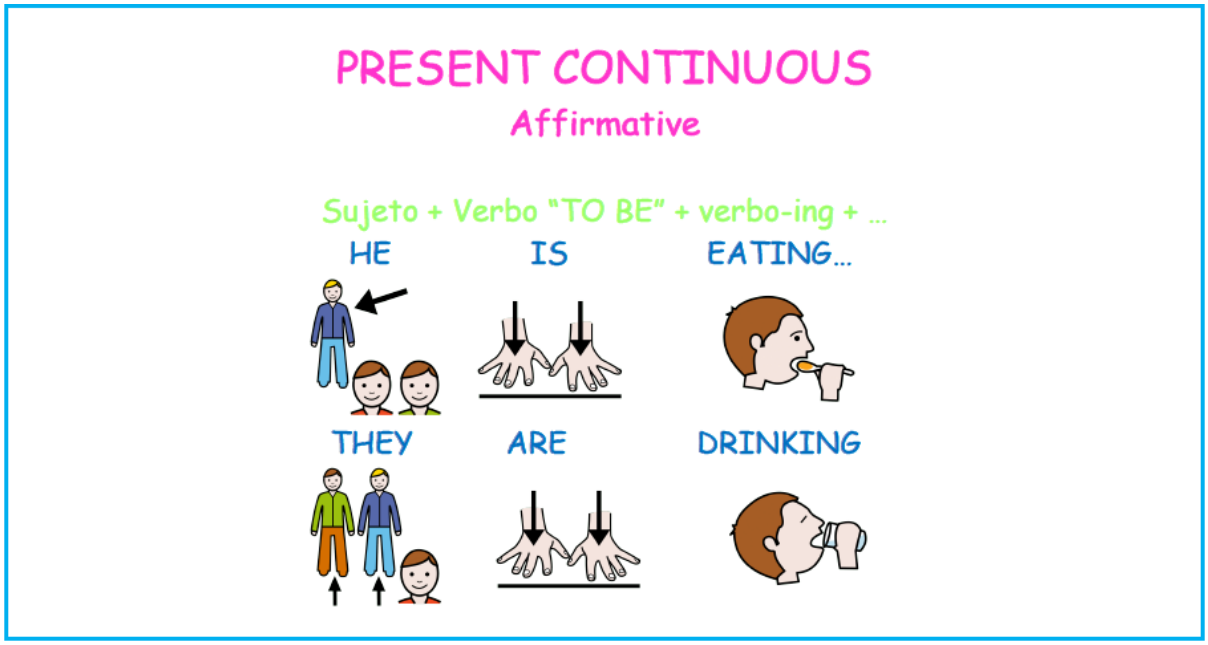
Appendix 24

WHAT' S MISSING?

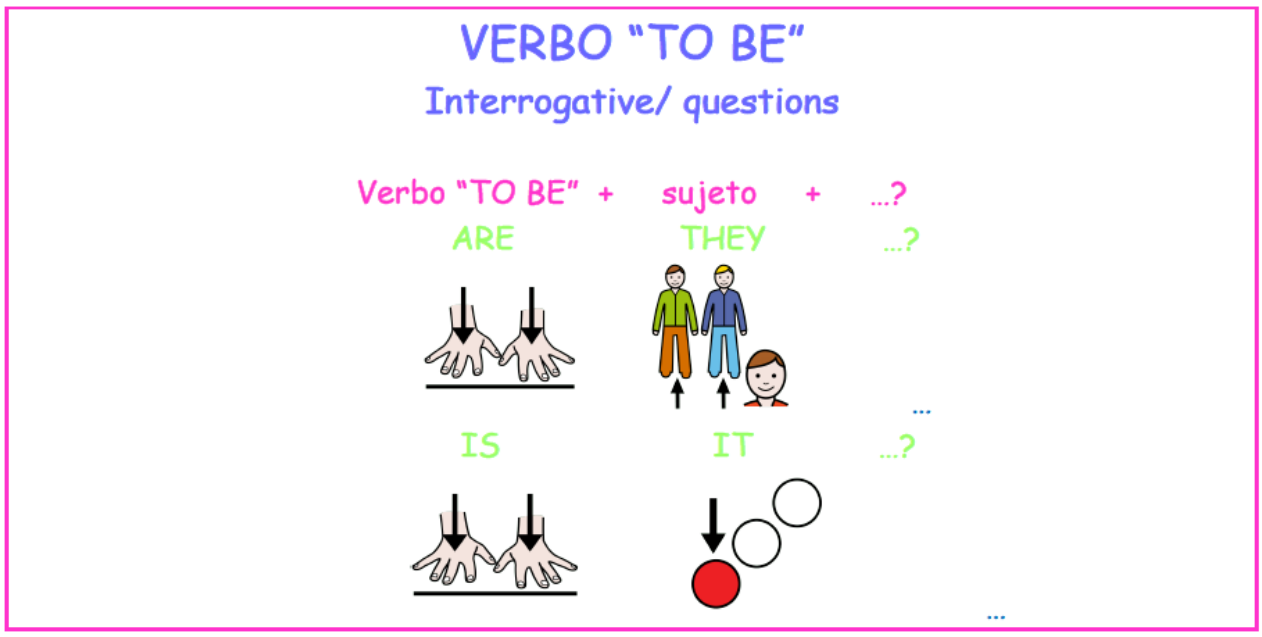




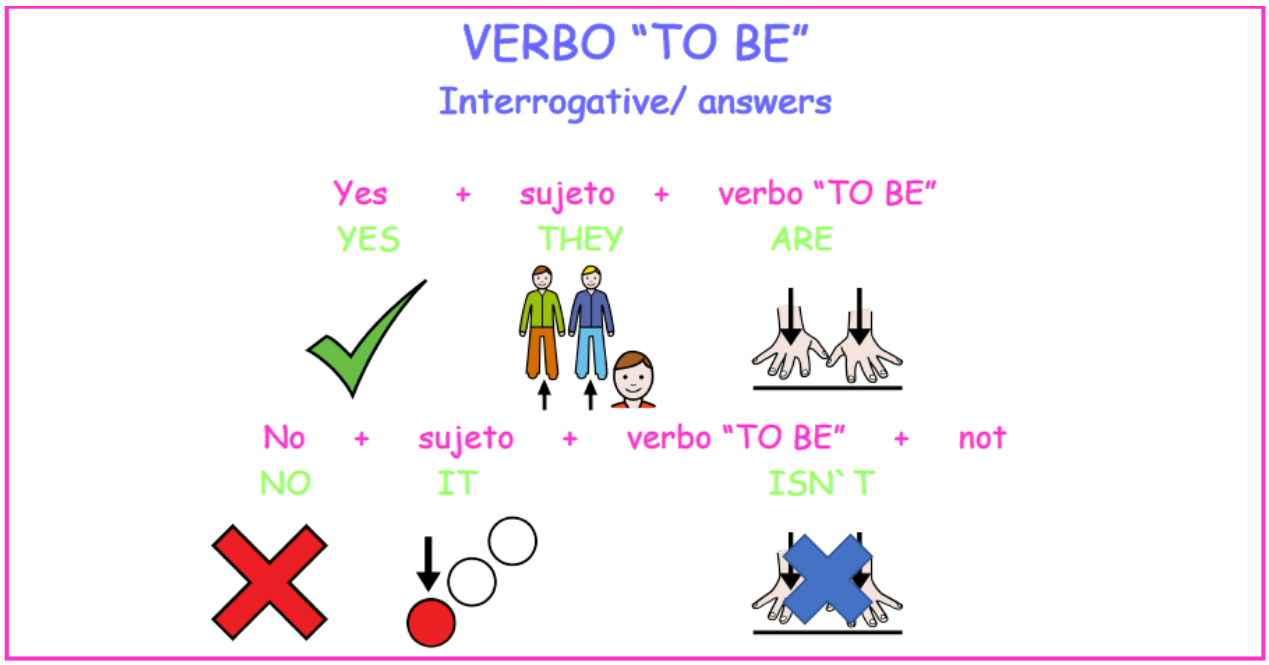
Appendix 25


PRESENT CONTINUOUS
Affirmative
Sujeto + Verbo "TO BE" + verbo-ing + ...
HE
IS
EATING...
THEY
ARE
DRINKING

Appendix 26


VERBO "TO BE"
Interrogative/ questions
Verbo "TO BE" + sujeto + ...?
ARE
THEY
...?
IS
IT
...?

Appendix 27


VERBO "TO BE"
Interrogative/ answers
Yes + sujeto + verbo "TO BE"
YES THEY ARE
No + sujeto + verbo "TO BE" + not
NO IT ISN`T

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