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RESEARCH ARTICLE ⓐ

Designing and Implementing a Multidisciplinary Remedial Educational Support Series for Children with Dyslexia: Theoretical Foundations, Methodological Framework, and Practical Applications of "The Key Series for Overcoming Reading Learning Difficulties"

Amina Saadedine	Scientific and Technical Research Centre for the Development of the Arabic Language	
	Algeria	
	E-mail: a.saadedine@crstdla.dz	
Kahina Lettad	Dr.	
	Scientific and Technical Research Centre for the Development of the Arabic Language	
	Algeria	
	E-mail : k.lettad@crstdla.dz	
Fahem Said	Scientific and Technical Research Centre for the Development of the Arabic Language	
	Algeria	
	Email: s.fahem@crstdla.dz	
Sawsen Maafa	Scientific and Technical Research Centre for the Development of the Arabic Language	
	Algeria	
	Email: s.maafa@crstdla.dz	

Abstract

This article presents a comprehensive scientific and methodological framework for a remedial educational support program designed for children with dyslexia, titled "The Key Series for Overcoming Reading Learning Difficulties." Developed by a multidisciplinary research team affiliated with the Scientific and Technical Research Centre for the Development of the Arabic Language in Algeria, this program represents the first structured educational support tool specifically tailored to children with dyslexia within the Algerian educational context. The program consists of four integrated instructional components accompanied by an implementation guide and is grounded in contemporary cognitive, linguistic, and educational theories of learning difficulties. It aims to complement orthophonic and therapeutic interventions by addressing the pedagogical dimension of dyslexia through targeted educational activities that restructure cognitive and linguistic pathways involved in reading acquisition. The series integrates phonological awareness, visual–linguistic processing, gradual decoding strategies, and motivational illustrated activities aligned with primary education competencies. Adopting a descriptive–analytical approach, this article outlines the scientific rationale underpinning the program, the multidisciplinary

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collaboration involved in its development, and the practical principles guiding its application in classrooms, homes, and clinical settings. Field experimentation conducted in collaboration with orthophony specialists ensured the program's pedagogical relevance and adaptability to the specific needs of children with dyslexia. The findings underscore the importance of integrated remedial education as a critical component of inclusive education policies. The study concludes that structured educational support programs, when combined with clinical interventions, can significantly enhance reading competence, reduce academic failure, and promote psychological well-being among children with dyslexia.

Introduction:

Learning difficulties encompass several disciplines, including medicine, orthophony, and language education. While medicine explores the underlying causes of these deficiencies, orthophony covers diagnosis and management of the disorder, and language education focuses on adapting teaching methods and educational programs for children diagnosed with learning difficulties. This is what we aimed to address through the preparation of the "Key Series to Overcome Reading Difficulties" directed at children with dyslexia. We were motivated by the increasing number of children suffering from dyslexia in our schools, who are at risk of academic failure and psychological distress. From this educational and social need, the idea emerged to develop a specialized educational support program aimed at primary school students with dyslexia, presented in the form of a four-part series and its accompanying guide, titled **"The Key Series for Overcoming Reading Learning Difficulties."**

Through this series, we aim to take responsibility for the educational aspect of helping children with dyslexia and providing them with appropriate educational support in parallel with orthophony sessions. The goal is to help them somewhat overcome their disorder and enable them to acquire reading competence as a foundational and transversal skill. Especially since specialized studies agree that these children have a normal level of intelligence (Kaufman et al., trans. Abdullah Muhammad, 2007, p. 51.) and are "normal in their mental, auditory, visual, and motor development" (Abdel Salam, 2009, p. 5). This positive indicator should be leveraged and taken into consideration to assist them in achieving reading proficiency and academic progress as much as possible.

In preparing this series, we relied on cognitive theories that explain learning difficulties and dyslexia. We combined intensive educational activities that modify the mental and cognitive pathways leading to the acquisition of reading mechanisms in these learners (the architecture of the reading act) with the use of linguistic content and illustrated activities to attract them and make learning enjoyable. We also adopted the principles of aligning the presented knowledge with the targeted educational competencies in the primary education stage and avoiding overloading with information that exceeds the basic competencies (Ministry of National Education, 2016, p. 17).

1. Introduction to the Project "The Key Series for OOvercoming Reading Learning Difficulties":

The "Key Series for Overcoming Reading Learning Difficulties" was developed by a specialized research team in "Teaching Arabic to Children with Learning Difficulties" as part of a research project registered at the Center for Scientific and Technical Research for the Development of Arabic Language in Algeria.[3]

Although the project was originally developed in Arabic, this article is presented in English to introduce the project to the international academic community.

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This series is classified as semi-scholarly books, and it is the first of its kind in this field in Algeria. It specifically targets children suffering from dyslexia, making it a distinctive addition to the semi-scholarly book market in the country.

The project leader, Dr. Amina Saadedine, who specializes in didactics of the Arab language, meticulously selected the members of her team to ensure the formation of a research group with comprehensive expertise and specializations. According to specialized studies in this field, the process of authoring remedial programs for children with learning difficulties requires the participation of multidisciplinary teams (Abdullah Muhammad, Ahmed Mustafa, Special Learning Difficulties, p.112). The research team consists of the following members and their scientific specializations:

- Researcher Prof. Dr. Kahina Lettad - Specialization in Orthophony.
- Researcher Prof. Dr. Said Fahem - Specialization in Linguistics.
- Researcher Dr. Sawsan Maafa - Specialization in Arabic Linguistics.
- Researcher Dr. Samira Nourin - Specialization in Linguistic Studies.
- Researcher Ph.D. candidate Hassina Mezari - Specialist in Orthophony at the University Hospital of Hussein Dey.
- Researcher Soumaya Sarrai - Specialist in Orthophony at the University Health Center of Kouba El Anasser.

The project leader, Dr. Amina Saadeddine, submitted a task book containing the initial project idea aimed at preparing an educational program for children with learning difficulties to the scientific council of the center. After the initial project was referred to experts and reviewers and unanimously approved, it was officially ratified by the scientific council in the June 2022 minutes. The project took approximately three years to complete, starting from April 2022 to March 2025. After completing all research stages and delivering the work to the center's administration, it is currently in its final stage, where the final infographic design will be adjusted and published.

Over the course of three years, the research team members worked to achieve an effective integration between the theoretical and practical aspects. They based their work on scientific and educational principles derived from academic research, while also ensuring these principles were tested practically through direct collaboration with the orthophony specialists within the team. These specialists provided opportunities to work and experiment with primary school children diagnosed with dyslexia and who were receiving treatment at the healthcare institution where they work. This combination of theoretical work and field experience enabled the development of a precise educational tool for teaching reading, specifically designed to meet the needs of children with dyslexia who consequently face difficulties in learning to read. This tool emerged from their firm scientific conviction of the importance of providing educational solutions tailored to the specific needs of this group, to ensure more effective support in their reading learning process.

2. Who Are Children with Dyslexia?

It is crucial to understand and classify the different categories of children who experience learning difficulties in general (dyslexia, dysgraphia, dyscalculia, etc.) to provide them with appropriate support and enhance their educational abilities. Early intervention, remedial education, and continuous support can significantly impact the improvement of their learning levels.

Dyslexia is one of the most prominent disorders affecting the acquisition of basic reading and writing skills. These difficulties are characterized by their persistence and appear in children or adults who have: (derived from the book ᴧᴧChildren and Learning Difficultiesᴧᴧ by Sabri Kamal and Hassan Tamsah , page 50)

- A normal level of intelligence.
- No sensory or perceptual disorders, such as hearing or vision problems.
- No primary psychological disorders affecting learning.
- A normal emotional, social, and cultural environment.
- Received regular, uninterrupted schooling for long periods.

This disorder is a dynamic disorder in reading learning, marked by a significant decrease in reading performance compared to the learner's age standards, manifesting in persistent difficulties rather than a mere delay in skill

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acquisition. The fundamental mechanisms of written language are affected in their structure, often impacting aspects related to both comprehension and expression. Environmental factors such as psychological, linguistic, social, and cultural factors do not cause these disorders, though they may complicate and exacerbate them at times.

The importance of the above definition lies in establishing a clear fundamental distinction: not every problem in written language is necessarily a specific disorder, meaning it results from structural disorders in the basic mechanisms of written language. There can also be cases of delayed or slow learning to read, refusal to engage in writing, or poor learning, etc. Thus, these difficulties are not due to a lack of intelligence or sensory problems, but rather to neurological factors that affect the mechanisms of language and writing processing. This necessitates remedial educational strategies to help them overcome these challenges. Therefore, a precise diagnosis is essential to dispel the myths and misconceptions that target children in this group (laziness, negligence, lack of effort), which often suggest that doubling the effort and repeating the same explanations and exercises will enable them to overcome learning difficulties and alleviate their symptoms. However, dyslexia is entirely different from academic reading difficulties, as the difficulties might be due to school interruption or psychological problems, etc., while dyslexia is one of the most prominent learning difficulties as a developmental disorder. Diagnosing dyslexia involves specialists applying a series of tests for intelligence, mental abilities, academic skills, language and text, as well as sensory-motor tests, with the possibility of adding comprehensive psychological tests and social skills tests if necessary. Dyslexia is a disorder that falls under learning difficulties, but there might be incidental and temporary reading learning difficulties that appear in some normal children for a specific period due to reasons unrelated to the child's mechanism of acquiring reading skills.

3. The Purpose of Preparing "The Key Series for Overcoming Reading Learning Difficulties":

The "Teaching Arabic to Children with Learning Difficulties" team, consisting of the previously mentioned members, started with the fundamental educational principle that every child has the right to receive education that meets their needs. They are scientifically convinced that all children can learn gradually, but through different methods and at varying rates. Programs and content must be adapted according to their individual abilities. This series falls entirely within remedial education, which is primarily based on conducting a comprehensive and in-depth survey of the educational needs of the targeted group (Hafez, Learning Difficulties and Remedial Education, p. 161), which we carried out. Remedial education acknowledges the possibility of offering individual or group educational remedial plans or programs (Hafez, Learning Difficulties and Remedial Education, p. 177 and p. 185). Based on this Remedial educational concept, "The Key Series for Overcoming Reading Learning Difficulties" was prepared, designed according to the common characteristics and manifestations of reading learning difficulties among children with dyslexia. The main objectives of preparing "The Key Series to Overcome Reading Difficulties" can be summarized as follows:

-Providing a remedial educational program aimed at supporting children with reading difficulties in primary school in Algeria, considering the absence of any educational tools that take their special needs into account.

- Fairness and support for this group of learners by giving them a real opportunity to learn that matches their particularities, contributing to their protection from marginalization, school dropout, and illiteracy.

- Facilitating the teaching and follow-up process for children facing reading difficulties by providing teachers and specialists with tools and strategies to help them improve the reading level of dyslexic learners.

- Creating a positive change in the educational environment by providing specialized educational resources, contributing to enhancing the quality of education and meeting the needs of children with learning difficulties.

- Integrating the work of specialized healthcare centers that follow up on children with dyslexia as part of the "remedial care" plan with the work of teachers and parents as part of the "educational support" and "remedial education" plans for them.

4. Who Applies "The Key Series for Overcoming Reading Learning Difficulties"?

The content of "The Key Series to Overcome Reading Difficulties" was designed and constructed to be applicable by:

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- Parents to help their children with dyslexia at home.

- Primary school teachers who teach children with dyslexia, either during regular class sessions or remedial sessions at school.

- Orthophony specialists to use during remedial care sessions they supervise.

To ensure the optimal application of this content, a special guide for "The Key Series for Overcoming Reading Learning Difficulties" will be provided. This guide aims to help implementers apply the program effectively to achieve the desired educational goals for dyslexic children.

5. Dyslexia:

Reading is defined as an interactive process that starts with decoding symbols and ends with extracting meaning. The ultimate goal of teaching and learning to read is for the child to reach a level of reading comprehension (reading to understand what they read). It is also a fundamental language skill necessary for the child's success in their educational journey. It is important because it is the way to develop other linguistic aspects, such as achieving proper pronunciation, enriching linguistic repertoire, and expanding linguistic knowledge related to various subjects and fields, etc. The process of reading involves abilities such as memory,

Visual abilities, linguistic skills, phonological awareness (Lettad, Reading Abilities in Individuals with Special Needs, p. 11). While spoken language is acquired automatically by children due to their exposure to a specific linguistic environment, reading remains a purely educational skill that needs to be planned according to the sensory abilities, mental and cognitive qualifications, and psychological characteristics of the young learner.

While,Dyslexia is one of the most common types of learning difficulties. It is defined as a disorder affecting the learning of reading, unrelated to any mental or sensory defect, appearing despite the social and academic opportunities available to peers who do not have learning difficulties. It is a cognitive neurological disorder affecting the accuracy and speed of word recognition, leading to weaknesses in spelling and reading comprehension. It can also affect various cognitive and perceptual areas such as memory, information processing capacity, time management and organization skills, visual-motor coordination, direction differentiation, and organizational skills. According to research, reading difficulties are not related to the individual's intelligence or inadequate educational practices but are primarily related to how the brain processes information. Children with dyslexia show significant discrepancies between their general intellectual abilities and their reading performance. They face problems in recognizing written words, reading fluency, and understanding texts (Boulahouch, Learning Difficulties between Cognitive Pathways of Perception and Linguistic Achievement, Reading as a Model, p. 171, p. 174).

Due to the different scientific views and explanations for the causes of learning difficulties in individuals, it is necessary to distinguish between the explanatory factors for dyslexia and the failure to achieve reading skills, and the manifestations resulting from dyslexia, i.e., the lack of acquisition of reading skills, which clearly appear in children of this group.

5.1 First, the Explanatory Factors for the Failure to Achieve Reading Skills:

These can be summarized based on psychological (diagnostic) evaluations and explanatory theories of dyslexia as follows (The Learning Staircase, Ltd, 2012):

Core factor	Definition	Manifestations of this factor
Phonological Awareness and Weakness in Phonemic Awareness	Phonological awareness is the ability to recognize larger spoken sound units in words and sentences and to perform blending or segmenting operations on these sound units.	1. Identifying the Onset and Rime: - Identifying the first consonant sound + the final segment, such as in the word ") "باب(door):

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Phonological Awareness **Phonemic Awareness**	- It is the ability to notice individual sounds (phonemes), think about them, and work with them in spoken words. - This knowledge and ability are employed to decode unfamiliar printed words.	بُ = onset اب = rime 2. Identifying Rhyme 3. Syllabification 4. Auditory Discrimination: - Identifying sounds - Phonetic classification - Blending sounds - Segmenting sounds - Recognizing and identifying rhyme - Generating rhymes - Manipulating sounds at the beginning, middle, or end of a word.
Weakness in visual perception Visual Perception	Visual perception refers to the brain's ability to understand what the eyes see. This is different from visual acuity, which refers to how clearly a person can see. Sequencing is the process of putting things in a certain order; following one thing after another. Sequencing relies on cognitive skills such as working memory (executive function), attention, auditory and visual processing, and receptive and expressive language skills.	Visual Discrimination Tracking Perceptual organisation Visual recognition Irlen syndrome
Sequencing	Working memory consists of a phonological loop for processing and temporarily storing speech-based information, and a visuospatial sketchpad that performs a similar function for visual and spatial information. Both	Visual sequencing Auditory sequencing Sequencing of ideas

	are overseen by a central executive, and they have limited capacity.	Planning work
Weakness in memory (Auditory memory or Working memory) **Memory**	- The process by which an individual produces a specific word from their mental lexicon or recognizes it when used by others. - Rapid lexical access helps a child recognize words when reading them. It is a process related to the brain where sensory input is transformed into a form that can be processed and stored in memory. Encoding is the first stage of memory processing, followed by storage and retrieval. Naming speed is a measure of students' ability to quickly retrieve the name of a symbol. Some examples of naming speed assessments include naming colors, letters, or objects.	Visual memory Auditory memory Kinesthetic memory Working memory
Weakness in lexical access and word retrieval Lexical access and word retrieval Weakness in speed naming Speed naming Weakness in motor development	Many children with dyslexia, ADHD, and dyspraxia experience significant deficits in both gross and fine motor skills compared to typical children.	There are several criteria for achieving rapid lexical access: - Frequency - Familiar words - Early acquisition of words - Word length - Semantic proximity of words (e.g., hospital, doctor) - Imagability of word meaning - Shapes - Colors - Numbers - Letters

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Motor Development		Gross motor skills: - These are abilities required to control the muscles of the body for movement, such as crawling, walking, jumping, and running. Fine motor skills: - Fine motor skills involve using the smaller muscles of the hands, usually in activities such as using pencils, scissors, building, and buttoning. Proprioception: - Proprioception is the body's ability to sense movement, action, and location. It is present in every muscle movement.

Table 1 : Factors Leading to Dyslexia

The table above clarifies a set of factors that affect learning, particularly among children who have difficulties such as dyslexia and Attention Deficit Hyperactivity Disorder (ADHD). These factors include phonological awareness, which is related to the child's ability to distinguish between sounds and syllables, affecting reading skills. Visual perception helps in understanding and processing visual information, and sequencing supports the logical ordering of thoughts and tasks. Additionally, weak memory (auditory or working) affects the child's ability to store and retrieve information quickly, impacting rapid naming and word retrieval from the mental lexicon. Motor skills also play an important role in muscle control for daily tasks, and children with learning difficulties often have weaker gross and fine motor skills, which can affect their academic and daily activities.

5.2 Second, the Manifestations Resulting from the Failure to Acquire Reading Skills:

Some of the main symptoms are (see Al-Muharij, The Scientific Guide to Teaching Children with Dyslexia, pp. 111, 124):

a. Difficulty in Recognizing Letter Identities: This includes the inability to link the written form of the letter to its phonetic performance, and difficulty recognizing the different forms of writing the same letter in various positions.

b. Difficulty in Distinguishing Similar Letters in Sound and Form: This includes difficulty distinguishing or mixing up letters that are phonetically similar and those that are similar in writing, leading to incorrect reading attempts.

c. Fluency: The first two factors directly affect reading fluency, causing those with dyslexia to need to segment syllables and slow down their reading. It should be noted that some individuals struggle to segment words and link syllables, which increases the severity of reading difficulties. Moreover, reading new or atypical words can affect fluency, even with common and typical words when placed in different sentence contexts. This often leads them to omit words

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from the context or replace them with synonyms (منزل - بيت) and add words that are not present in the read text, or read words made up of the same letters (قارب - راقب) due to their reliance on guessing rather than actual reading. All these reading difficulties and others make the dyslexic child tired and use all their effort on basic spelling and phonemic blending, without reaching the stage of proper intonation, vocal performance, and respect for punctuation marks, as these processes follow after mastering spelling and achieving reading fluency.

d. Extracting Meaning: As a natural consequence of the sequence of difficulties that a dyslexic child faces in the previously mentioned stages (difficulty recognizing letter identities, difficulty distinguishing similar letters in sound and form, and fluency), we see how dyslexia affects all steps and stages of the reading act, starting with Decoding and ends with extracting meaning, making it impossible for the dyslexic child to achieve the goal of reading, which is to read to understand what is being read.

In this context, the literature indicates that early intervention and remedial education can be effective in reducing the impact of reading difficulties. Recommended educational methods include the use of multisensory programs, which incorporate auditory, visual, and kinesthetic activities to enhance reading learning. Psychological and social support also play a significant role in helping children adapt to their reading challenges, contributing to improve self-confidence and academic performance. This motivated us to initiate the "Key Series for Overcoming Reading Learning Difficulties" for children with learning difficulties.

6. The Situation of Children with Dyslexia in Algerian Schools:

There are no accurate statistics on the proportion of learners with learning difficulties or those with dyslexia in Algerian schools. However, the absence of these figures does not mean that the incidence of this cognitive disorder is low. On the contrary, those who interact with the school environment, such as teachers, principals, and inspectors, especially in primary education, and those in the orthophony healthcare sector, are fully aware of the increasing prevalence of this group in schools. The lack of precise statistics is just one indicator of the lack of official attention from the Ministry of Education to this problem, which now threatens a significant number of learners.

Until recently and even today, children with learning difficulties and dyslexia in Algerian schools are often treated as lazy and unmotivated, accused of not making enough effort to develop their reading skills. They and their parents are blamed for not reviewing letters or practicing spelling sufficiently, among other accusations and preconceived notions that do not apply to them as learners suffering from cognitive disorders preventing them from reading according to a learning path similar to their peers.

In another scenario, teachers may indeed notice that children with learning difficulties and dyslexia face unique challenges that hinder their proper acquisition of reading skills. Although these children exhibit normal behaviors and intelligence levels, teachers may find themselves unable to confirm their suspicions about the nature of these children's difficulties because they lack the qualifications, training, and tools for diagnostic assessment that would enable them to identify the type of difficulties the child in front of them is experiencing. This is especially true as they have never encountered dyslexia as a distinct disorder from other difficulties during their training, particularly since the inability to read and difficulty to learn are common symptoms that do not only appear in children with dyslexia but also in children who are slow learners, children with intellectual disabilities ranging from mild to severe, children with autism or autism spectrum disorders ranging from mild to severe, and children with psychological problems such as shyness, anxiety, and lack of self-confidence. It is important to note that all these cases make the teacher's task more challenging and often lead to misconceptions about children with dyslexia, mistakenly categorizing them under one of these groups without considering that they might be suffering from dyslexia as an independent cognitive disorder. Hence, it is essential to always encourage teachers to refer such cases (those observed to struggle with unusual learning factors) to specialists for objective diagnostic tests to confirm that the child with dyslexia is experiencing learning difficulties and not another disorder that manifests as an inability to read, and to subsequently treat them according to that diagnosis during lessons and school evaluations.

The situation of children with dyslexia in Algerian schools does not stop at the difficulty of identification and diagnosis. Even if these children are referred to specialists and diagnostic tests confirm they have dyslexia, this does not mean their challenges end in primary school. Teachers often lack knowledge about this disorder and consequently do not know how to deal with these children or adapt educational content to better suit them. Moreover, there are no adapted programs tailored to this group, even though they need more educational support

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than typical children (Zayat, 2008, p.84). As a result, schools do not provide appropriate educational services to these children, leading to continuous failure and frustrating grade repetition.

7. Teaching Reading in Primary Schools in Algeria:

Since 2003, Algerian schools have adopted the competency-based approach in education and the textual approach in teaching Arabic. The educational curricula and programs related to teaching Arabic for different years and educational stages have been prepared according to the textual approach. In 2016, the curricula were updated and rewritten, continuing to adopt the textual approach in teaching Arabic from primary education. To elaborate, teaching Arabic according to this approach is based on moving from the whole to the part. Prior to 2003, Arabic was taught from the part to the whole, with reading content gradually progressing from stabilizing sounds and their correct performance in learners, then linking the proper phonetic performance of letters to their written form..., then linking the different segments to form words based on that and reading them aloud. The child would start with correct spelling, then fluent pronunciation, storing the meaning of the read word, and its spelling. Nowadays, teaching Arabic in the early stages of education starts with reinforcing the written form of words, linking them to their meaning, and then breaking them into smaller phonemic segments. This shift has led to an increase in phonological reading difficulties because Arabic is inherently a syllabic language. Many specialized studies have attributed the prevalence of phonological reading difficulties to the holistic method used in teaching Arabic to primary school children.

For instance, one study states that "learning difficulties arise mainly due to not relying on findings from researchers in psychology and educational linguistics, which support the strategy of learning from part to whole, and the results of experiments in the field of perception[1] in general" (Kahina Lettad, The Impact of Applying the Holistic Method in Teaching Reading, p. 95). Additionally, another Algerian researcher conducted a study concluding that "the holistic method does not align with the Arabic language system and cannot be used in the early years of primary education. One of our suggestions is to follow the developmental stages of reading acquisition, starting from the alphabetical phase which relies on moving from visual units to phonetic units, followed by the orthographic phase in later years, where frequent words are stored in the mental lexicon, allowing reading to become fast and accurate. Although this method initially causes a slowdown in reading acquisition, it eventually becomes an automatic process that does not require intensive cognitive effort or concentrated resources" (Kahina Lettad, The Impact of Applying the Holistic Method in Teaching Reading, p. 95)[2.]

In general, it was essential for us to assess the method of teaching reading in Algerian schools when addressing dyslexia. Teaching methods can help learners overcome certain symptoms and difficulties if they are appropriate and effective, or exacerbate them if they are not. We aimed to highlight through this discussion that specialized studies have proven the ineffectiveness of the holistic method currently used in Algeria for children with dyslexia. Therefore, it is necessary to reconsider this approach, as it may contribute to the spread of this disorder among Algerian learners, especially since experienced educators acknowledge that dyslexia was not as prevalent in primary schools in the past as it is now.

8. The Need to Develop Curricula and Educational Programs for Children with Dyslexia:

Learning is a planned process that can only be completed by targeting educational goals and objectives, taking into account the learner's age, environment, profile, cognitive level, and other characteristics that distinguish them from others. These factors control the variation in curricula and educational programs. We have raised the issue of reading acquisition among children with.

.. learning difficulties because we believe that the personal efforts and attempts made by some specialists and teachers remain insufficient and not widespread. We deemed that it is necessary to develop a program based on scientific and methodological foundations and to work on generalizing it later. In this context, it is essential to highlight two points:

1. Firstly, there is no official initiative in Algeria to develop a reading program for children in this category, despite the "importance of the educational system's collaboration in this field when preparing educational curricula and considering these students, to support and strengthen them based on well-studied and regulated foundations that align with their moral and material needs" (Zogawi and Zaarour, Reading Difficulties in Children, p. 168). This can

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be achieved through curricula and educational programs, textbooks, teaching aids, teaching and evaluation methods, teacher's guides, teachers, school administration, family environment, media, community institutions, and so on.

2. Secondly, they are a group that needs specialized reading curricula and programs that consider the main factors and symptoms that hinder their reading learning, primarily their lack of pre-reading skills and phonological awareness skills (discrimination/segmentation/blending/substitution/deletion/addition) and confusion between letters that are similar in sound or form. It should be noted that some of these skills may be acquired automatically and quickly by typical children but need planning to develop in children with difficulties. This is where the general concept and principles we relied on to build the educational support program for children with dyslexia emerged.

9. General Perception and Educational and Methodological Choices in Building "The Key Series for Overcoming Reading Learning Difficulties":

We started building our general concept for developing an educational support program for children with dyslexia from a theoretical foundation. This involved understanding the specific nature of learning difficulties as an independent disorder, models of reading acquisition in typical children, the nature of dyslexia, its types, and manifestations. We also identified the main factors and symptoms that hinder these children from acquiring reading skills. We then identified the most suitable educational activities for teaching reading to children in this category (dyslexia), matching the types of difficulties identified, mainly related to phonological awareness, visual perception, and various types of memory and sensory processing. We subsequently adopted standards related to the type of content we select and include in our program, focusing directly on the difficulties that can be overcome using a linguistic approach. Additionally, we adopted a set of presentational and formal conditions that specialized books agree play a role in facilitating the reading process for children with difficulties.

We then embarked on the practical phase of developing the educational support program for children with reading difficulties, selecting the specific content and materials. We distributed them according to the targeted educational competencies into content focused on recognizing letter sounds and shapes, content aimed at distinguishing between letters that are similar in writing and pronunciation, and content for building, forming, and correctly reading words. Based on this, the series was divided into four parts:

1. A part dedicated to recognizing letters.

2. A part focused on distinguishing between letters that are phonetically similar.

3. A part focused on distinguishing between letters that are similar in writing.

4. A final part dedicated to spelling syllables and words, along with a guide for applying the series.

We highlight some of the main principles behind preparing this series:

- Focusing on the foundational competencies that lead to the reading act in dyslexic children.
- Emphasizing the development of a basic linguistic repertoire for dyslexic children.
- Relying on the syllabic method in teaching Arabic (sound and form (letter) – syllable – word).
- Targeting the gradual and partial achievement of the targeted reading skills.
- Using visual methods to reinforce letters in the learner's mind.
- Employing memory recall prompts to help the child remember the letter's shape and link it to its sound.
- Utilizing manual auditory aids (or using illustrative tools) to approximate the correct phonetic performance of short and long sounds.
- Starting from the individual vocabulary used in Arabic language textbooks for primary education.
- Using familiar and frequent vocabulary for the targeted group.
- Relying entirely on picturable words to develop the individual repertoire for dyslexic children and bring meanings closer to them.
- Utilizing educational exercises consistent with the prominent manifestations of reading difficulties in the Algerian educational environment, particularly phonological awareness.
- Creating distinctions in learning letters that are phonetically similar.
- Creating distinctions in learning letters that are similar in writing.

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- Employing picturable words and matching each word with its corresponding image.
- Adopting specific and standardized criteria in selecting images in terms of clarity, size, and background.
- Using frequently used words in the learner's school and daily environment to build a functional mental lexicon.
- Targeting the development of various phonological awareness skills: discrimination, addition, deletion, substitution, etc.
- Relying on the syllabic method in teaching reading.
- Gradually increasing the length of the words being read: Teaching spelling from shorter words to longer words, with gradual length increases each time.
- Using a different color for all content in the program.
- Designing each lesson to include a wide variety of exercises in different styles, aiming to reinforce the targeted partial skill more effectively, rather than relying on just one or two exercises and repeating the same method of reinforcing the information.
- Using distinctive writing features in terms of font type, size, spacing between letters, words, and lines.
- Preparing the lessons to be independent of each other so that the child with reading difficulties can focus on any lesson they struggle with without having to follow the sequence of previous lessons, allowing flexibility in learning according to their individual needs.
- Using comprehensive exercises in each lesson so that the practitioner cannot disregard the sequential application of the proposed exercises.
- Using exercises that do not require the learner to write more than one letter throughout the program, considering that they are learners with difficulties and should not be burdened with tasks that make learning feel challenging.
- Using exercises that can be completed in a short time, so the child with reading difficulties does not feel bored or tired when completing a single exercise.

These were the main principles we adopted in building the reading instruction program for children with learning difficulties, which we find entirely absent in the current educational program, exacerbating the challenges faced by children in this group. Their difficulties related to cognitive functions are compounded by the difficulties arising from an unsuitable program.

10. What is the Specificity of "The Key Series for Overcoming Reading Learning Difficulties"?

"The Key Series for Overcoming Reading Learning Difficulties" was designed to meet the pervasive and common individual needs of children with learning difficulties, specifically dyslexia. As we explained in the previous section, we relied on a combination of activities and exercises characterized by interaction, motivation, and repetition in various learning contexts, along with multisensory support. The series also provides clear guidelines for teachers and parents to help them provide appropriate support for the children.

This series also stands out by using attractive colors, special drawings, and designs to capture children's attention, motivate them, and enhance their drive to learn, while clearly explaining the targeted phonological and writing phenomena.

Regarding the educational design, it was developed with an integrated concept that includes specifications, tools, steps, and methodologies, which can be further clarified as follows :

10.1 Design and Writing Letters and Words :

The series offers the advantage of specific printing sizes and spacing between words and lines, as these details play a significant role in facilitating the reading process, improving comprehension, reducing visual effort, and enhancing focus.

- **Using large print size** : Helps reduce the visual effort required to distinguish letters and words. Large print size makes letters more clear and easier to recognize.

Using clear and easy-to-read fonts for children with dyslexia. These fonts consider the shapes and spaces of the letters to avoid visual confusion.

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- **Increasing spacing between words :** Helps prevent words from visually merging, making it easier for the dyslexic reader to identify the beginning and end of each word.

- **Increasing line spacing** : Using double spacing or 1.5 line spacing helps prevent line overlap and makes it easier for the dyslexic reader to move from one line to another without losing their place.

- **Increasing letter spacing :** Can help improve word reading by making the letters more distinguishable. This involves increasing the spacing by 2-5% over the default spacing.

10.2 Designing Letters to Improve Memory Retention for Children with Dyslexia :

Designing letters in a way that aids memory retention is one of the effective methods to support children with dyslexia. The idea is to use letter shapes and designs that make it easier for the brain to recognize and remember them, reducing the difficulties faced by dyslexic children when reading.

-   **Unique letter design :** Each letter should have a unique and distinctive design, so it is not easily confused with similar letters.

10.3 Using Distinctive Features :

Adding distinctive features to each letter, such as unique shapes, can help the dyslexic child distinguish letters from one another. Small, simplified illustrations accompany the letters to clarify the letter's shape and help in remembering it. For example, the letter «ث » is accompanied by a simple illustration of fruit, which begins with the same letter, with the base of the letter serving as a bowl for the fruit and the three dots representing grapes inside the bowl (examples are not provided due to space constraints and the final infographic design not yet being finalized, but they can be found in the series or the guide).

In addition to the previous strategies, enhancing the recall of proper pronunciation or phonetic performance of letters and learning them among children with dyslexia (Dyslexia) can be achieved through using specific features in forming Arabic letters, employing drawings that help children remember and reinforce them in their minds.

In this regard, the repetitive visual patterns and exercises help reinforce patterns in memory and reduce distraction.

10.4 Using Multisensory Education :

Teaching children letters through tactile formations using either their fingers or a pen to trace the general shape of the letter.

10.5 Listening and Pronunciation :

Repeatedly hearing and pronouncing the letters helps better link the sound with the shape.

10.6 Combining Sounds with Pictures :

Using educational tools that combine sounds and pictures, where the child can hear the letter's sound and see a related illustrative drawing at the same time, gaining both pronunciation and meaning simultaneously, reducing confusion when encountering new or previously unacquired words.

These exercises designed for children with dyslexia can have a significantly positive impact on the cognitive functions that assist with the reading process. By improving phonological awareness, working memory, visual discrimination, processing speed, executive functions, long-term memory, and attention, these exercises can greatly enhance reading and comprehension abilities. This leads to improved academic performance and educational success for children, making the learning process more effective and enjoyable.

10.7 Phonological Awareness :

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- Phonemic Discrimination Exercises : Using exercises involving letter and word sounds helps children improve phonological awareness, which is the ability to distinguish sounds within words. This helps children more effectively link letters and sounds.

- Rhythmic Exercises : Activities that include rhythm can help develop phonological awareness in fun and interactive ways.

10.8 Working Memory :

- Visual and Auditory Memory Exercises : Using flashcards and interactive applications with pictures and sounds that require children to remember letters and words can strengthen working memory, a crucial ability for gathering and processing information.

- Repetition Games : Games that require children to repeat and sequence letters and words help improve working memory.

- Repeated Learning : Continuous repetition of letters and words in different contexts helps embed the information in long-term memory.

- Visual Exercises : Using activities that require distinguishing visually similar letters such as "ب" and "ت" and "ث"or "د"and "ذ" helps enhance the ability to visually recognize letters and words.

10.9   Visual Discrimination and Semantic Associations :Using drawings and concrete examples to link letters and words to meanings helps strengthen long-term memory.

10.10 Attention : Dividing learning tasks and breaking down targeted educational competencies into small and simple goals, along with providing regular breaks, helps enhance the attention and focus of children with reading difficulties.

10.11 Diverse Activities :: Using a variety of activities that require continuous attention can help improve the ability to focus and pay attention.

10.12 Interactive Learning   : Interactive applications and educational games that encourage active participation help maintain children's attention.

11. Structure of « The Key Series for Overcoming Reading Learning Difficulties » :

« The Key Series for Overcoming Reading Learning Difficulties » consists of four interrelated and integrated parts, along with a special guide for its application. They are :

- **Part One : Recognizing Letter Identities**

 All letters are presented with a special design that reflects their shapes in a distinctive way, aimed at reinforcing them in the mind of the dyslexic learner by encouraging them to recall the designed shapes.

- **Part Two : Distinguishing Phonetically Similar Letters**

 Phonetically similar letters are grouped in unified lessons to help the learner who faces reading difficulties distinguish between closely related sounds, such as (ص/س) and(ت/ط)This strategy relies on auditory and visual exercises that enhance phonological awareness, contributing to improved reading accuracy (see, Al-Buhairi, Model Strategies for Teaching Reading Skills, p. 68).

- **Part Three : Distinguishing Letters with Similar Writing**

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Letters with similar writing are grouped in unified lessons to help the learner who faces reading difficulties distinguish between closely related letter shapes. Developing this skill requires focusing on the fine visual differences between letters through exercises based on observation, tracing, and comparison, enhancing the learner's ability to differentiate between them and improving their reading skills (see, Al-Buhairi, Model Strategies for Teaching Reading Skills, p. 72).

- **Part Four : Phonological Awareness Skills and Spelling Syllables and Words**

This part includes exercises aimed at developing various phonological awareness skills such as deletion, addition, segmentation, blending, substitution, and identifying the beginnings and endings of words. All studies consider phonological awareness a crucial foundation in learning to read and related processes (see, Al-Buhairi et al., Phonological Processes and Reading and Writing Difficulties, p. 42).

- **Series Guide :**

The guide for « The Key Series for Overcoming Reading Learning Difficulties » is a comprehensive instructional document that explains the methodology of using the series. It aims to facilitate the effective application of the series' content by teachers, parents, and specialists. It includes explanations of the series' objectives, lesson structures, adopted educational strategies, and practical guidance on how to utilize activities and assessments to ensure significant progress for children facing reading difficulties.

These parts are characterized by their sequential, gradual, and integrated approach to building reading competence. Each part builds on the previous one, allowing learners to develop their reading skills progressively. It is possible to apply the latter part without the previous part

if the diagnosis or achievement test confirms that the dyslexic child has acquired the previous part's competencies.

The general educational goal of this series, and the final educational competency targeted for each part, are as follows :

- **General Educational Goal of the Series :**

« By the end of 'The Key Series for Overcoming Reading Learning Difficulties,' the dyslexic learner should be able to read simple words and sentences correctly and overcome some or all of the difficulties they face. »

- **Final Competency Targeted in Part One :**

« By the end of the part on recognizing letter identities, the dyslexic learner should be able to recognize the shapes of all letters and pronounce them correctly. »

- **Final Competency Targeted in Part Two :**

« By the end of the part on distinguishing phonetically similar letters, the dyslexic learner should be able to differentiate between phonetically similar letters and read them correctly in various performances. »

- **Final Competency Targeted in Part Three :**

« By the end of the part on distinguishing letters with similar writing, the dyslexic learner should be able to differentiate between letters with similar writing and read them correctly in different positions. »

- **Final Competency Targeted in Part Four :**

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« By the end of the part on phonological awareness skills and spelling syllables and words, the dyslexic learner should master various phonological awareness skills, be able to spell syllables of different shapes and lengths, and read simple words and sentences. »

- **Series Guide :**

The guide for « The Key Series for Overcoming Reading Learning Difficulties » includes instructions and guidelines aimed at ensuring a more effective application of the series' content by teachers, parents, and specialists.

Through these final competencies for each part of the series, and aiming at the overall educational goal of the design, we strive in « The Key Series for Overcoming Reading Learning Difficulties » to provide a comprehensive educational experience that supports dyslexic learners in their journey to overcome reading difficulties, develop their linguistic abilities, and enhance their self-confidence.

Conclusion:

In conclusion, we recommend giving children who suffer from learning difficulties the importance they deserve within both family and school environments. If the curricula and educational programs designed for children without any difficulties are reviewed, updated, and improved through conferences to enhance education quality—which is both desirable and necessary—then it is even more essential for the responsible ministry (Ministry of National Education) to make efforts within an official framework to ensure a special quality education for children with learning difficulties. It should guarantee them the right to education provided by the supreme law of the country, which is the Algerian constitution, and ensure they have a place to receive appropriate education. This is a call to all educators and stakeholders in education, each according to their position and responsibility, to pay attention to a group that faces school marginalization and deprivation of the right to education due to the absence of effective programs and means for them. Until then, this series is an initiative by a multidisciplinary research team (Arabic language education, speech therapy, language sciences) to fill the gap in the Algerian educational environment to this day and to provide educational support to those who need it most, namely children with learning difficulties in Algeria. These children may be different, yes, but they are equal with others in their right to learn.

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