

LexiPal Therapy to Rehabilitate Learning Difficulty of Dyslexic Children

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Abstract: *Dyslexia is a condition of a person who experiencing learning difficulty, particularly in reading. This condition usually can be detected during childhood and often lead to learning skills at below average. This study discusses the concept of dyslexia and how to handling the dyslexic children through lexiPal therapy. Conceptual descriptions prove parents need to know what dyslexia means, in order to avoid and anticipate their children from learning difficulty. In addition, therapy using lexiPal (learning media) tools which uses a multisensory approach should be introduced to dyslexic children so that they are motivated to continue learning.*

Keywords: *difficulty in reading, dyslexia, lexiPal*

Introduction

Reading is one of the highest functions of the human brain than all living things in the world. Among all beings, only humans can read and write. The process of learning to read and write begins at the age of growth or childhood. According to Stephen, one of the important abilities and must be mastered by children is the ability to read and write. The ability to read and write is the main provision for children to be able to understand the subjects given in school [1].

The child's growth and development is an exciting time and become the most attention of parents. What is achieved in every child's growth is seen as a gift. Parents always interpret every new ability that the child achieved. At a certain age, after the child able to speak then she/he will turn to reach the school age. At the school age, besides counting, it is expected that children can read and write. It is a pride that the child achieves when he starts to read and write. Conversely, parents will feel uneasy if the child can not read and write than his age student. In linguistic science this condition is called *dyslexia*.

Globally, dyslexic cases range from 5-17% in the children school-aged. Approximately, 80% of

people with learning disorders have dyslexia. 5-10% of children and adults are exposed to dyslexia [2]. According to Nirmala and Saputra, data from BPS center in 2010 showed that Indonesian children at the age of 5 until 7 years amounted to 44 million people. At this age, they were introduced for the first time with alphabet letters for the next step of the reading process. If 10% or 1 in 10 of children are dyslexic, then there are at least 2.4 million children in Indonesia who have dyslexia [3].

Dyslexia is a difficulty associated with written words or symbols experienced by children. This disorder is caused by an inability in connecting the oral and written, or the difficulty of knowing the relationship between voice and word in writing. For normal children, the ability to read has emerged since the age of six or seven years, not so in children who have dyslexia. Until the age of 12, they are still not fluent in reading. This difficulty can be detected when children enter to school.

In daily life, dyslexic patients look like most children. Dyslexia disorders are not physically seen because the disorder occurs in the nerves and the brain. Children who have / experienced dyslexia will face difficulty when they have to read, write, sort numbers, or take orders, especially written orders. This is sometimes not realized by some parents when the child has a disorder, in this case dyslexia. As a result he/she is difficult to learn. In the end, parents often assume that he/she is stupid or mentally disabled. In fact, it does not mean dyslexic children will have permanent difficulties in their lives. Even in some cases, dyslexic children are much more intelligent and have advantages than other normal children. Some world renowned figures are known as dyslexic sufferers. However, they managed to show that dyslexia is not a fatal obstacle to becoming a successful career in life.

Several attempts have been made to deal with dyslexic children. One of them is a lexiPal therapy. This therapy is a remedial program. Aspects

covering the program are reading aspects as well as all activities that support reading activities. Initially, the *lexiPal* program was done conventionally using pens, paper, blackboards, or educational toys. However, along with technological developments, technology-based applications on the basis of *lexiPal* programs were later developed to further help the dyslexic children improve their learning difficulties [4].

Based on the explanation above, this study discussed about the concept of dyslexia and the introduction of therapy with *lexiPal* tool in rehabilitate learning difficulty of children who experienced dyslexia. The purpose of this study is to provide information and understanding of what is meant by dyslexia so that children with dyslexia at the time of its development can be treated appropriately. In addition, the introduction of *lexiPal* therapy is expected to make the learning process more effective and productive.

Literature Review

2.1. What is Dyslexia?

The term dyslexia comes from Greek, *dys* meaning without, not strong or difficulty and *lexis / lexia* means word or language. Dyslexia is one of the characteristics of learning difficulty in children who have problems in written, oral, expressive or receptive language [5].

Dyslexia is a form of difficulty in studying the components of words and sentences, which historically show the slow and almost problematic development of language in writing and spelling as well as difficulty in studying representational systems such as with regard to time, direction, and period [6].

Furthermore, dyslexia is a language disorder of reading disability, that is, the child inability to read is below the proper ability, taking into account the level of intelligence, age, and education. This disorder is not a form of physical disability, such as vision problems, but leads to how the brain processes after the child has entered school age for some time [7].

Dyslexia is characterized by the difficulty of reading in children and adults who should show the ability and motivation to read fluently and accurately. According to Wenar and Kerig, the problem that arises is the child has difficulty in reading, spelling, writing, speaking, and listening. In other words, it is said that dyslexia is one of the groups in specific learning difficulties. Dyslexia is not a disease, dyslexia has no cure. Dyslexia is the

most common learning difficulty found in the study [8].

Hornsby stated that dyslexia as a form of learning and writing difficulty, especially learning to spell and express thoughts in writing, and he has never used normal schooling and does not show retardation in other subjects [9]. Furthermore, Emmy proposed that dyslexic children usually have a normal label of intelligence and even some others above normal. Approximately, 80% of cases of dyslexia are found from groups of individuals who have specific learning difficulty [10].

Among the definitions of experts above, there is the general agreement on the definition and explanation formulated into four parts [11], namely:

- a) Dyslexia has a biological basis and is due to a congenital neurological condition.
- b) Dyslexia problems persist until adolescence and adulthood.
- c) Dyslexia has a perceptual, cognitive and linguistic dimension.

Refers to some definitions above, it can be concluded that dyslexia is an information processing condition different from a normal child. It is often characterized by difficulty reading and writing. These disorders can affect the areas of cognition, such as memory, input processing speed, timing capability, as well as coordination aspect and motion control.

2.2. The Causes or Symptoms of Dyslexia

Dyslexia is caused by a problem in the part of the brain, which regulates the learning process. In addition, genetic or hereditary factors also play a role. For example, if a father is difficult to read or dyslexic, it is not impossible that the child will experience similar difficulties. Although no one has been able to ascertain the cause of dyslexia, studies have concluded that there are three factors causing dyslexia: (1) heredity, (2) hearing factors from an early age, and (3) combinations or two factors 1 and 2.

Meanwhile, the symptoms of dyslexia are; firstly, the lack of verbal memory to remember the order of information verbally in a short period of time, a kind of short order such as putting bags and washing hands. Secondly, difficulties in sorting and saying things in words, such as sequence numbers, naming colors or objects. Lastly, difficulty in processing the oral information, for example when recording phone numbers or dictated.

Generally, the dyslexia symptoms are not same in each patient. For dyslexic baby, it can be

recognized through the development of speech which is more slowly than the children of his age and takes a long time to learn a new word. In Indonesian language, for example, they mention mistakenly the word "ibu (mother)" to be the word "ubi (yam)". They have difficulty in using words to express themselves and lack the understanding of words that have rhymes. The usual dyslexic symptoms will be more pronounced when children start reading and writing in the school. Furthermore, Praptiningrum & Purwandari pointed out the mistakes experienced by the dyslexic children in recognizing words such as **the disappearance of words** such "ibu pergi ke pasar (mother goes to market)" is read "ibu pasar (market mother), **insertion** "bapak pergi ke kantor (father went to office) " is read " bapak dan ibu pergi ke kantor (father and mother go to office) ", **replacement the word** "itu buku kakak (that is brother's book) " is read "itu buku bapak (that is father's book)", **the reversal of the letters in the word** " ubi (yam) " is read "ibu (mother)", **slip of the tongue** "namun (but)" read "nanum", **changing word order** "ibu pergi ke pasar (mother goes to market)" is read "ibu ke pasar pergi (mother to market go)" , **do not know the word** (stop reading because he does not recognizing the word), and **jerking** (reading with a jerky rhythm because he is faced to the word which unknown to speech). As for the error comprehension of reading, it appears in the many errors in answering the questions related to the reading, unable to express the order of the story, and unable to understand the theme of a story [12].

According to Madinatul, dyslexia is a specific learning difficulty in certain learning problems. It is not a general study that has difficulty in the entire spectrum of learning. The specific symptoms include difficulty in reading, spelling, and writing language. Other comorbid symptoms are difficulty counting (dyscalculia), writing numbers (notational skills/music), and coordination function/motorik skills (dispraksi) [13].

2.3. Characteristics of Dyslexic Children

The dyslexia disorders can be detected after the children enter the school for some time, just as the children in entering kindergarten. The easiest way to detect whether they are dyslexic children or not is by recognize the characteristics when they try to learn reading. Some of characteristics of dyslexic children are as follows:

1. Can not pronounce the words correctly and proportionally.
2. Get the difficulty in sorting letters in words.
3. Difficult to pronounce the phoneme (unit of sound) and combine it into a word

4. Difficult to spell words or syllables correctly. It could happen that a child with this disorder will invert sounds of letters, or syllables
5. Read a word correctly on one page, but do the mistaken on another page, and also forgot to place dots and signs such as commas, exclamation marks, question marks, and other punctuation.
6. Get trouble when he comes to understand what he has been reading. He may be able to read correctly, but does not understand what he reads.
7. Often reversed in writing or saying a word, such as "hal (thing)" become "lah". Then, forgot to include capital letters or put them in the wrong place.
8. Do the mistaken in the short words and confused determine where to use which hand to be used to write.
9. They write the letters and numbers with unfavorable results. Furthermore, there is a distance on the letters in a series of words. Children with this disorder usually write unstable, writing sometimes up and sometimes down.

Children can be diagnosed with dyslexia or not when children in elementary school age, which is about 7-8 years. While at the age of toddlers, a child has not been targeted to be able to read.

By recognizing the characteristics of children with dyslexia, parents are expected in monitoring the children development and anticipate the worse possibility that can occur. Moreover, they have to consult with educators, doctors and psychotherapists in order to get the right handling for their dylesic children.

2.4. Types of Dyslexia

In an article, Loezina proposed that there are two types of dyslexia, namely auditoris and visual type (sight). In the type of auditoris, the symptoms are dylesic children get difficulty in auditorist discrimination and perception, difficulty in analysis and auditor synthesis, auditoris difficulty of sounds or words, learning by heart is better than oral reading, sometimes accompanied by disorder of the auditorist order and they tend to perform activities visual. In other words, dyslexic children with an auditorist type rely more on visual learning. As study, they prefer to learning in the heart rather than verbally [14].

In contrast, the symptoms of children who are involved in visual types are inverse tendencies, discrimination difficulties, confusing letters or similar words, difficulty in following and

remembering the visual sequences, impaired visual memory, slow perceptual speed, analytical difficulty and visual synthesis, the reading test results are poor and usually better in the ability of the auditor's activity. Thus, it can be concluded that the dyslexic children with visual type relies more on learning by the auditorial. In learning process, the children prefer to hear what the teacher explains rather than self-study [15].

2.5. How to Overcome Dyslexia in Children

Basically, there are different types of dyslexia. The discovery of the experts shows that the differences of the variation are so obvious, that no single criterion really fits all of the characteristics of a dyslexic child. Then, it must take the expert assistance (psychologist) to find the right solution.

For children with dyslexia, educational interventions are most effective if it is given before the child reaches the age of eight. Dyslexic patients are taught to recognize the smallest phonemes or words in words, to understand the letters and the composition of the letters that make up the sound, to understand what is read, to read sounds, and to build vocabulary.

Besides, parents should also play an important role in improving children's abilities. A simple step is reading a book that interests children. This activity can be done repeatedly until the child is familiar with the text in the book. Parents are encouraged not to denounce their child if they make a mistake.

Here are some ways to overcome dyslexia by using the following methods:

1. Multi-Sensory Method

From neurophysiologists point a view, reading activity occurs due to the functioning of articulator, perceptual visual, auditoris controlled by motor central nerves, and central nervous understanding. So, the process of reading begins from the sensing process followed by motor vocalization process and ends in the process of application of human noble functions that include understanding of organizing as well as creative and productive thinking. Therefore, one of the methods to help the learning difficulties of dislexic children is to activate the function of all of sensory types, known as multisensory methods. The multisensory method is an exercise that enables all of children sensory to know or learn something [16].

By this integrated method, the children will be taught to spell not only by what they hear and then recite, but also take an advantage of visual (visual) and tactile (touch) visual skills. In practice, they are ordered to write letters in the air and on the floor, forming letters with wax (plastisin), or by writing them large on paper sheets. This allows the association between hearing, sight, and touch. Thus, it makes easier for their brain to work by recalling the letters.

Aini has conducted dyslexia research under the title "Gestalt Therapy Implementation in handling Student Dislection". Based on the result and conclusion, Aini claims that the use of Gestalt Therapy is considered successful. This evident appears from the change and development of reading and writing shown by students x after therapy. This study indirectly answers the question if Dyslexia can be rehabilitated through therapy [17].

Based on the research conducted by Praptiningrum and Purwandari, it is also obtained that multisensory method can be used as one of the learning model that can develop the reading children with dyslexia. In addition, the learning procedure can enable all types of censorship, which involves the functionality of touch, visual, auditory and pronunciation. This method can involve the active and interactive dyslexic children but still requires external motivation, in this case educators.

Interestingly, there is a new learning media that has been developed by some experts. One of learning medium that uses a multisensory approach is a LexiPal learning medium. The form of this learning media is an application. LexiPal application has been validated by the Indonesian Dyslexia Association (ADI). Besides, this application involves as much of the child's senses as visual, auditory, tactile, and kinesthetic. LexiPal also provides a more comprehensive application by including pre-reading content and specific capabilities to assist them in their daily activities, besides reading skills. Interesting and fun content is available in this application with the aim of motivating dyslexic children to not to stop in learning [18].

2. Build Self Confidence

Dyslexia disorder in children is often not understood and known in the environment, including their own parents. As a result, they tend to be considered ignorant and sluggish in the learning because they can not read and write properly, like most other children. Therefore, they are often harassed, ridiculed, or received

negative treatment, while the difficulty is not caused by laziness.

It would be nice if parents and teachers are sensitive to children's difficulties. Based on that, the early detection can be done to find out the factors inhibiting the learning process. Once found, certainly, it can be decided an effective strategy to overcome them. It can be starting from the process of introduction and simple understanding, to the game of words and sentences in the simple story books.

Method

This research is in the form of monitoring and in-depth study on the subject of research, by doing treatment (in the form of LexiPal therapy) within 9 months of research object in this case dyslexic children.

Discussion

When the children are detected to be dyslexic, the steps to be taken are to provide early therapy as possible; such repetitive therapy with patience and perseverance can help the child overcome the difficulty. Dyslexic children often feel unable to perform or produce the best they want.

Particular children, especially dyslexia, will never be able to read at high speed and will always have trouble in developing spelling skills based on their age. Dyslexia is seen as a biological disorder that is manifested by the difficulty in learning to read and spell despite conventional teaching and has sufficient intelligence. Therefore, therapy is one of method to rehabilitate children with dyslexia.

LexiPal therapy through application is a learning media to read for children at the age of 5-12 years. This tool is more than just a therapeutic tool for children who have difficulty reading (dyslexia). A LexiPal (learning media) tool has many uses, especially for students, parents, teachers and therapists. But in this study, this tool is not only a tool to encourage children to learn to read but also a tool that can be used to help sufferers in reducing difficulty, especially in reading difficulty.

As a therapeutic tool, LexiPal can not work and be benefit without precedence of the degree and difficulty reading of dyslexic readers. This is what is contained in this study, namely tracing the linguistic fact of children reading difficulty before the therapy.

Moreover, LexiPal therapy can improve the child's response, perception, direction recognition, memory, object association, improvement of speech,

and sentence comprehension. By LexiPal, the logic of language and the response of the children can develop well. Through regular and continuous therapy, this study proved that the difficulties of reading children can be improved to the better, with a 24.7% improvement rate.

LexiPal is a dyslexia therapy tool designed in the form of games (games) that are favored by children. This tool consists of 12 (twelve) categories with different benefits. LexiPal therapy tools include 1) forms and patterns 2) equations, differences and comparisons 3) short-term memory 4) association of objects 5) direction perception 6) sequence of activities 7) understanding of place 8) time concept 9) social skills 10) Syllable and Words, and 12) Simple sentences.

According to Nirmala and Agus, [19] the advantages of LexiPal therapy are as follows:

1. Interesting and fun
The LexiPal application is designed close to the world of children which is full of games and colors, so it is expected to be more interesting and fun.
2. Motivate
With the score, gift and certificate, LexiPal can motivate children to learn more
3. Appropriate with the ability of children
Every child is unique and different. Almost all media of learning at LexiPal provides arrangements, including difficulty levels, so that it can be tailored to the needs and abilities of the child.
4. Multisensory Approach
LexiPal adopts a multisensory approach involving as much of the child's sense of learning as possible, including visual, auditory, tactile and kinesthetic. With the help of a kinetic motion sensor tool, LexiPal applications provide some learning media that support natural interaction with gestures. Children can learn just like in cyberspace without touching the keyboard and mouse.
5. Schedule
Users especially the therapist can create a timetable as a reminder of study time
6. Historical Data
With historical data, teachers and parents can see and monitor the child's learning progress.

Based on this research, it is found that dyslexia can be rehabilitate. The improvement here means the provision of therapy to the patients, in this case LexiPal therapy. This is because the LexiPal therapy utilizes models that have been specifically designed for trained skills. The model and skills trained include:

1. Shapes and Patterns Model which is the skills trained in the form; eye coordination with hands, fine motor, and eye search and recognition.
2. Equations, Differences and Comparisons Model with the skills trained in the form; identification of shapes and drawings, differentiate image position (for matrix image) and sense number (for dot screener image).
3. Short-Term Memory Model with skills trained in the form in the form; exact image identification and visual memory
4. Object Association Model with trained skills in the form; association or correlation between two images and grouping of objects into 2 different categories
5. Direction Perception Model with skills trained in the form; understanding of forward, back, right and left positions, as well as rough motor
6. Sequences Activities Model with skills trained in the form; sequence of activities in daily activities and thinking in sequence and sequential
7. Understanding and Place Model with skills trained in form; the ability to name location and objects that exist in the location and the relationship between the location with objects and activities
8. Concept Time Model with skills trained in the form; name of day and the day related to daily activities
9. Social Skills Model with skills trained in the form; reading the condition of an event and understand the emotional expression (happy, sad, afraid, angry, shocked) that occurred on an event.
10. Letters Model with skills trained in the form; discrimination of phonemic sounds and names of vowels and the formation of vowels with the form of an object in everyday life
11. Syllabel and Word Model with skills trained in form; sound of KV syllables (vocal consonants) or consonant and vowel combinations and read the words in VVKV, KVKV, and KVKVKV pattern

Hence it is the nature of therapy; it needs to be held repeatedly with great patience. During the eight treatments, there was improvement of each therapy. Thus, it is certain that lexiPal therapy is very helpful to rehabilitate the learning difficulty of dylexic children.

Conclusion

Dyslexia is a learning difficulty related to written words or symbols. This disorder is caused by an inability to connect between oral and written, or the difficulty of knowing the relationship between

voice and word in writing. If allowed to drag on, the children will face the difficult to do everything related to reading and spelling activities. Until the age of teenagers, they will be difficult to face up to their psychology then eventually be disrupted. Knowing the learning difficulty, especially dyslexia experienced by children, is very necessary to be done by parents in order to overcome and anticipate this early learning difficulty.

Dyslexia can not be cured, but early detection and treatment have been shown to be helpful in rehabilitate the patient's ability, especially in reading. In the learning process, children with dyslexia are not the same as other children. There must be a special treatment, such as special teachers, methods and personal space and special time.

One of methods that is currently developing to improve reading difficulties in dyslexic children is lexiPal therapy. The therapy using this lexiPal program is a remedial program for children 5-7 years adopted multisensory approach. In addition, LexiPal application has been validated by the Indonesian Dyslexia Association (ADI). It involves pre-reading content and special skills for the daily life of dyslexic children. Moreover, by the content of reading ability, it makes the application more comprehensive. With various models presented with each form of skill trained and done repeatedly then lexiPal therapy certainly rehabilitate learning difficulty of children with dyslexia.

Because of handling the dyslexic children in the form of lexiPal therapy requires time and energy, family and patients are encouraged to be patient to live it. Support and help from family and close friends will be very helpful so that the teraphy of children with dyslexia can be handled appropriately.

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