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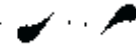
Educational Research Association  
The International Journal of  
Educational Researchers 2020,  
11(3): 1-7  
ISSN: 1308-9501



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## Understanding Issues in Dyslexic Learners' Pedagogy, the Role of Assistive Technology, and its Challenges

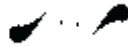
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### Abstract

Globally, 5 to 10 % of the total population is suffering from dyslexia. Since dyslexia is considered as an educational problem, with difficulties that focus on weaknesses in the acquisition of literacy skills, the main emphasis of assistance should be educational and must concentrate on improving those skills. Thus, such a language learning disability incurs fatal impediments in developing efficient language abilities both within and outside the academic realm. To overcome these difficulties early intervention is a prerequisite. The awareness level of dyslexia among masses is ever more decreasing, resulting in delayed diagnosis and remediation. In an attempt to assist in this direction, the present paper provides insights about language learning disabilities – dyslexia in particular, its characteristics, causes, as well as manifestations. By adopting a descriptive research methodology, the paper investigates the challenges dyslexia generates for academic literacy development and English language pedagogy. Further, the purpose of this study is to elaborate upon the affective as well as the psychological problems dyslexic learners struggle with and their contemporary challenges. This study also highlights and suggests ways of proven assistance for learners coping with dyslexia. Therefore, this paper is an attempt to offer a holistic review of language learning disabilities and aims at increasing awareness for early diagnosis of dyslexia and its treatment to a great extent.

**Keywords:** Dyslexia, language acquisition, language pedagogy, psychological factors, assistive technology.



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## **Introduction**

The early research in learning disability in the form of brain pathology depended on the evidence of brain localization. Major contributors were Franz Joseph Gall, Pierre Paul Broca, and Carl Wernicke, thus providing a base for a quantum leap of research on Language-Based Learning Disorders.

The term language disability encapsulates in itself a range of difficulties relating to language acquisition or language learning, the primary cause of which relates to brain injuries or aphasia. The term language disability first appeared in the discourses of Samuel Kirk, where he meticulously defined the term as “retardation, disorder, or delayed development in one or more processes of speech, language, reading, writing, arithmetic...caused by a possible cerebral dysfunction and/or emotional or behavioral disturbances” (Kirk, 1962).

The often unattended problem of dyslexia is one of the most widespread language disabilities which reveals in the form of inefficient and faulty cognitive and motor skills. Globally, it covers up to 10% of the whole population (Snowling, 2000), and thus is “the single biggest cause of academic low achievement in school students” (Good & Benner, 2006).

## **Purpose of the Study**

The purpose of the present study is to provide a comprehensive overview of dyslexia. It not only covers the discussion surrounding language disability, but also presents the challenges these learners with dyslexia face in academic and social life. Moreover, the objective of this paper is to highlight the importance of awareness among educators and communities regarding some crucial aspects of dyslexic learners for providing them adequate assistance in the form of differentiated instructions as well as social support.

## **Research Questions**

This article addresses the following research questions:

- What is the cognitive basis of dyslexia?
- What are the pedagogical issues with dyslexic learners?
- What is the extent to which dyslexia affects non-academic domains?
- What are the ways to assist dyslexic learners?
- What are the contemporary challenges that hinder embracing dyslexics?

## **Methodology**

To answer the aforementioned questions, the present study adopts an explanatory approach with descriptive research method. Document analysis is undertaken to discuss the important themes in this paper. Moreover, insights and recommendations are provided using explanatory approach.

## **Understanding Dyslexia: A Literature Review**

Since dyslexia is variable in nature and manifests itself differently among learners with a language disability, it is impractical to define it in a single definition. One of the earliest and comprehensive definitions is given by Lyons (1998), where he defines dyslexia as,

...one of several distinct language disabilities. It is the specific language-based disorder of constitutional origin characterized by difficulties in single word decoding, usually reflecting insufficient phonological processing. These difficulties in single word decoding are often unexpected in relation to age and other cognitive and academic abilities; they are not the result of generalized developmental disability or sensory impairment. Dyslexia is manifested by variable difficulty with different forms of language, often including in addition to problems with reading, a conspicuous problem with acquiring proficiency in writing and spelling.

The British Dyslexia Association (1999) provides a definition of dyslexia on its neurological basis: “Dyslexia is a complex neurological condition which is constitutional in origin. The symptoms may affect many areas of learning and function, and may be described as a specific difficulty in reading, spelling and written language.”

“Dyslexia is both familial and heritable: The disorder is found in 23% to 65% of the children of parents who are dyslexic, and 40% of the siblings of a dyslexic child are also affected” (Pennington & Gilger 1996).

The analysis of dyslexia phenotype reveals that dyslexia is a developmental language disorder resulting in both phonological and orthographic issues in processing as well as difficulties with memory and automatized naming (Snowling, 2000; Ramus et al., 2003). Moreover, developmental dyslexia produces great errors in word recognition and decoding, thus resulting in slower speed (Pennington, 2006; van Bergen et al., 2014; Ozernov- Palchik et al., 2016).

A human brain normally uses three areas for reading any text, the Broca's area (located in the Anterior system of the brain), the Parieto-Temporal and Occipito-Temporal areas (both of which are located in the Posterior section of the brain) of the left hemisphere. The Broca's area deals with a number of language aspects, namely, vocabulary, articulation, understand and word recognition. The decoding of words through phonemes is carried out by the Parieto-Temporal area, while the Occipito-Temporal area establishes the sounds to letter correspondence. There is massive underdevelopment, resulting in nil activation when reading, of both Parieto-Temporal and Occipito-Temporal areas in people having dyslexia. As a result, there is hyperactivation of the Broca's area to cope with reading difficulties.

Major contributions in studying the dyslexic mind were done by Samuel Orton. From his extensive observations and studies, he outlined certain prevalent patterns among all dyslexics:

- a) Switching and confusion between certain letters, such as p and q and b and d
- b) Puzzling of palindromes such as 'was' and 'saw'
- c) A tendency to “mirror read and/or write.” ( Hallahan & Mercer, 2001)

Moreover, dyslexics tend to exhibit faulty vowels and consonants, reversals, the addition of sounds, the omission of sounds, substitution of sounds, repetition of words, the addition of words, the omission of words, refusals, and words aided (Monroe, 1932; as cited in Hallahan & Mercer, 2001).

### **Characteristics of Dyslexics**

Through extensive studies and observations certain predominant characteristics are considered as prevalent among people with dyslexia, which are as follows (Chisom, 2016):

- Dyslexic individuals lack logical processing which in turn distorts their phonic skills and affects reading and comprehension.
- Poor short-term/ working memory creates issues with speaking, reading, writing, organizing words and facts, and omission of words. The difficulty at this level immensely hinders the ability to express thoughts in sentences.
- Inapt automatizing skills among dyslexics produce exertion in cognition. This, in turn, leads to inefficient simultaneous comprehension of classroom instructions and note-taking or maintaining both the form and content of while writing texts.
- Extreme difficulty in visual processing among dyslexics deteriorates reading ability. Reading at length is thus a challenging task. Inability in visual processing also results in visual movements of text and color illusions. Such difficulties also affect physical wellbeing causing frequent occasions of epilepsy and migraine.

Moreover, Lerner (1976) listed some common yet core elements among various issues faced by dyslexic learners as follows:

- Neurological dysfunction
- Uneven growth pattern
- Difficulty in academic and learning task
- Discrepancy between achievement and potential
- Exclusion of other causes.

### **Types of Dyslexia**

Studies have made known two different subtypes of dyslexia, namely, Phonological – lack of auditory awareness, and Orthographical – lack of site awareness (Newby et al., 1993; as cited in Feifer, 1998).

Johnson and Myklebust (1967) explained two categories of dyslexia as being Visual and Auditory Dyslexia, which they consider to be the most generic category among other types. The following list explains the most widely discussed types of dyslexia:

- Surface Dyslexia: It is a deficit in lexical route. Reading totally by sound with frequent errors is its main characteristic. Example – “lace” may be read as “lake” due to deficit in detecting print to sound correspondence. (McCarthy & Warrington, 1990)
- Deep dyslexia: It is a rare form characterised by impairment in reading words with abstract meaning rather it is substituted by reading easily imaginable concrete words. Example– “Watch” for a “Clock” and “food” for “dinner”.
- Primary Dyslexia: When dyslexia is genetically inherited, it is called as primary dyslexia. It causes difficulty in sound, letter and number processing, thus, distorting the ability to read, spell, and carry out arithmetic tasks. Such cases are seen more in boys than in girls.
- Secondary/Developmental Dyslexia: The inability to acquire functional reading skills despite normal intelligence. It is caused by neurological mal-development during prenatal stage.
- Neglect Dyslexia: The person tends to neglect or misread the initial or ending of the words. Example – “this” for “his” and “train” for “rain”.
- Attentional Dyslexia: Intense difficulty in reading multiple words in the same visual field.
- Acquired/Trauma Dyslexia: Injury in parts of brain which controls leggieer and writing caused by diseases drama results in difficulties and language processing.

### **Manifestation of Dyslexia: Unsound Academics**

Language ability forms the basis for academic literacy. Issues with language, be it at the level of reading, writing, or comprehension, extensively affect academics both within the classroom and beyond. It is concluded that reading disability covers “somewhat over 10 percent of the total school population” (Orton, 1939, p. 59). Dyslexia manifests itself at various levels, creating hurdles in the acquisition of academic skills. Following is the list of academic areas affected by dyslexia:

#### **Reading and Perception.**

- Difficulty in acquiring phonics skills, reading ability and comprehension
- The frequent necessity of repetitive reading for decoding text
- Poor reading ability marked by the omission of words or chunks of text
- Extremely low concentration
- A damaged and erroneous perception of text (words floating or running together).
- Frequent visions of glare on a white text surface

#### **Writing.**

- Significantly slow speed while writing.
- Confusion and switching of similar structured alphabets and words.
- Jerky and untidy handwriting, as a result of faulty visual-motor patterning.
- Deviancy in spoken and written communication on the same subject (Chisom, 2016).

### **Beyond Academics: Psychological and Affective Issues**

The problem of dyslexia is not only limited to acquiring or using literacy skills; rather it is far more devastating. Dyslexics at a young age, as adolescents or as adults have a greater risk of developing poor self-concepts and low self-esteem typically among their peers (Klassen & Lynch, 2007). Samuel T. Orton, through his researches, found a deep connection between emotional aspect and dyslexia.

The exasperation among children with dyslexia often centres on their incompetence to meet expectations. Empirical studies prove that children, adolescents and adults with dyslexia highly tend to develop low self-esteem (Burden, 2008; Orth, Robins, Trzesniewski, Maes & Schmitt, 2009). The painfully slow and frustrating academic progress due to reading difficulties leaves the dyslexic child vulnerable to emotional breakdown and thus resort to avoidance-based coping. Without adequate and timely support dyslexics end up in excessive academic pressure and social isolation (Schultz, 2013, p.2). A number of studies (Riddick, 1995; Humphrey & Mullins, 2002; Humphrey, 2001; Ingesson,

2007; Alexander-Passe, 2006) suggest a deep connection between dyslexia and defective social behavior.

Past few decades have seen an increase in researches on dyslexia, but what remains unchanged is the intense lack of awareness and acceptance to dyslexia. The greatest harm is incurred upon those with dyslexia by being labelled as either “stupid” or “lazy” for their inefficiency in academics. This compels children with dyslexia to develop poor self-perception (Humphrey & Mullins, 2002). A great level of anxiety is markedly higher among dyslexics than those without learning disabilities (Carroll & Lies, 2006). Reading anxiety among adolescents with dyslexia results in learned helplessness, especially in times of familial or peer pressure (Tsovoli, 2004).

### **Coping with Dyslexia and the Contemporary Challenges**

Early diagnosis and intervention are the keys to assist children with dyslexia. Many researches (Wagner, 2008; Torgesen, 2004) highlight the necessity of early intervention, as children who are poor readers during the initial grade remain poor readers throughout life if they are not adequately addressed at an early point.

The specialist school milieu provides a supportive environment which promotes the development of healthy self-esteem through positively affecting emotional involvement. “Adults with dyslexia who attended specialist schools tended to have higher self-esteem because specialist school attendance directly decreased negative emotional experience with dyslexia” (Nalavany, Carawan, & Brown, 2011). Long, MacBlain and MacBlain (2007) highlight the essential role that trained and aware teachers play in addressing “not only the educational needs, but also the personal, social, and emotional needs of students with dyslexia”.

Moreover, the integration of computer technology, in the form of computed based instructions and assistive technology both at school and home provide “alternate modes of excess, stimulating and engaging the environment and personalised interactive experience” (Khan, 2019). Computer-assisted language learning adequately caters to the needs of dyslexics. Through its flexible nature, computer technology provides text in small chunks with the preferred layout to provide assistance while reading, writing or sequencing, thus giving them a sense of accomplishment and success. Myrberg (2003) and Myrberg & Länge (2006) suggest that computers immensely help students facing difficulty in reading and writing (cited in Sharan, 2014). A number of recommendations (example, British Dyslexia Association and International Dyslexia Association) are available for dyslexia users to facilitate readability of the text. Nevertheless, there are certain fronts or typeface (example, Dyslexie fonts, Open Dyslexic, Lexie Readable) designed specifically for readers with dyslexia. These fonts incorporate several features and modifications to meet the desired look required by the struggling minds. Studies highlight the assistance learners with dyslexia get with the use of such modified typeface.

Besides supportive and understanding teachers and parents, peers play a crucial role in emotional support and self-esteem development for children and adolescents with dyslexia (Burnett & McCrindle, 1999). But the great challenge lies in the lack of knowledge among the community that could provide diagnosis and timely interventions. There is an imperative need to make knowledge of dyslexia pervasive. A number of researches are conducted but masses remain unaware. This lacuna is ever more increasing in countries like India, with 13-14% of school children suffering from learning disabilities (Sakhuja, 2004), where educated awareness is minimal and proper intervention still remains a far-fetched dream (Kalyanpur, 2018). The false perception of dyslexia as a ‘disease’ or ‘handicap’ is what the minimal knowledge constitutes, thus none musters the courage to embrace their child with dyslexia. It is high time to know that a child with dyslexia is an “intelligent teenager who had [just] failed to read” (Dr. Pringle-Morgan, 1896 as cited in Snowling & Stackhouse, 1996, p.1).

### **Conclusion**

The issue of language disability in general and dyslexia, in particular, is becoming a serious concern due to its ubiquitous presence among individuals. Dyslexia not only deteriorates academic growth but also immensely affects self-perception and the ways they view the world around them. Moreover, the external pressure and expectations due to the lack of appropriate awareness from parents, peers or



teachers succumb to greater damage to the struggles of dyslexics. Therefore, explicit, intense, timely and systematic interventions should be provided to treat dyslexia. This is only possible by provoking thoughtfulness among people, educating them to what actually dyslexia is, to humanize masses against the stigmas associated with it and to guide them towards adequate and suitable on time interventions for helping people with dyslexia.

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