

Understanding The Definition and Characteristics of Dyslexia

Hasliza Binti Yunus^{1*}, Noor Aini Binti Ahmad²

¹Faculty of Human Development, Sultan Idris Education University (UPSI), 35900, Tanjung Malim, Perak Darul Ridzuan, Malaysia.

Email: cikguhasliza75@gmail.com

²Faculty of Human Development, Sultan Idris Education University (UPSI), 35900, Tanjung Malim, Perak Darul Ridzuan, Malaysia.

Email: Noor.aini@fpm.upsi.edu.my

CORRESPONDING AUTHOR (*):

Hasliza Binti Yunus
(cikguhasliza75@gmail.com)

KEYWORDS:

Learning Disabilities Specific
Definition of Dyslexia
Characteristic of Dyslexia

CITATION:

Hasliza Yunus & Noor Aini Ahmad. (2022).
Understanding The Definition and
Characteristics of Dyslexia. *Malaysian
Journal of Social Sciences and Humanities
(MJSSH)*, 7(3), e001353.
<https://doi.org/10.47405/mjssh.v7i5.1353>

ABSTRACT

Reading skills are an important element for obtaining knowledge in academic learning. Previous research has demonstrated that dyslexia pupils have a major problem with reading skills. The biggest issue of dyslexic pupils includes language learning disorder. Dyslexia could be a long-lasting impedance, and numerous indications hold on into adulthood. Identification of dyslexia at a preliminary phase comes from the ability to notice dyslexia characteristics, for instance, poor handwriting, written expression difficulties, spelling difficulties, reading fluency, and difficulty associating sounds with letters. Nevertheless, the investigation has exhibited that teachers and parents are still unaware of dyslexia. The goal of this article is to explore dyslexia's definitions and characteristics that are associated with it. Dyslexia comprises different definitions and characters. Each dyslexic pupil encounters indications that are distinctive from each other. Understanding the definition of dyslexia and the character of early dyslexia can assist teachers in planning fitting intercessions for dyslexic pupils. Conclusions: The implications of this work are that it can assist educators in identifying students who have dyslexia characteristics or symptoms.

Contribution/Originality: This manuscript is original, has not been published before and is not currently being considered for publication elsewhere. The corresponding author is responsible for ensuring that this study contributes in the exiting literature and the descriptions are accurate. All authors interpreted the data, critically reviewed, and approved the manuscript.

1. Introduction

Special needs students must be provided with the necessary assistance to “enable their full and rise to aid in education,” according to Article 28 of Malaysia’s People with Disabilities Act 2008. Special needs pupils are defined as those who are having hearing-impaired, sight-impaired, physically-impaired, speech-impaired, learning disabilities, and multiple disabilities ([Ministry of Education Malaysia \[MOE\], 2013](#)). The Integrated Special

Education Programme is divided into several sections in Malaysia because not all pupils have the same problem or disability. For example, dyslexia is among the learning disabilities groups. In reality, numerous people with dyslexia have not been successful, but a few people with dyslexia can change the world. Bill Gates and Albert Einstein, as famous personalities, were recognized as examples of dyslexia problems.

In Malaysia, 10% to 15% of primary school-going pupils are reported to be [dyslexic \(Pillai, 2021\)](#). Relating to achieving the National Transformation 2050 (TN50), a teacher must be expert and creative in educating, including special education pupils. However, the finding showed public awareness of dyslexia is seriously inadequate ([Lin et al., 2020](#)); teacher struggles while teaching dyslexia pupils ([Kalsoom et al., 2020](#)); lack of awareness among teacher school about dyslexia ([Ahmed et al., 2020](#)); and parents ([Jincy & Hency, 2021](#)). In previous research, the teacher had an exceptionally deficient sum of knowledge about dyslexia ([Ogunsola, 2018](#)). Other findings revealed that most of the teachers were found to be having a higher understanding of the general information approximately dyslexia compared to their understanding of symptoms, diagnosis, and the treatments ([Ramli et al., 2019](#)). Subsequently, teachers have to be given a total directly to assist teachers and parents in recognizing dyslexia in more depth.

Early detection of dyslexia can contribute to immediate treatment, which can help students boost their educational performance and social skills. Dyslexia is a serious public health issue that has to be addressed, and early dyslexia screening and diagnosis are critical. In conclusion, the investigators will deliver the description and characteristics of dyslexia in this study in order to assist educators in discovering further regarding dyslexia. Something exciting is when an individual can be polished and become a successful person. Dyslexia issues got to be clearly caught on to assist dyslexia better.

2. Literature Review

2.1. Specific Learning Disabilities

Learning disorders are identified when a person's success on independently conducted reading aptitude, mathematics, or written expression is significantly underneath that estimated for age, schooling, and intellectual level, as per the Diagnostic and Statistical Manual – IV (DSM-IV). The phrases learning disability (LD), learning disorders and learning difficulty bear a similar connotation. One of the learning disabilities categories is specific learning disabilities described using a variety of words. One or more of these may be displayed by an individual.

In 2019–20, 7.3 million students aged 3–21 received special education under the Individuals with Disabilities Education Act (IDEA), with particular learning disabilities being the most frequent kind of disability ([National Center for Education Statistics \[NCES\], 2018](#)). Specific Learning Disabilities (SLDs) are a type of neurodevelopmental disorder that impairs the capability to learn or utilize particular scholastic abilities that serve as the foundations for other academic learning ([Diagnostic and statistical manual of mental disorders \(DSM-V\), 2013](#)) and are associated with impoverished long-term social and professional outcomes ([Grigorenko et al., 2020](#)). Dyslexia is a category of learning disability that includes distinct learning problems. In short, dyslexia is related to neuro issues that can be affected by academic learning and social skills.

Students with learning disabilities should be provided with the opportunity to memorize in accordance with their requirements and ability (Yahya et al., 2019). However, a recent finding in India revealed that specific learning disabilities are exceedingly predominant and lack awareness among teachers and guardians (Chordia et al., 2020). Early identification and successful intervention may help dyslexia pupils study, compared with those who are late identified in elementary school (International Dyslexia Association [IDA], 2019). Therefore, again there should be a clear description of dyslexia to help teachers do appropriate and effective teaching to dyslexic pupils, thereby minimizing the difficulties faced by dyslexic pupils.

2.2. Definition of Dyslexia

The word dyslexia originates from Greek; the prefix dys implies difficulty, and the lexia implies words. Earlier clinical diagnosis was described as dyslexia by the term word-blindness. Reading disability, specific reading retardation, word-level reading disability, specific learning difficulties, reading disorder, unexpected reading difficulty, learning disability, specific reading difficulties, specific reading disability, and reading difficulties are common terminologies associated with dyslexia. A teacher must have a clear understanding of dyslexia definition clearly. There are two broad types of dyslexia: Acquired dyslexia and Developmental dyslexia. In this paper, the researcher focuses on developmental dyslexia.

Various definitions of dyslexia are discussed. Dyslexia is described by the International Dyslexia Association (2019) as:

Dyslexia is a specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede the growth of vocabulary and background knowledge (International Dyslexia Association, 2019).

A commonly held belief is that reading difficulty are due to a genetic, brain-based, and phonological impairment. Dyslexia is defined by the British Dyslexia Association as a learning difficulty that influences abilities, for instance, exact and proficient word reading and spelling, learning difficulties in reading (Mayo Clinic, 2017), can be inherited sometimes in families (National Institute of Neurological Disorders and Stroke, 2019), and language processing disorder. The estimates of the influenced school-age populace around the world that 80% of all people analyzed with a few sorts of learning disability are dyslexic (D'mello & Gabrieli, 2018).

In Malaysia, the number of special education pupils is a total of 93,951 people. A percentage of 82% (77,207 people) are pupils with learning disabilities, and 17% (13,302 people) are dyslexic pupils (MOE, 2020). In this condition, dyslexia is struggling with language disorder, but a few studies have concluded that dyslexia has great potential or strengths in curiosity, fairness, kindness, judgment, honesty, and leadership (Kannangara et al., 2018). This is why it is critical to comprehend the nature of dyslexia in order to improve their life happiness and general well-being.

Dyslexia may be a neurological condition but is not an obsessive issue (Subramaniam & Kunasegran, 2019). Moreover, as per the Malaysian Dyslexia Association, dyslexia is the impairment in the brain, and as per the Malaysian Dyslexia Association, dyslexia is defined as damage in the brain's ability to interpret written visuals acquired from the eyes into meaningful thoughts. Dyslexia was characterized by the National Institute of Neurological Disorders & Stroke (2019) as a brain-based form of learning inability that notably hinders an individual's capacity to read, where brain abnormalities in the left hemisphere were linked to reading difficulties. Other studies suggested that developmental dyslexia is improbable to be a particular category of neurodevelopmental disorder, with lower-level abnormalities in visual motion processing supporting this conclusion (Piotrowska & Willis, 2019).

Dyslexia is defined by heterogeneity and individual variability (Perry et al., 2019), and it may be seen as a complicated causal chain spanning biology to cognition (Knight, 2017). Dyslexia has a strong intrinsic foundation represented in certain regions of the genome, namely on chromosomes 6 and 18, which may have inherited variants that lead to reading difficulties (Leah & Heads, 2018). Dyslexia can appear as a primary problem (difficulty learning certain academic abilities) or as a secondary condition (comorbid with other developmental disorders as attention deficit hyperactivity disorder) (Grigorenko et al., 2020). Thus, biology and cognitive problems will influence the conduct of people with dyslexia.

Dyslexia refers to a group of symptoms that causes individuals to have difficulty learning particular skills, particularly in learning specialized skills (International Dyslexia Association, 2017). As a result, it is intriguing to see how individuals who engage with dyslexic individuals begin to realize what it is and how it affects their lives. Thus, it is essential to understand the characteristics of dyslexia in order to dig deeper.

2.3. Characteristics Of Dyslexia

In our society, literacy skills are crucial. Deficiencies in phonological word coding, for instance, interpreting the sounds and connotations of phrases, are common among dyslexic students (Snowling, 2019). Phonological shortfalls in dyslexia are shown within the preschool for a long time, and sometimes recently, reading instruction starts (Snowling et al., 2019). The troubles these pupils have with phonology frequently propose they may create a perusing impedance as they develop or mature. Research showed that dyslexia has speech and language problems (Cabbage et al., 2018); phonological awareness, spelling, reading comprehension, and deficits in word and pseudoword reading (Reis et al., 2020); and orthographies problem (Laurence et al., 2018).

The most common dyslexia issues in school are phonemic awareness, interpreting/decoding, reading fluency, and spelling (Castles et al., 2018), and dyslexia is occasionally complemented with spoken language impairments (Snowling et al., 2020). Dyslexia is characterized by the difficulty in comprehending individual speech sounds, as well as issues retaining sounds in series in short-term memory and reading fluency (National Association of Special Education Teachers 17). The investigation has been recorded and acknowledged that dyslexia battles with reading, composing, and spelling issues, in spite of having sound insights from (Sayeski, 2019). This also includes a struggle with writing (Hebert et al., 2018) due to impaired joint position sense (Kimura et al., 2021) and may happen independently of execution in other spaces like arithmetic (Skeide et al., 2018). Every person with dyslexia is struggling with different issues.

Dyslexic pupils appeared challenged to study since they came up short to procure the ability to isolate the sounds in a word in order to coordinate them to their visual letter counterparts (Stein, 2018). Although the dyslexic students may not have developed phonological representation, they spell phonologically common phrases using letter labeling approaches. The findings revealed that all dyslexic students had difficulties with letter inversions, incorrect letter naming, incorrect sounding out of spelled words, and difficulty with spelling assignments (Wan Norudin & Baba, 2018). Dyslexia frequently co-occurs, and students who are affected have significant difficulties with reading comprehension since bad interpretation is aggravated by poor dialect. Thus, relying on the fundamental reasons for their difficulties, several types of treatments are necessary for impoverished reading comprehension (Snowling et al., 2019).

People with dyslexia struggle with visual attention (Vidyasagar, 2019); displayed varied visual dyslexia symptoms depending on their learning level, specifically beginner, intermediate, and advanced (Subramaniam & Kunasegran, 2019); and had inferior memory performance (Gray et al., 2019). Rather than a single phonological loss, dyslexia is usually caused by a combination of deficiencies (Fletcher & Grigorenko, 2017). Other related issues show that understudies with reading difficulties are moreover seen to have a shortage of executive functions (Meiri et al., 2019).

Other occurrences dyslexia is sometimes classified as dreary, lethargic, harsh, difficult, and so on without realizing its reason. Students with lesser reading efficiency will have challenges when they enter school at the assistant or higher levels, preventing them from achieving outstanding perceptive accomplishment, causing ardent and behavioral concerns, and causing some to drop out (Williams et al., 2016). Other than that, dyslexic pupils stand up to various inconveniences in their instructive intelligence and social environment. Furthermore, adolescents face frustrations and low self-esteem as a result of the pressure to succeed, specifically in academics, which may have an influence on their long-term prospects (Abd Rauf et al., 2018). Hence, in cases usually not identified and made a difference at an early organization, it can lead to passionate disorders (depression), behavioral issues (battling, behavioral disarranged), and low academic accomplishment (causing school dropout) (Bakar & Abd Rahman, 2018). It showed that the characteristics of dyslexic pupils are diverse. They have knowledge about characteristics of dyslexia able to guide instructors, teachers, or any master to plan or make a reasonable appraisal or intercession to them.

3. Discussion and Conclusion

The goal of this research was to understand the definition and characteristics of dyslexia better. Overall, the definition of dyslexia discusses the difficulties faced by individuals with dyslexia in reading skills. Struggling in mastering reading skills includes the reading process, such as aspects of reading fluency, pronunciation of letters and words, as well as the skills of understanding what is read and making dyslexia consist of several types.

Adults with dyslexia proceed to confront comparable challenges as they did during childhood, like poor verbal working memory, speeded sentence-level perusing, and shortfalls in phonology-based aptitudes (Tufo & Earle, 2020). Multiple regression analyses revealed that having dyslexia resulted in more negative or imbalanced sentiments, which anticipated reduced level of job self-efficacy, job qualities, work competency, and work anxiety over and past establishing key components (Nalavany et al., 2017). They may demand psychosocial assistance in order to transfer their soft skills

in the workplace (Costantini et al., 2020). There's no remedy for dyslexia, either restorative or through other measures. Be that as it may, the challenges due to dyslexia within the ranges of reading, spelling, composing and comprehension, etc., can be overseen viably with opportune and suitable intercession (Parveen & Baig, 2021). Therefore, early identification needs to be done to enable individuals with dyslexia not to face a bad life in the future. Affirmation from peers, society, teachers, and others impacts their effective consideration.

Educators or educates must be made aware of the problem and trained to screen for it at the elementary school level so that treatment may begin as soon as possible (Kohli, et al., 2018). With the knowledge of dyslexia detection, teachers may use a variety of effective learning strategies that are appropriate for dyslexic students. The confidence and enthusiasm of dyslexic understudies to memorize will continue to grow in a pleasant and motivating surrounding. Early dyslexia screening would be a realistic solution for beneficial mediations, which are necessary for effective mediation and the ability to monitor appropriately (Sundus et al., 2017). Early identification is able to select and give reasonable evaluation and intervention to dyslexia pupils. When school staff individuals get students with dyslexia, they can distinguish it and give suitable interventions, where pupils with dyslexia will get the bolster they desperately require. It is better suited to assist them in creating the capacity, and it is vital that dyslexia is understood over life expectancy.

Acknowledgement

This work would not have been possible without the monitoring and guidance from my supervisor Dr Noor Aini Ahmad. I would like to express my gratitude to her for her support and her time.

Funding

This study received no funding.

Conflict of Interests

The authors declare no conflict of interest in this study.

References

- Abd Rauf, A. A, Ismail, M.A., Balakrishnan, V. & Haruna, K. (2018). Dyslexic pupils: The need for parents awareness. *Journal of Education and Human Development*, 7(2), 91-99. <https://doi.org/10.15640/jehd.v7n2a12>.
- Ahmed Ansari, S., Memon, F., & Khan, I. (2020). Exploring the level of awareness of dyslexia among private school teachers. *International Journal of English Research*, 5(6), 27-31.
- Bakar, N. F. & Abd Rahman, M.J. (2018). Prevalence Murid Berisiko Disleksia Dalam Kalangan Kanak-Kanak Prasekolah. *Prosiding Seminar Kebangsaan Majlis Dekan Pendidikan Universiti Awam*.

- Cabbage, K.L., Farquharson, K., Iuzzini-Seigel, J., Zuk, J., Hogan, T.P. (2018). Exploring the overlap between dyslexia and speech sound production deficits. *Language Speech Hearing Service in School*, 49(4), 774-786.
- Castles, A., Rastle, K., & Nation, K. (2018). Ending the reading wars: Reading acquisition from novice to expert. *Psychological Science in the Public Interest*, 19(1), 5-51. <https://doi.org/10.1177/1529100618772271>.
- Chordia, S. L., Thandapani, K. & Arunagirinathan, A. (2020). Pupils 'At Risk' of Developing Specific Learning Disability in Primary Schools. *Indian J Pediatr*, 87, 94-98 <https://doi.org/10.1007/s12098-019-03130-z>.
- Costantini, A., Ceschi, A., & Sartori, R. (2020). Psychosocial Interventions for the Enhancement of Psychological Resources among Dyslexic Adults: A Systematic Review. *Sustainability*, 12(19). <https://doi.org/10.3390/su12197994>.
- D'Mello, A. M. & Gabrieli, J. D. E., (2018). Cognitive Neuroscience of Dyslexia. *Language, Speech, and Hearing Services in School*, 49(4), 789-809. https://doi.org/10.1044/2018_LSHSS-DYSLC-18-0020.
- Del Tufo, S. N., & Earle, F. S. (2020). Skill Profiles of College Pupils With a History of Developmental Language Disorder and Developmental Dyslexia. *Journal of Learning Disabilities*, 53(3), 228-240. <https://doi.org/10.1177/0022219420904348>.
- Diagnostic And Statistical Manual of Mental Disorders. (2013) *Diagnostic And Statistical Manual of Mental Disorders*, 5th ed. American Psychiatric Association Publishing.
- Fletcher, J. M., & Grigorenko, E. L. (2017). Neuropsychology of learning disabilities: The past and the future. *Journal of the International Neuropsychological Society*, 23(9-10), 930-940. <https://doi.org/10.1017/S135561771700104>.
- Gray, S., B. Fox, A., Green, S., Alt, M, P. Hogan, T., Petscher, Y., & Cowan, N., (2019). Working Memory Profiles of Pupils With Dyslexia, Developmental Language Disorder, or Both. *Journal of Speech, Language, and Hearing Research*, 62, 1839-1858, https://doi.org/10.1044/2019_JSLHR-L-18-0148.
- Grigorenko, E. L., Compton, D. L., Fuchs, L. S., Wagner, R. K., Willcutt, E. G., & Fletcher, J. M. (2020). Understanding, educating, and supporting pupils with specific learning disabilities: 50 years of science and practice. *American Psychologist*, 75(1), 37-51. <https://doi.org/10.1037/amp0000452>.
- Hebert, M. M. Kearns D, Hayes J, B, Bazis P, & Cooper S. (2018) Why Pupils with Dyslexia Struggle With Writing and How to Help Them. *Language, Speech, and Hearing Services in School*, 49, 843-863, https://doi.org/10.1044/2018_LSHSS-DYSLC-18-0024.
- International Dyslexia Association (2019). Dyslexia Basics. *International Dyslexia Association*. <https://dyslexiaida.org/dyslexia-basics-2/>.
- International Dyslexia Association. (2017). Dyslexia in the classroom: What every teacher need to know. *International Dyslexia Association*. <https://dyslexiaida.org/wp-content/uploads/2015/01/DITC-Handbook.pdf>. Accessed 5 May 2021.
- Jincy, J., & Jose, P. S. H. (2021). Survey on Intervention & Diagnosis of Dyslexia, 2021 *International Conference on Advances in Electrical, Computing, Communication and Sustainable Technologies (ICAECT)*, 1-5, <https://doi.org/10.1109/ICAECT49130.2021.9392606>.
- Kalsoon, T., Mujahid, A. H., & Zulfqar, A. (2020). Dyslexia as a learning disability : Teachers' perceptions and practices at school level. *Bulletin of Education and Research*, 42(1), 155-166.
- Kannangara, C., Carson, J., Puttaraju, S., & Allen, R., (2018). Not All Those Who Wander are Lost: Examining the Character Strengths of Dyslexia. *Global Journal of Intellectual & Developmental Disabilities*, 4(5). Doi: 10.19080/GJIDD.2018.04.555648

- Kimura, K., Itokazu, M., & Otabe, N. (2021). Characteristic of The Joint Position Sense in Pupils with Developmental Dyslexia, *The Journal of Physical Therapy Science*, 33, 236-240.
- Knight, C. (2017). What is dyslexia? An exploration of the relationship between teachers' understandings of dyslexia and their training experiences, *Dyslexia*, 1-13, <https://doi.org/10.1002/dys.1593>.
- Kohli, A., Sharma, S., & K. Padhy, S. (2018). Specific Learning Disabilities: Issues that Remain Unanswered, *Indian Journal of Psychological Medicine*, 40(5).
- Laurence, P. G., Pinto, T. M., Fea, R. A. T., & Macedo, E. C. (2018). *Can a lexical decision task predict efficiency in the judgment of ambiguous sentences?* *Psicologia: Reflexao e Critica*.
- Leah, F. & Heads, R. (2018), Dyslexia as a multi-deficit disorder: Working memory and auditory temporal processing. *International Journal homepage: www.elsevier.com/locate/actpsy*.
- Lin, Y., Zhang, X., Huang, Q., Lv, L., Huang, A., Li, A., Wu, K., & Huang, Y., (2020). The prevalence of dyslexia in primary school pupils and their chinese literacy, *International Journal of Environmental Research and Public Health*, 17, 7140, <https://doi.org/10.3390/ijerph1719740>.
- Malaysian Dyslexia Association, What is Dyslexia?. <http://www.dyslexiamalaysia.org/en/dyslexia/what-is-dyslexia>
- Mayo Clinic (2017). Dyslexia-Symptoms and Causes. <https://www.mayoclinic.org/diseases-conditions/dyslexia/symptoms-causes/syc-20353552> (Last accessed on 2021 July).
- Meiri, R., Levinson, O., & Horowitz-Kraus, T. (2019). Altered Association Between Executive Functions and Reading and Math fluency tasks in pupils with reading difficulties compared with typical readers. *Dyslexia*, 1-17, <https://doi.org/10.1002/dys.1624>.
- Ministry of Education (2013). *Laporan Awal Pelan Pembangunan Pendidikan Malaysia 2013- 2025*. Kuala Lumpur. Ministry of Education Malaysia.
- Ministry of Education (2020). *Special Education Data 2020*. Ministry of Education Malaysia.
- Nalavany, B. A., Logan, J. M., & Carawan, L. W. (2017). The Relationship between emotional experience with dyslexia and work self-efficacy among adults with dyslexia. *Dyslexia*, 24(1), 17-32. <https://doi.org/10.1002/dys.1575>
- National Center for Education Statistics. (2018). Pupils and youth with disabilities. http://nces.ed.gov/pro-grams/coe/indicator_cgg.asp
- National Institute of Neurological Disorders and Stroke. (2019). Dyslexia Information Page. <https://www.ninds.nih.gov/Disorders/All-Disorders/Dyslexia-Information-Page>
- Ogunsola, B. A. (2018). Teacher's Qualification and Dyslexia Identification in Primary Schools in Oyo State, Nigeria. *Africa Education Review*, 15(4), 36-66.
- Parveen, N., & Baig, M.M. (2021). Diagnosis and identification of Dyslexia. *International Journal of Reflective in Social Sciences*, 4(1), 1-3.
- Perry, C., Zorzi, M. & Ziegler, J. C., (2019). Understanding Dyslexia through personalized large-scale computational models. *Psychol. Sci*, 30 (2019). <https://doi.org/10.1177/0956797618823540>.
- Pillai, S., (2021, Jan 10). Don't leave dyslexic pupils behind. *The Star* <https://www.thestar.com.my/news/education/2021/01/10/dont-leave-dyslexic-pupils-behind>
- Piotrowska, B., & Willis, A. (2019). Beyond the global motion deficit hypothesis of developmental dyslexia: A cross-sectional study of visual, cognitive, and socio-

- economic factors influencing reading ability in pupils. *Vision Research*, 159, 48-60. <https://doi.org/10.1016/j.visres.2019.03.007>.
- Ramli, S., Idris, I. B., Omar, K., Harun, D., Surat, S., Mohamad Yusop, Y., & Nor Zainudin, Z., (2019). Preschool teachers' knowledge of dyslexia: A Malaysian experience. *Malaysian Journal of Medicine and Health Sciences*, 134-139.
- Reis, A., Araújo, S., Morais, I.S., & Faisca, L. (2020). Reading and reading-related skills in adults with dyslexia from different orthographic systems: a review and meta-analysis. *Ann. of Dyslexia*, 339-368. <https://doi.org/10.1007/s11881-020-00205-x>.
- Sayeski, K. (2019). Dyslexia. *Teaching Exceptional Pupils*, 51(3), 170-171. <https://doi.org/10.1177/0040059918820436>.
- Skeide, M.A., Evans, T.M., Mei, E.Z., Abrams, D.A., Menon, V. (2018). Neural signatures of co-occurring reading and mathematical difficulties. *Dev. Sci*, 21, e12680 <https://doi.org/10.1111/desc.12680>.
- Snowling, M. J. (2019). *Dyslexia: A Very Short Introduction*. Oxford, UK: Oxford University Press.
- Snowling, M. J., Hayiou-Thomas, M. E., Nash, H. M., & Hulme, C. (2019). Dyslexia and developmental language disorder: Comorbid disorders with distinct effects on reading comprehension. *Journal of Child Psychology and Psychiatry*, 61(6), 672-680, <https://doi.org/10.1111/jcpp.13140>
- Snowling, M. J., Hulme, C., & Nation, K. (2020). Defining And Understanding Dyslexia: Past, Present And Future. *Oxford Review of Education*, 46(4), 501-513, <https://doi.org/10.1080/03054985.2020.1765756>.
- Stein, J. (2018). What is Developmental Dyslexia?. *Brain Sci*, 8(2), 26 <https://doi.org/10.3390/brainsci8020026>.
- Subramaniam, V., & Kunasegran K. (2019). Visual Dyslexia Symptoms VS. The Level of Learning of Dyslexic Pupils. *Infrastructure e University Kuala Lumpur Research Journal*, 7(2)
- Sundus Khaliq, Iram Ramzan, Javed (2017). Study about Awareness of Dyslexia among Elementary School Teachers Regarding Pakistan Elementary Educational Institutes. *Int Journal of Research in Business Studies and Management*, 4(5), 1-23.
- Vidyasagar, T. R. (2019). Visual attention and neural oscillations in reading and dyslexia: Are they possible targets for remediation?. *Neuropsychologia*, 130, 59-65. <https://doi.org/10.1016/j.neuropsychologia.2019.02.009>
- Wan Norudin, S.W.A, & Baba, S. (2018). Literacy Difficulties of Dyslexic Pupils in Bahasa Malaysia: A Case Study in Kelantan. *INSANIAH: International Online Journal of Language, Communication, and Humanities*, 1(2) 9-24.
- Williams, J. P., Kao, J. C., Poa, L. S., Ordynans, J. G., Cheng, R., & Debonis, D. (2016). Close analysis of texts with structure (CATS): An intervention to teach reading comprehension to at-risk second graders. *Journal of Educational Psychology*. <https://doi.org/10.1037/edu0000117>.
- Yahya, A.Y., Noor Aini Ahmad & Yoong, S.M. (2019). A new dimensional in teaching non-verbal pupils with learning disabilities. *International Journal of Academic Research in Business and Social Sciences*, 8(12), 2099-2108. <https://doi.org/10.6007/IJARPED/v9-12/7420>.