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Difficulties in Cognitive Development with Specific Learning Disabilities Among Indian Students: A Review Studies

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Abstract:

This present review study seeks to provide an in-depth analysis of the “difficulties in cognitive development with specific learning disabilities among Indian students”. Learning Disabilities are often called “Hidden Disabilities”, because the person may appear bright and capable, leading to misunderstanding about their struggle. Actually, Learning Disabilities (LD) based on various type of neurological processing related problems. LD can impact on learning related some basic skills such as speaking, reading, writing abilities, mathematical calculation, speech’s rhythmic flow (Dysphemia), comprehending etc. Children with learning disabilities (LD) often experience more pronounced cognitive challenges. If left unrecognized and untreated, these difficulties tend to intensify over time, potentially hindering the child’s cognitive, social, and emotional development and impacting their overall growth. The methods for this review studies include a range of secondary sources such as books, research papers, journal articles, research reports, and online reference materials like Wikipedia etc. The main objective of this review studies is to identify the different types of learning disabilities (LD) in India and explore the difficulties in cognitive development with specific learning disabilities among Indian students. This review studies also aims to inform of all parents, educators, and school counsellors about the profound impact learning disabilities can have on a child’s cognitive development, highlighting the importance of early recognition and supportive interventions. The findings reveal that children with diverse learning disabilities—including dyslexia, dyscalculia, dyspraxia, dysphasia, and aphasia—exhibit marked cognitive delays across multiple domains. In this study, children with dyslexia faced pronounced difficulties in phonological processing and working memory, which affected their reading and language skills. Those with dyscalculia demonstrated significant impairments in numerical processing and spatial reasoning, limiting their ability to perform even basic arithmetic tasks effectively.

Keywords: Learning Disabilities, Cognitive Development, Dysphemia, Dysphasia, Aphasia

INTRODUCTION:

In psychology ‘Disability’ is often defined as a condition where children have particular types of physical or mental permanent impairment that bounded themselves in showing their full potentiality or productivity. That have some specific symptoms by which people can easily able to identify them as a physically or mentally disabled. But there are some other types of disability where it is very difficult to identify ‘the such children’ who have that kinds of disability by only the physical or mental symptoms. We are here talking about the disability which is known as ‘Learning Disability’, when people may easily overlook the problems as it is very much deviated condition from the others.

Learning Disability refers to the challenges that occur because the nervous system has difficulty processing information (Sharma, 2025). It is a kind of disorder that affects the overall cognitive functioning system, including the ability to store, process, and express different types of information. Learning Disability is not a single condition; it can take many forms, such as Dyslexia, Dysgraphia, Dysphemia, Dyspraxia, Dyscalculia, Dysphasia, Aphasia, and Alexia (Pandey & Shukla, 2024). Meanwhile, cognitive development is an ongoing process that improves a person’s thinking skills, problem-solving abilities, and capacity to learn new things over time (Radhika & Kiran, 2017). Moreover, Learning Disability can have a negative effect on various cognitive functions of students, such as reading, writing, performing mathematical calculations, concentrating, perceiving, remembering, general awareness and memorization (Malik, 2019). Although the term “learning disabilities” is often used broadly, it actually covers a diverse range of distinct conditions, each involving specific types of cognitive and psychological difficulties in learning (Reiff et al.,1993). The lack of awareness and recognition of specific learning disabilities, such as dyslexia and dyscalculia, can result in students being unfairly perceived as “lazy” or “unproductive” compared to their neurotypical peers. In India, the limited recognition of learning disabilities like dyslexia and dyscalculia creates barriers that prevent affected students from fully participating and engaging in classroom activities. Deu to the Specific Learning Disabilities and autism often present with similar symptoms and recurring behavioural patterns and both can significantly influence an individual’s social interactions, cognitive development, and overall quality of life, autism is frequently categorized alongside other learning disabilities, despite being a distinct condition (Panicker, 2021).

OBJECTIVES:

1. To identify the different types of learning disabilities (LD) in the children in India.
2. To explore the difficulties in cognitive development with specific learning disabilities among Indian students.

METHODOLOGY OF THE STUDY:

In this review study the researchers used various types of secondary sources for gathering relevant qualitative data or information pertaining to the above objectives. These various types of

secondary sources are books, research papers, thesis, articles, research reports, Wikipedia etc.

CRITICAL SYNTHESIS OF PRIOR REVIEW:

➤ **Conceptualization of SLD in Indian context:**

Extensive research has been conducted regarding Specific Learning Disabilities (SLD); an analysis of this existing body of research reveals that, within the Indian context, the conceptual framework surrounding these disabilities has not yet become fully robust. Most international studies interpret Specific Learning Disabilities as a neurodevelopmental condition (Francis-Williams, 2014; Taboada et al., 2020). As evidence of this, the difficulties observed in areas such as reading, writing or mathematics are typically categorized under the umbrella of Specific Learning Disabilities (Grigorenko et al., 2020). In the Indian context, SLD was officially notified as a recognized disability in 2016. However, various Indian studies often tend to limit the definition of Specific Learning Disabilities to just a few specific domains. There have been only limited efforts to discuss the broader framework encompassing these disabilities. Furthermore, various studies suggest that these Specific Learning Disabilities may, to some extent, contribute to the conscious enhancement of a child's character strengths (Niemic et al., 2017). Till date, it has not been possible to significantly raise awareness regarding the broader framework of Specific Learning Disabilities within the Indian context. A review of various studies indicates that these learning disabilities tend to exert a somewhat more pronounced influence on Indian children (Sahoo et al., 2015). This variation points to a specific issue: the fact that, within the Indian context, complete conceptual clarity regarding these learning disabilities has not yet been established.

➤ **Core cognitive deficit identified:**

A close review of previous studies on specific learning disabilities among Indian students shows that the difficulties are not limited to their academic abilities alone, but rather to their academic performance (Al-Zoubi & Younes, 2015; Hau & Salili, 1996). The findings suggest that there are a wide range of working memory problems among students. One of the most common issues are that students are unable to read and comprehend, and in many cases, they also have difficulty in solving mathematical problems (Phonapichat et al., 2014). They also have difficulty with some of these working memory tasks. The review also shows that there is a deficit in phonological processing, which is particularly evident in reading disabilities such as dyslexia (Snowling, 1998). Many Indian studies also show that there is limited attention to relevant topics such as multilingual learning environments (Achugar, 2009). These difficulties can lead to difficulties in performing various tasks, such as maintaining attention or adapting to new learning situations. Overall, it can be seen that cognitive deficits are particularly associated with specific learning disabilities and that they need to be thoroughly reviewed or given importance.

➤ **Neuropsychological and neurological evidence:**

A thorough review of previous studies shows that students' specific learning disabilities not only cause difficulties in their studies, but are also closely related to the inherent differences in the brains of students (Gilger & Kaplan, 2001). It also shows that inefficient communication between different brain regions can cause problems in information integration, which required coordination between different processes to resolve, but these have not been explored in depth in the Indian context. Also, the concept of neuroplasticity has been discussing very little in previous reviews, so further research is needed to examine that aspects thoroughly (Kaczmarek, 2020). Therefore, it can be said that especially in the Indian context, such interactions between brain, culture and environment are often ignored, which further aggravates SLD in students.

Discussion pertaining to the Objectives- 1:

In India likewise the other countries of the world, there are different types of learning disabilities. Their effects on individuals vary from time to time.

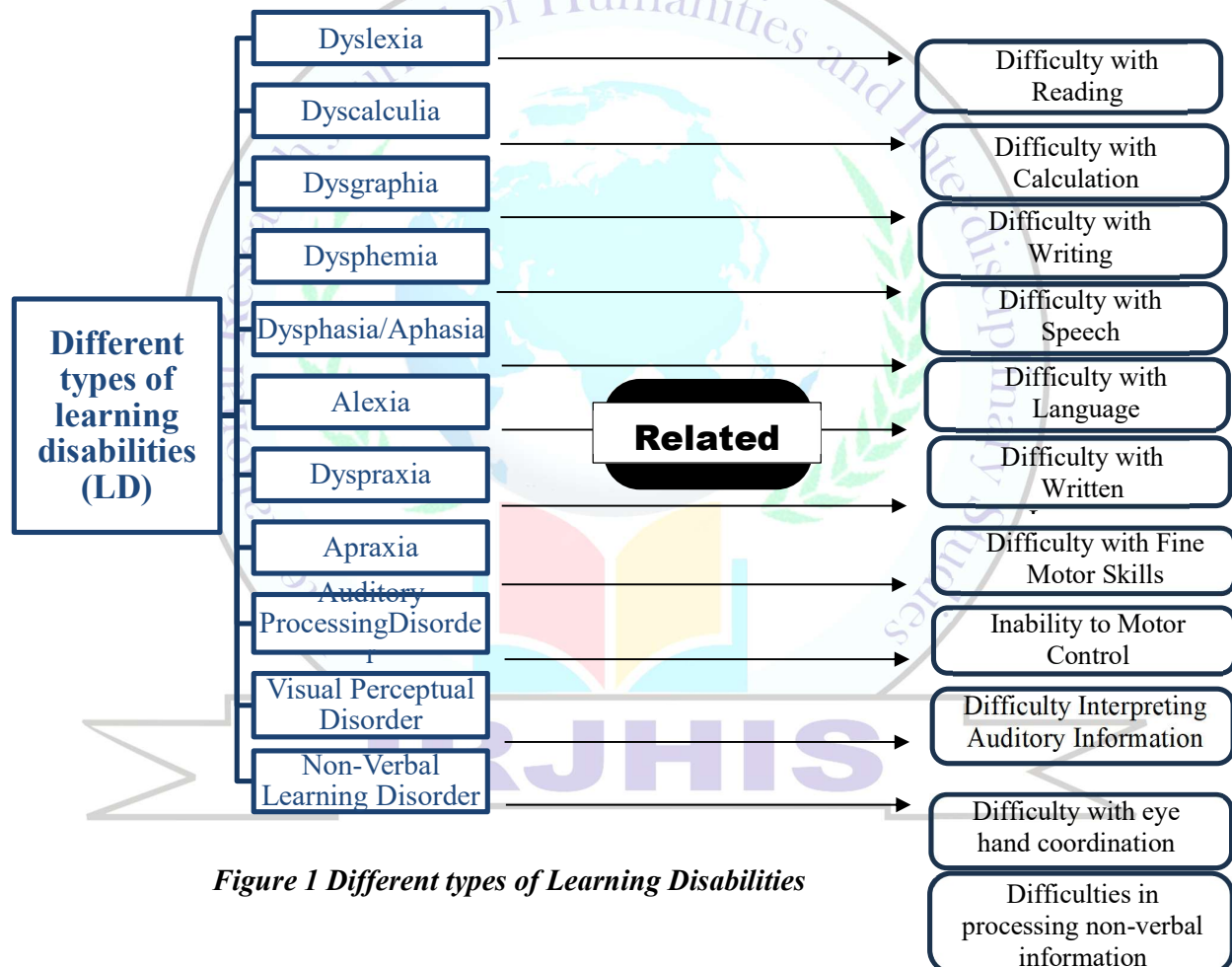


Figure 1 Different types of Learning Disabilities

- Dyslexia:** Dyslexia is an important disability among the learning disabilities. It is that kind of disability where so many problems are arisen, such as- words related difficulty, alphabets processing related difficulty, numbers related difficulty. Due to these reasons, reading related troubles are occurred more and more (Sharma, 2025). This reading related disorder that

interferes with a student's ability to decode words and identify written symbols accurately (Jadhav, 2022). Dyslexia commonly causes difficulties in understanding written text, reading smoothly and accurately, spelling words correctly (Lyon, 2003) etc. As an example: Children often don't able to identify similar types of letters or words, similar patterns of letters, sequence of a word. Such as: they are very much confused between p & q; M & W; b & d; or in the case of 'felt' & 'left'. They also have the problems like poor spelling condition, difficulties in rhyming and phonics.

2) **Dyscalculia:** Through these disabilities, students have faced so many difficulties like lack of numerical understanding, lack of spatial related awareness, mathematic reasoning related calculation, delay in number sense developing process (Kumar, 2024). Near about 3-7 percent of school age children suffer from this dyscalculia disorder (Kunwar, 2022). Dyscalculia is a mathematical calculation related difficulty. The term Dyscalculia comes from two Greek and Latin words, which are 'dys' and 'calculia'. Here 'dys' (Greek Word) means 'badly' and 'calculia' (Latin Word) comes from 'calulare', means 'making calculation'. So, the complete meaning of Dyscalculia is "*Badly calculating or having trouble with making calculation*" (Wikipedia Contributors, 2026). Some common symptoms of dyscalculia are:

- ❖ Math anxiety
- ❖ Counting related trouble
- ❖ Difficulty to tell time using an analog clock (A traditional timekeeping device).
- ❖ Troubles with composing and discomposing mathematical numbers
- ❖ Loses math related symbols, such as +, -, ×, ÷, >, <, ∑ (Sigma), π (Pi), ∞ (Infinity) etc. (Fischer et al., 2008).

Therefore, according to the above discussion it may be denoted that in this condition children often suffer from the trouble in counting; difficulties in recognising the shape, size or colour; trouble in writing the numbers from word to numbers (six – 6); trouble in understanding the mathematical signs etc.

3) **Dysgraphia:** This disability specifically impacts on students writing skills. A writing disorder that affects a student's ability to form letters correctly, organize ideas effectively on paper, and produce written work that is clear, readable, and logically structured (Jadhav, 2022). The term of Dysgraphia comes from two Greek words, which are 'dys' and 'graphia'. Here 'dys' means 'impaired' and 'graphia' means 'writing by hand' (Wikipedia Contributors, 2026). Some major symptoms related to dysgraphia mentioned below:

- ✓ Difficulties with handwriting.
- ✓ Major difficulties for putting thoughts on paper.

✓ Trouble with holding and manage a writing tool.

✓ Difficulty with drawing a straight line (Pandey & Shukla, 2024).

4) **Dysphemia:** This disability related to complex speech disorder. Which interrupt to the “*speech’s rhythmic flow or normal flow of speech*”. This disorder not caused by an any single factor. Its combination of various types of genetic factors, environmental stressors, neurological troubles in the brain structures, emotional stressors etc (Sharma, 2025). Some common symptoms related to dysphemia mentioned below one by one:

- Repetitions of syllables, sounds, words (**Example: cat-cat-cat**)
- Trouble with prolongations of sound within some words (**Example: “ssssss-School”**)
- Difficulty creates with silent blocks or broken words, where zero sounds is produced or word is blocked or specifically stopped in mid-sentence (Wikipedia Contributors, 2026).

5) **Dysphasia & Aphasia:** These two things are not a same or similar concept. Here very little dissimilarities present between these two disabilities. Where ‘Aphasia’ means “**Total Loss or Total Impairment**”, on the other hand ‘Dysphasia’ means “**Partial Loss or Partial Impairment**”. Both these concepts refer to individual struggles or difficulties with the language; including spoken, reading, Understanding and written related communication (with these both disabilities related to inability of effective communication). Aphasia is a condition that affects a person’s ability to understand or produce language, typically resulting from damage to specific areas of the brain. Although aphasia is traditionally characterized by language impairments, growing evidence shows that many individuals with aphasia also experience non-linguistic cognitive difficulties, including challenges with attention, memory, executive functioning, and learning (Wikipedia Contributors, 2026). Some researchers suggest that language impairments in individuals with aphasia may stem primarily from broader cognitive deficits, with limitations in attention and working memory playing a central role in disrupting language processing and communication (Hula & McNeil, 2008). Dysphasia can occur alongside many different neurological conditions, such as head injuries, tumours, strokes, and infections (Albert et al., 2013). Some common symptoms related to “Dysphasia & Aphasia” clearly mentioned below one by one:

- Inability with read & write
- Limited verbal output
- Speaking with incomplete sentences

- Inability to pronounce and comprehend language
- Sometimes are not recognizing the exact meaning behind the words (Wikipedia Contributors, 2026).

6) **Alexia:** Alexia is also called “Word Blindness or Agnosic Alexia” (Wikipedia Contributors, 2026). This disorder is a neurological disorder. These disorder typically a result of any critical trauma, cerebral vascular accidents, brain damage or injury (Sharma, 2025). So, result for this disorder is difficulty to read and comprehend any written language. Alexia disorder is usually merged with other comprehension deficits. These other *comprehension deficits* are clearly mentioned below:

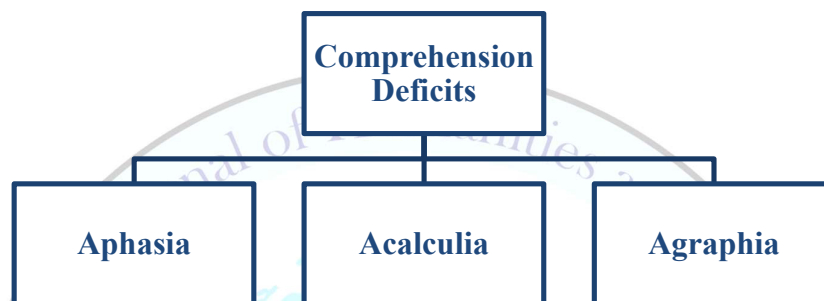
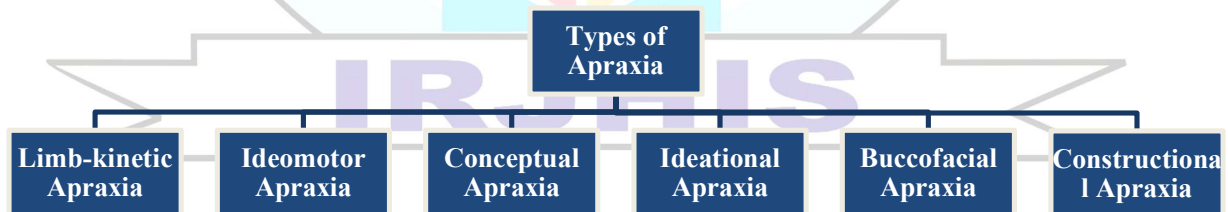


Figure 2 Various types of comprehension deficits

- ❖ **Aphasia:** Aphasia, sometimes referred to as dysphasia, is a disorder that affects a person’s ability to understand or produce language, usually due to damage in specific areas of the brain (Damasio, 1992). The primary causes of aphasia are stroke and traumatic brain injury. While exact prevalence rates are difficult to establish, it is estimated that stroke-related aphasia affects approximately 0.1–0.4% of the population in developed nations (Wikipedia Contributors, 2026). Aphasia can also impact visual forms of language, including sign language (Damasio,1992).
- ❖ **Acalculia:** The term “acalculia” is derived from the Greek prefix *a-* meaning “not” and the Latin word *calcolare*, meaning “to count” (Wikipedia Contributors 2026). Acalculia is a trouble with performing simple math related tasks, such as addition (+), subtraction (-), multiplication (* or ×), division (÷), percentage (%) etc (Benn et al., (2023).
- ❖ **Agraphia:** Agraphia is a neurological condition acquired later in life that impairs a person’s ability to express thoughts through writing. This disruption can arise from motor control difficulties, brain lesions, or other neurological dysfunctions that interfere with the complex coordination required for written communication (De Smet et al., 2011). Agraphia can be classified into two broad types: central and peripheral. Central agraphias primarily affect the brain’s language-processing

regions, leading to challenges with spelling, constructing written sentences, or generating spontaneous written communication, and are often seen alongside other language impairments. In contrast, peripheral agraphias mainly involve motor and visuospatial systems, disrupting the physical act of writing itself. These forms typically stem from damage to motor-related brain areas, resulting in difficulty coordinating the movements required for writing, even when language knowledge remains intact (Sinanović et al., 2011).

- 7) **Dyspraxia:** It is a motor skill related disorder, that critically impacts on human fine motor skills and coordination. Dyspraxia also known as “Developmental Coordination Disorder or DCD”. Many people with this disorder have more troubles in their daily life situation, like handwriting, catching objects, tying shoelaces, riding bike, any performing tasks that require coordination (Sharma, 2025).
- 8) **Apraxia:** The concept of apraxia was introduced by “Hugo Liepmann”, a leading figure in cognitive neurology, who recognized the disorder while analysing the hand movements of a patient following a stroke (Park, 2017). Apraxia is defined as a disorder affecting higher-level motor control (Goldenberg, 2013). Apraxia is commonly described as an inability to execute previously learned, purposeful movements on command, even though strength and coordination are preserved (Gross & Grossman, 2008). Apraxia can arise across a range of neurological conditions, particularly following stroke and in progressive brain disorders such as Alzheimer's disease, Parkinson's disease, and atypical parkinsonian syndromes. Notable examples of the latter include Corticobasal syndrome (formerly referred to as corticobasal degeneration) and Progressive supranuclear palsy. Apraxia is commonly divided into several subtypes, including ideomotor, ideational, and limb-kinetic forms etc, based on the nature of the movement impairment (Park, 2017).



- **Limb-kinetic Apraxia:** Limb-kinetic apraxia is a specific condition that impairs the precise control and coordination of hand and finger movements, particularly during skilled actions (Leiguarda et al., (2003). Limb-kinetic apraxia reflects impairment at the lowest level of the motor control system, primarily affecting the execution of movements. It was initially described more broadly as “frontal apraxia” to denote difficulties in using objects appropriately after damage to the frontal lobes. This

condition is most commonly associated with lesions in regions such as the contralateral inferior frontal gyrus (including the ventral premotor cortex), the primary motor cortex, and the basal ganglia (Rounis & Binkofski, 2023).

- **Ideomotor Apraxia:** Research on ideomotor apraxia (IMA) dates back to the early decades of the 20th century, when clinicians first began documenting its clinical features. Initial studies largely centered on individuals who had sustained brain damage following a stroke. Such patients commonly exhibit marked difficulty in producing meaningful gestures, struggle to imitate or simulate the use of everyday tools, and often present with a broader range of motor and cognitive deficits. Ideomotor apraxia (IMA) most often arises following damage to the left cerebral hemisphere, particularly in individuals who have experienced a stroke. Beyond stroke-related cases, it is also associated with several neurodegenerative conditions, including corticobasal degeneration (CBD), Parkinson's disease (PD), Alzheimer's disease (AD), progressive supranuclear palsy (PSP), and Huntington's disease (HD), where it contributes to impairments in purposeful movement despite preserved basic motor function (Wheaton & Hallett, 2007). Ideomotor apraxia is characterized by a disruption in the internal representations that guide skilled actions, leading to an impaired ability to properly configure and direct the arm during both object-related (transitive) and symbolic or communicative (intransitive) movements in space (Heilman, 2010).
- **Conceptual Apraxia:** Conceptual apraxia characterized by impaired action semantics and reduced mechanical knowledge may represent an early indicator of this disease (Schwartz et al., 2000). Ideational (or conceptual) apraxia refers to a disruption in higher-level motor planning, where an individual struggles to mentally represent a sequence of actions and organize them into a coherent goal-directed task. Rather than a problem with basic movement, the difficulty lies in understanding what needs to be done and in what order. As a result, multistep activities become disorganized or incorrectly sequenced. Individuals may select inappropriate actions or misapply tools for instance, attempting steps out of order, such as preparing food in an illogical sequence or dressing in a mismatched progression. This condition reflects a breakdown in accessing or executing learned motor programs, leading to an inability to intentionally carry out familiar tasks even when the required objects are available (Wikipedia Contributors, 2025).
- **Ideational Apraxia:** Ideational apraxia is an uncommon neurobehavioral condition typically associated with damage to the posterior regions of the language-dominant cerebral hemisphere. Its defining characteristic is a disruption in the ability to

conceptualize and execute a coherent sequence of goal-directed actions, especially those involving the coordinated use of multiple objects in a logically ordered manner. Individuals with this disorder may understand the purpose of a task but fail to organize or carry out the necessary steps to complete it effectively. Importantly, this deficit cannot be attributed to more basic impairments such as muscle weakness (paresis), language dysfunction (aphasia), deficits in visual object recognition, global cognitive decline, or any combination of these factors. Instead, ideational apraxia reflects a breakdown at a higher level of motor planning specifically in the integration of intention, object knowledge, and sequential action marking it as a disturbance of complex motor cognition rather than simple motor execution (Poeck, 1983).

- **Buccofacial Apraxia:** Buccofacial or Orofacial apraxia one of the most frequently observed forms of apraxia is characterized by a marked difficulty in performing intentional movements of the face and mouth when asked, despite having the physical ability to do so. The core issue is not muscle weakness but an impaired capacity to translate a verbal command into the appropriate motor action. As a result, individuals may be unable to carry out simple instructed gestures such as licking their lips, winking, or whistling. This deficit reflects a disruption in the voluntary control of coordinated movements involving the tongue, lips, cheeks, pharynx, and larynx, particularly when these actions must be performed on demand rather than spontaneously (Wikipedia Contributors, 2025).
- **Constructional Apraxia:** Constructional apraxia is a neurological impairment characterized by a selective difficulty in performing constructional tasks, such as assembling, arranging, or drawing, despite preserved intention and comprehension. Individuals affected by this condition typically understand what is required, are motivated to carry out the task, and possess adequate motor strength and coordination. However, they are unable to successfully translate this understanding into organized spatial output, reflecting a disruption in higher-order visuospatial and planning processes rather than a primary motor or sensory deficit (Wikipedia Contributors, 2025). A central impairment seen in individuals with constructional apraxia is a marked difficulty in accurately reproducing or sketching visual forms. This problem goes beyond simple drawing ability, reflecting a breakdown in organizing spatial relationships and assembling parts into a coherent whole. Notably, the nature of these errors varies depending on the underlying condition: those with left hemisphere damage often produce drawings that are fragmented or lack detail, individuals with right hemisphere lesions tend to show distortions in spatial arrangement and overall structure,

while patients with Alzheimer's disease may exhibit a more generalized decline, combining spatial disorganization with simplification and omission of features (Guérin & Belleville, 1999).

9) Auditory Processing Disorder: Auditory processing disorder (APD) refers to a complex and not yet fully understood hearing-related condition in which individuals have difficulty interpreting auditory information, particularly speech, especially in noisy or otherwise demanding listening environments (Moore, 2007). "Auditory Processing Disorder" (APD), also known as "Central Auditory Processing Disorder," is listed in the 10th revision of the International Classification of Diseases as code H93.25 and is also included in the beta version of the 11th revision. APD can have significant negative effects on an individual, including reduced self-esteem, anxiety, and depression, and symptoms may persist into adulthood. These difficulties can also interfere with learning as well as with communication and social, emotional, and academic or occupational functioning (Iliadou et al., 2017).

10) Visual Perceptual Disorder: Individuals with visual perceptual or visual-motor deficits often experience reduced coordination between visual input and physical movement, which can affect a range of everyday and academic tasks. They may have difficulty with eye hand coordination, frequently lose their place while reading, and struggle with fine motor activities such as writing with pencils, using scissors, or applying glue. During reading or task completion, they may confuse letters or symbols that appear similar, making it harder to read accurately and fluently. They can also find it challenging to move through and interpret their surroundings due to difficulties in processing spatial and visual information. In some cases, atypical eye movement patterns may be observed while focusing or tracking visual details. These challenges can limit an individual's ability to efficiently interpret visual information, as well as affect skills such as drawing, copying from a model or board, and understanding content that is primarily presented through visual means (Muktamath et al., 2022).

11) Non-Verbal Learning Disorder: Non-verbal Learning Disorder (NLD) is classified as a neurodevelopmental condition in international classification systems. It is characterized by difficulties in processing non-verbal information, which can affect areas such as visual-spatial understanding, social cues, and problem-solving. Individuals with NLD often experience particular challenges in mathematics, especially when tasks require interpreting patterns, spatial relationships, or visual information rather than verbal instructions (Soltani et al., 2020). Non-verbal Learning Disorder (NLD) is a condition marked by distinct difficulties in motor coordination, visual-spatial processing, and social interaction, even though individuals typically demonstrate average or above-average intelligence and age-appropriate language development (Demehri et al., 2020).

Discussion pertaining to the Objectives- 2:

Cognitive development means ability to abstract thinking, problem solving with logical way, understanding of real situations etc. But when different types of learning disability impact on the process of cognitive development, then the entire cognitive development process or structure faces with major problems or difficulties. These issues are discussed below in details -

- ❖ **Metacognition:** Hallahan and colleagues (1919) said that, Metacognition is a “Thinking about Thinking” (Pandey & Shukla, 2024). Metacognition much more important for understanding own thinking strategies, learning process, evaluate one’s own behaviour etc (Smith et al., 2004). Others research has consistently shown that students with learning difficulties tend to have much weaker for awareness and control of their own thinking processes compared to classmates who have do not experience such critical challenges or Learning Disabilities (Padeliadu et al., 2002).
- ❖ **Memory & Processing:** Memory skills play a crucial role in academic learning (Liddell & Rasmussen 2005). Problems with memory, especially working memory, often cause difficulties for students in the classroom. Mastery of reading and math skills is strongly influenced by working memory capacity, often more so than by short-term memory alone. Working memory plays a critical role in both recognizing words and understanding written text (Ashbaker & Swanson, 1996). Extensive research shows that children with various learning disabilities often struggle with working memory, particularly in areas involving verbal processing and executive functions (Swanson & Berninger, 1996).
- ❖ **Language Learning:** Students with learning disabilities frequently face challenges in both the structural (mechanical) and social aspects of language (Hallahan & Kauffman 2003). Difficulties in language development are particularly evident in oral communication and the ability to understand spoken information. These two domains are fundamental to effective communication; consequently, impairments in one or both can profoundly influence a child with a learning disability, affecting not only their overall quality of life but also their academic progress and participation in education (Smith, 2004).
- ❖ **Phonological Processing & Literacy:** Phonological processing and literacy refer to the cognitive abilities involved in recognizing, analyzing, and manipulating the sound structure of language, and using this knowledge to support reading and writing skills. Dyslexia is a frequently occurring learning disorder that affects reading ability, primarily due to difficulties in linking spoken sounds with their corresponding written letters. This impairment interferes with the decoding process, resulting in slower reading and reduced understanding of written material.

- ❖ **Executive functioning challenges:** Individuals frequently experience difficulties with executive functioning skills, including planning and organizing tasks, developing effective strategies, managing time efficiently, and maintaining attention to detail.
- ❖ **Abstract Thinking:** Abstract Thinking refers to the cognitive ability to understand, analyze, and reason about concepts that are not directly tied to concrete or immediate experiences. Although children with specific learning disorders (SLDs) generally follow a typical trajectory of overall cognitive development, they may rely more heavily on concrete modes of thinking than their peers. This difference becomes more apparent when they are faced with tasks that demand abstract reasoning, complex linguistic interpretation, or multi-step logical processing, where they may find it harder to move beyond literal meanings and flexible conceptual thinking.
- ❖ **Difficulty to attention:** Children with learning disabilities are often described as having difficulty in sustaining attention. In many cases, their challenges with maintaining focus can be significant to the extent that they may receive an additional diagnosis of Attention-Deficit/Hyperactivity Disorder (Pandey & Shukla, 2024). Various types of Research evinced that children with learning disabilities often have attention problems (Kotkin, Forness & Kavale 2001). A significant number of learners with learning disabilities (LD), who experience challenges related to processing and interpreting sensory information (Lerner, 2003).
- ❖ **Academic Achievement:** Extensive research indicates that children and adolescents with learning disabilities (LD) often experience substantial challenges in retaining both academic and everyday information. These difficulties can affect their ability to remember school-related content, such as lessons and multiplication tables, as well as routine details like homework tasks, instructions, appointments, and even simple information such as phone numbers. Low academic performance resulting from weak working memory. A growing body of research suggests that students with learning disabilities (LD) tend to exhibit more pronounced impairments in various aspects of memory compared to their peers without LD, while their long-term memory abilities are often relatively preserved (Pandey & Shukla, 2024).

Findings of this Review Study:

- Key findings related to objective number-1 reveal that, this study found that learning disabilities affect various types of functioning in students. These include writing, reading, mathematics, speech, language, perception, motor coordination, and social interaction. The major learning disabilities discussed in this study include Dyslexia, Dyscalculia, Dysgraphia, Dysphemia, Dysphasia, Aphasia, Alexia, Dyspraxia, Apraxia, Auditory Processing Disorder, Visual Perceptual Disorder, and Non-verbal Learning Disorder. Among these learning disabilities, dyslexia mainly creates difficulties in reading, spelling, and word recognition,

whereas dyscalculia causes various problems in understanding mathematical concepts and performing calculations. Dysgraphia and agraphia significantly hinder handwriting and written expression. Speech and language disorders such as dysphemia, dysphasia, aphasia, and alexia negatively affect communication, language comprehension, and verbal fluency. Motor-related disorders such as dyspraxia and apraxia impair body coordination, movement, and the ability to perform purposeful tasks. This study also revealed that many learning disabilities are neurological in origin and are closely related to brain dysfunction, injury, or developmental issues. Auditory and visual perceptual disorders reduce students' ability to process sensory information effectively, while non-verbal learning disorder creates significant difficulties in visual-spatial skills, social understanding, and problem-solving despite adequate verbal abilities. Furthermore, learning disabilities not only affect academic performance but also negatively impact emotional, psychological, and social well-being. As a result, anxiety, low self-esteem, frustration, and social problems may develop. If learning disabilities are identified at an early stage and supported through individualized intervention, inclusive education, and specialized assistance, the academic and personal development of students with learning disabilities can be greatly improved.

- The key finding corresponding to Objective No. 2 reveals that, the findings show that learning disabilities significantly affect various aspects of cognitive development, including thinking, memory, language, attention, and academic performance. Although children with learning disabilities often have average intelligence, difficulties in specific cognitive processes create barriers to effective learning. Students with learning disabilities commonly experience weak metacognitive skills, making it difficult for them to monitor, evaluate, and regulate their own learning strategies. They also face problems with working memory and information processing, which negatively influence reading, writing, comprehension, and mathematical problem-solving. Language development is another major area of difficulty, particularly in oral communication, vocabulary, and understanding spoken information. Similarly, deficits in phonological processing affect literacy skills such as reading fluency, spelling, decoding, and comprehension, especially among children with dyslexia. The findings further indicate that many learners with LD struggle with executive functioning skills, including planning, organization, time management, and maintaining attention. Difficulties in abstract thinking and higher-order reasoning are also evident, as these children tend to rely more on concrete thinking than conceptual understanding. Attention-related problems are highly common and may coexist with Attention-Deficit/Hyperactivity Disorder, affecting concentration and classroom participation. Collectively, these cognitive challenges contribute to poor academic achievement, difficulties in retaining information, and reduced classroom performance.

Overall, the findings suggest that learning disabilities have a broad impact on cognitive development and academic functioning. Early identification, individualized support, and appropriate educational interventions are essential to reduce these difficulties and support the holistic development of children with learning disabilities.

Conclusion:

Learning disabilities include a range of conditions that can often have a significant negative impact on students' information processing and cognitive development. However, when these challenges are identified at a very early stage and emphasis is placed on addressing them through supportive educational systems, students with such disabilities are able to successfully overcome or reduce the various obstacles they face. Learning disabilities can hinder the development of fundamental cognitive processes, which often negatively affect children's ability to think, understand, and retain information. As a result, learning disabilities may create various types of cognitive difficulties during students' development. Nevertheless, children with learning disabilities require appropriate support, structured guidance, and continuous encouragement for their overall development. Learning disabilities are not a single or uniform disorder; rather, they consist of a range of difficulties that can affect areas such as reading, writing, language, and mathematics. This research presents a brief discussion on the basic nature and characteristics of learning disabilities, along with highlighting their various impacts on children's cognitive development. Parents and teachers need to be particularly aware of the signs, underlying causes, and effects of learning disabilities on children's cognitive abilities and overall development. Through patience, empathy, and caring support, parents and teachers must always be well-prepared to assist children with learning disabilities. By providing a safe and encouraging environment, parents and teachers can effectively help these children participate in learning, build self-confidence, and overcome the barriers that hinder their cognitive, social, and emotional development. Through individualized teaching methods and by creating an inclusive and supportive classroom environment, students with learning disabilities can not only achieve academic success but also develop the essential skills and mental resilience needed to succeed in their future personal, educational, and professional lives.

REFERENCE:

1. Pandey, S., & Shukla, M. (2024). Learning Disability and its Impact on Cognitive Functioning: An Analytical Review. *International Journal of Creative Research Thoughts (IJCRT)*, 12, e51-e61. Retrieved from https://ijcrt.org/papers/IJCRT2408440.pdf?utm_source=chatgpt.com
2. Sharma, D. P. (2025). NTA UGC EDUCATION PAPER-2 (3rd ed.). Noida: S Chand and Company Limited.
3. Jadhav, D. (2022). The impact of learning disabilities on academic achievement among secondary-level students. *International Journal of Indian Psychology*, 10(4), 225. Retrieved from <https://ijip.in/wp-content/uploads/2024/12/18.01.225.20221004.pdf>

4. Lyon, G.R. (2003). Learning disabilities: A framework for understanding. MIT Press. <https://psycnet.apa.org/record/2006-05090-008>
5. Reiff, H. B., Gerber, P. J., & Ginsberg, R. (1993). Definitions of learning disabilities from adults with learning disabilities: The insiders' perspectives. *Learning Disability Quarterly*, 16(2), 114-125. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Reiff%2C+H.%2C+Gerber%2C+P.%2C+%26+Ginsberg%2C+R.+%281993%29.+Definitions+of+Learning+Disabilities+from+Adults+with+Learning+Disabilities%3A+The+Insiders%27+Perspectives.+Learning+Disability+Quarterly%2C+16%282%29%2C+114-125.+doi%3A10.2307%2F1511133&btnG=
6. Panicker, L. P. (2021). Understanding Learning Disabilities and Stigma: A study on Public Stigmatization of Learning Disabilities and Policy Recommendations in the Indian Context. *Electronic Journal of Social and Strategic Studies*, 2(3), 298-319. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Understanding+Learning+Disabilities+and+Stigma%3A+A+study+on+Public+Stigmatization+of+Learning+Disabilities+and+Policy+Recommendations+in+the+Indian+Context&btnG=
7. Radhika, S., & Kiran, V. K. (2017). Cognitive development of children with learning disabilities: an intervention study. *International Journal of Educational Science and Research (IJESR)*, 7(4), 53-60. https://www.researchgate.net/publication/324525261_COGNITIVE_DEVELOPMENT_OF_CHILDREN_WITH_LEARNING_DISABILITIES_AN_INTERVENTION_STUDY
8. Malik, M. A. (2019). Studying the Effect of Cognitive Difficulty of Students on their Academic Achievement. *THE COMMUNICATIONS*, 50. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Studying+the+Effect+of+Cognitive+Difficulty+of+Students+on+their+Academic+Achievement&btnG=
9. Kumar, S. (2024). Cognitive development in children with learning disabilities in India: Challenges and Interventions. *International Journal of Childhood and Development Disorders (IJCDD)*, Vol. 5(Issue 2), 38-45. Retrieved from <https://www.rehabilitationjournals.com/childhood-development-disorders/archives/2024.v5.i2.A.56>
10. Kunwar, R. (2022). Impacts of Dyscalculia in Learning Mathematics: Some Learning disabilities: Neurobiology, assessment, clinical features and treatments, 235.
11. Wikipedia Contributors (2026). common symptoms of dyscalculia Wikipedia. Retrieved from <https://en.wikipedia.org/wiki/Dyscalculia>
12. Fischer B, Gebhardt C, Hartnegg K (2008). "Subitizing and visual counting in children with problems in acquiring basic arithmetic skills" (PDF). *Optometry & Vision Development*. 39 (1): 24–9. Archived from the original (PDF) on 9 October 2010. Retrieved 11 June 2013. Retrieved from <https://en.wikipedia.org/wiki/Dyscalculia#:~:text=11%20External%20links%2C,Signs%20and%20symptoms,on%20fingers%20when%20adding%20numbers.>
13. Wikipedia Contributors (2026). Some common symptoms related to dysgraphia wikipedia. Retrieved from <https://en.wikipedia.org/wiki/Dysgraphia>
14. Wikipedia Contributors (2026). common symptoms related to dysphemia wikipedia. Retrieved from <https://en.wikipedia.org/wiki/Stuttering>
15. Wikipedia Contributors (2026). Some common symptoms related to Dysphasia & Aphasia wikipedia. Retrieved from <https://en.wikipedia.org/wiki/Aphasia>

16. Albert, M. L., Goodglass, H., Helm, N. A., Rubens, A. B., & Alexander, M. P. (2013). *Clinical aspects of dysphasia*. Springer Science & Business Media. Retrieved from https://books.google.co.in/books?hl=en&lr=&id=VohfBgAAQBAJ&oi=fnd&pg=PA3&dq=Clinical+forms+of+infantile+dysphasias&ots=5NztPahq5i&sig=-B3GiNx5WgNciNObhku-9SekfJw&redir_esc=y#v=onepage&q&f=false
17. Padeliadu, S., Botsas, G., & Sideridis, G. (2002). Metacognitive awareness and reading strategies: Average and reading disabled students. *Selected papers on theoretical and applied linguistics*, 14, 307-318. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Padeliadu%2C+S.%2C+Botsas%2C+G.%2C+%26+Sideridis%2C+G.+%282002%29.+Metacognitive+awareness+and+reading+strategies%3A+Average+and+reading+disabled+students.+Selected+Papers+on+Theoretical+and+Applied+Linguistics%2C+14%280%29.+https%3A%2F%2Fdoi.org%2F10.26262%2Ffistal.v14i0.6214&btnG=
18. Ashbaker, M. H., & Swanson, H. L. (1996). Short-term memory and working memory operations and their contribution to reading in adolescents with and without learning disabilities. *Learning Disabilities Research & Practice*. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Ashbaker%2C+M.+H.%2C+%26+Swanson%2C+H.+L.+%281996%29.+Short-term+memory+and+working+memory+operations+and+their+contribution+to+reading+in+adolescents+with+and+without+learning+disabilities.+Learning+Disabilities+Research+%26+Practice.+11%284%29%2C+206-213&btnG=#d=gs_cit&t=1775491591656&u=%2Fscholar%3Fq%3Dinfo%3AOLK465CSQMoJ%3Ascholar.google.com%2F%26output%3Dcite%26scirp%3D0%26hl%3Den
19. Liddell, G. A., & Rasmussen, C. (2005). Memory profile of children with nonverbal learning disability. *Learning Disabilities Research & Practice*, 20(3), 137-141. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Liddell%2C+G.+A.%2C+%26+Rasmussen%2C+C.+%282005%29.+Memory+profile+of+children+with+nonverbal+learning+disability.+Learning+Disabilities+Research+%26+Practice%2C+20%283%29%2C+137.+141.&btnG=
20. Swanson, H. L., & Berninger, V. W. (1996). Individual differences in children's working memory and writing skill. *Journal of experimental child psychology*, 63(2), 358-385. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Swanson%2C+H.+L.%2C+%26+Berninger%2C+V.+W.+%281996%29.+Individual+differences+in+children%27s+working+memory+and+writing+skill.+Journal+of+experimental+child+psychology%2C+63%282%29%2C+358-385.&btnG=
21. Hallahan, D. P., & Kauffman, J. M. (2003). Ypatingieji mokiniai: specialiojo ugdymo įvadas. *Vilnius: Alma littera*. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Hallahan%2C+D.+P.%2C+%26+Kauffman%2C+J.+M.+%282003%29.+Ypatingieji+mokiniai%3A+specialiojo+ugdyimo+vadas.+Vilnius%3A+Alma+littera.+p.608&btnG=
22. Smith, D. J. (2004). *Parenting and Delinquency at Ages 12 to 15*. Edinburgh: University of Edinburgh, Centre for Law and Society. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Smith%2C+D.+J.+%282004%29.+Parenting+and+Delinquency+at+Ages+12+to+15.+University+of+Edinburgh%2C+Centre+for+Law+and+Society.&btnG=

23. Kotkin, R. A., Forness, S. R., & Kavale, K. A. (2001). Comorbid ADHD and learning disabilities: Diagnosis, special education, and intervention. In *Research and global perspectives in learning disabilities* (pp. 43-63). Routledge. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Kotkin%2C+R.+A.%2C+Forness%2C+S.+R.%2C+%26+Kavale%2C+K.+A.+%282001%29.+Comorbid+ADHD+and+learning+disabilities%3A+Diagnosis%2C+special+education%2C+and+intervention.+Research+and+global+perspectives+in+learning+disabilities.+Essays+in+honor+of+William+M.+Cruikshank%2C+43+-63.&btnG=
24. Lerner, J. W. (2003). *Children with Learning Disabilities: Theories, diagnosis & teaching strategies*. Boston: Houghton Mifflin: Boston: Allyn and Bacon. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Lerner%2C+J.+2003.+Learning+disabilities.+Theories%2C+strategies%2C+Boston%3A+Houghton+Mifflin+Company&btnG=
25. Wikipedia Contributors (2026). *what is Aphasia wikipedia*. Retrieved from <https://en.wikipedia.org/wiki/Aphasia>
26. Hula, W. D., & McNeil, M. R. (2008, August). Models of attention and dual-task performance as explanatory constructs in aphasia. In *Seminars in speech and language* (Vol. 29, No. 03, pp. 169-187). © Thieme Medical Publishers. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Hula+WD%2C+McNeil+M+R+%28August+2008%29.+%22Models+of+attention+and+dual-task+performance+as+explanatory+constructs+in+aphasia%22.+Seminars+in+Speech+and+Language.+29+%283%29%3A+169%E2%80%93187%2C+quiz+C+3%E2%80%934.+doi%3A10.1055%2Fs-0028-1082882.+PMID+18720315.+S2CID+260319083.&btnG=
27. Damasio, A. R. (1992). Aphasia. *New England Journal of Medicine*, 326(8), 531-539. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Damasio+AR+%28February+1992%29.+%22Aphasia%22.+The+New+England+Journal+of+Medicine.+326+%288%29%3A+531%E2%80%93539.+doi%3A10.1056%2FNEJM199202203260806.+PMID+1732792.&btnG=#d=gs_cit&t=1775549812436&u=%2Fscholar%3Fq%3Dinfo%3AZY9BZOuhYfQJ%3Ascholar.google.com%2F%26output%3Dcite%26scirp%3D0%26hl%3Den
28. Wikipedia Contributors (2026). *what is aphasia wikipedia*. Retrieved from <https://en.wikipedia.org/wiki/Aphasia>
29. Damasio, A. R. (1992). Aphasia. *New England Journal of Medicine*, 326(8), 531-539. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Damasio+AR+%28February+1992%29.+%22Aphasia%22.+The+New+England+Journal+of+Medicine.+326+%288%29%3A+531%E2%80%93539.+doi%3A10.1056%2FNEJM199202203260806.+PMID+1732792.&btnG=
30. Wikipedia Contributors (2026). *what is Acalculia wikipedia*. Retrieved from <https://en.wikipedia.org/wiki/Acalculia>
31. Benn, Y., Jayes, M., Casassus, M., Williams, M., Jenkinson, C., McGowan, E., & Conroy, P. (2023). A qualitative study into the experience of living with acalculia after stroke and other forms of acquired brain injury. *Neuropsychological Rehabilitation*, 33(9), 1512-1536. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Benn+Y%2C+Jayes+M%2C+Casassus+M%2C+Williams+M%2C+Jenkinson+C%2C+McGowan+E%2C+et+al.+%28

- 2023%29.+%22A+qualitative+study+into+the+experience+of+living+with+acalculia+after+stroke+and+other+forms+of+acquired+brain+injury%22.+Neuropsychological+Rehabilitation.+33+%289%29%3A+1512%E2%80%931536.+doi%3A10.1080%2F09602011.2022.2108065.+PMID+35959752.&btnG=
32. De Smet, H. J., Engelborghs, S., Paquier, P. F., De Deyn, P. P., & Mariën, P. (2011). Cerebellar-induced apraxic agraphia: a review and three new cases. *Brain and cognition*, 76(3), 424-434. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=De+Smet+HJ%2C+Engelborghs+S%2C+Paquier+PF%2C+De+Deyn+PP%2C+Mari%C3%ABn+P+%28August+2011%29.+%22Cerebellar-induced+apraxic+agraphia%3A+a+review+and+three+new+cases%22+%28PDF%29.+Brain+Cogn.+76+%283%29%3A+424%E2%80%93434.+doi%3A10.1016%2Fj.bandc.2010.12.006.+PMID+21507544.+S2CID+27786528.&btnG=
33. Sinanović, O., Mrkonjić, Z., Zukić, S., Vidović, M., & Imamović, K. (2011). Post-stroke language disorders. *Acta Clin Croat*, 50(1), 79-94. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Sinanovi%C4%87+O%2C+Mrkonji%C4%87+Z%2C+Zuki%C4%87+S%2C+Vidovi%C4%87+M%2C+Imamovi%C4%87+K+%28March+2011%29.+%22Post-stroke+language+disorders%22.+Acta+Clin+Croat.+50+%281%29%3A+79%E2%80%9394.+PMID+22034787.&btnG=
34. Goldenberg, G. (2013). Apraxia. *Wiley Interdisciplinary Reviews: Cognitive Science*, 4(5), 453-462. Retrieved from <https://wires.onlinelibrary.wiley.com/doi/abs/10.1002/wcs.1241>
35. Gross, R. G., & Grossman, M. (2008). Update on apraxia. *Current neurology and neuroscience reports*, 8(6), 490-496. Retrieved from <https://link.springer.com/article/10.1007/s11910-008-0078-y>
36. Park, J. E. (2017). Apraxia: review and update. *Journal of clinical neurology*, 13(4), 317-324. Retrieved from <https://synapse.koreamed.org/articles/1048060>
37. Leiguarda, R. C., Merello, M., Nouzeilles, M. I., Balej, J., Rivero, A., & Nogués, M. (2003). Limb-kinetic apraxia in corticobasal degeneration: clinical and kinematic features. *Movement disorders: official journal of the Movement Disorder Society*, 18(1), 49-59. Retrieved from <https://movementdisorders.onlinelibrary.wiley.com/doi/abs/10.1002/mds.10303>
38. Rounis, E., & Binkofski, F. (2023). Limb apraxias: The influence of higher order perceptual and semantic deficits in motor recovery after stroke. *Stroke*, 54(1), 30-43. Retrieved from <https://www.ahajournals.org/doi/full/10.1161/STROKEAHA.122.037948>
39. Moore, D. R. (2007). Auditory processing disorders: acquisition and treatment. *Journal of communication disorders*, 40(4), 295-304. Retrieved from <https://www.sciencedirect.com/science/article/abs/pii/S0021992407000214>
40. Iliadou, V., Ptok, M., Grech, H., Pedersen, E. R., Brechmann, A., Deggouj, N., ... & Bamiau, D. E. (2017). A European perspective on auditory processing disorder-current knowledge and future research focus. *Frontiers in neurology*, 8, 622. Retrieved from <https://www.frontiersin.org/journals/neurology/articles/10.3389/fneur.2017.00622/full>
41. Muktamath, V. U., Hegde, P. R., & Chand, S. (2022). Types of specific learning disability. *Learning Disabilities-Neurobiology, Assessment, Clinical Features and Treatments*, 10. Retrieved from <https://books.google.co.in/books?hl=en&lr=&id=LNJuEAAAQBAJ&oi=fnd&pg=PA3&dq=>

visual+processing+disorder+learning+disability&ots=vX_jjgg0Xy&sig=IimDkob70o0d0UF4ivek8mQeQu4&redir_esc=y#v=onepage&q&f=false

42. Soltani Kouhbanani, S., Arabi, S. M., Zarenezhad, S., & Khosrorad, R. (2020). The effect of perceptual-motor training on executive functions in children with non-verbal learning disorder. *Neuropsychiatric Disease and Treatment*, 1129-1137. Retrieved from <https://www.tandfonline.com/doi/full/10.2147/NDT.S252662>
43. Demehri, F., Darvishi, E., & Saiedmanesh, M. (2020). Effectiveness of motor based cognitive rehabilitation on orientation, learning memory, attention, and cognition in children with non-verbal learning disorder. *The Scientific Journal of Rehabilitation Medicine*, 9(2), 249-256. Retrieved from https://web.archive.org/web/20201026012540id_/http://medrehab.sbm.ac.ir/article_1100851_098955187cf89cd58693c65d968b639e.pdf
44. Wheaton, L. A., & Hallett, M. (2007). Ideomotor apraxia: a review. *Journal of the neurological sciences*, 260(1-2), 1-10. Retrieved from <https://www.sciencedirect.com/science/article/abs/pii/S0022510X07002766>
45. Heilman, K. M. (2010). Apraxia. *CONTINUUM: Lifelong Learning in Neurology*, 16(4), 86-108. Retrieved from <https://continuum.aan.com/doi/10.1212/01.CON.0000368262.53662.08>
46. Schwartz, R. L., Adair, J. C., Raymer, A. M., Williamson, D. J., Crosson, B., Rothi, L. J., ... & Heilman, K. M. (2000). Conceptual apraxia in probable Alzheimer's disease as demonstrated by the Florida Action Recall Test. *Journal of the International Neuropsychological Society*, 6(3), 265-270. Retrieved from <https://www.cambridge.org/core/journals/journal-of-the-international-neuropsychological-society/article/abs/conceptual-apraxia-in-probable-alzheimers-disease-as-demonstrated-by-the-florida-action-recall-test/AA66A18C6C7F80CD937BF5063E96F77C>
47. Wikipedia Contributors (2025). conceptual apraxia wikipedia. Retrieved from <https://en.wikipedia.org/wiki/Apraxia>
48. Wikipedia Contributors (2025). Buccofacial Apraxia wikipedia. Retrieved from <https://en.wikipedia.org/wiki/Apraxia>
49. Poeck, K. (1983). Ideational apraxia. *Journal of Neurology*, 230(1), 1-5. Retrieved from <https://link.springer.com/article/10.1007/bf00313591>
50. Guérin, F., Ska, B., & Belleville, S. (1999). Cognitive processing of drawing abilities. *Brain and Cognition*, 40(3), 464-478. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Gu%C3%A9rin+F%2C+Ska+B%2C+Belleville+S+%28August+1999%29.+%22Cognitive+processing+of+drawing+abilities%22.+Brain+Cogn.+40+%283%29%3A+464%E2%80%93478.+doi%3A10.1006%2Fbreg.1999.1079.+PMID+10415132.+S2CID+41074859.&btnG=
51. Wikipedia Contributors (2025). Constructional Apraxia wikipedia. Retrieved from https://en.wikipedia.org/wiki/Constructional_apraxia
52. Al-Zoubi, S. M., & Younes, M. A. B. (2015). Low academic achievement: Causes and results. *Theory and Practice in Language Studies*, 5(11), 2262. <http://dx.doi.org/10.17507/tppls.0511.09>
53. Achugar, M. (2009). Designing environments for teaching and learning history in multilingual contexts. *Critical Inquiry in Language Studies*, 6(1-2), 39-62. <https://doi.org/10.1080/15427580802679377>
54. <http://dx.doi.org/10.17507/tppls.0511.09> Francis-Williams, J. (2014). *Children with specific learning difficulties: The effect of neurodevelopmental learning disorders on children of*

normal intelligence. Elsevier.

55. Grigorenko, E. L., Compton, D. L., Fuchs, L. S., Wagner, R. K., Willcutt, E. G., & Fletcher, J. M. (2020). Understanding, educating, and supporting children with specific learning disabilities: 50 years of science and practice. *American psychologist*, 75(1), 37. <https://psycnet.apa.org/doi/10.1037/amp0000452>
56. Gilger, J. W., & Kaplan, B. J. (2001). Atypical brain development: a conceptual framework for understanding developmental learning disabilities. *Developmental neuropsychology*, 20(2), 465-481. https://doi.org/10.1207/S15326942DN2002_2
57. Hau, K. T., & Salili, F. (1996). Prediction of academic performance among Chinese students: Effort can compensate for lack of ability. *Organizational Behavior and Human Decision Processes*, 65(2), 83-94. <https://doi.org/10.1006/obhd.1996.0008>
58. Kaczmarek, B. L. (2020). Current views on neuroplasticity: what is new and what is old?. *Acta neuropsychologica*, 18, 1-14. <http://dx.doi.org/10.5604/01.3001.0013.8808>
59. Niemiec, R. M., Shogren, K. A., & Wehmeyer, M. L. (2017). Character strengths and intellectual and developmental disability: A strengths-based approach from positive psychology. *Education and Training in Autism and Developmental Disabilities*, 52(1), 13-25. <https://doi.org/10.1177/215416471705200103>
60. Phonapichat, P., Wongwanich, S., & Sujiva, S. (2014). An analysis of elementary school students' difficulties in mathematical problem solving. *Procedia-social and behavioral sciences*, 116, 3169-3174. <https://doi.org/10.1016/j.sbspro.2014.01.728>
61. Sahoo, M. K., Biswas, H., & Padhy, S. K. (2015). Psychological co-morbidity in children with specific learning disorders. *Journal of family medicine and primary care*, 4(1), 21-25. DOI: 10.4103/2249-4863.152243
62. Snowling, M. (1998). Dyslexia as a phonological deficit: Evidence and implications. *Child Psychology and Psychiatry Review*, 3(1), 4-11. <https://doi.org/10.1111/1475-3588.00201>
63. Taboada, E. M., Iglesias, P. M., López, S., & Rivas, R. M. (2020). Neurodevelopmental difficulties as a comprehensive construct of learning disabilities in children with developmental delay: a systematic review. *Ann. Psychol*, 36, 271-282. <https://doi.org/10.6018/analesps.347741>

