Learning Disabilities and Processing Disorders

Learning Disabilities are specific neurological disorders that affect the brain's ability to take in, store, process or communicate information. Learning Disabilities are NOT the same as mental retardation, autism, deafness, blindness, behavioral disorders or laziness. Learning Disabilities are not the result of economic disadvantage, environmental factors or cultural differences. People that have learning disabilities have normal, and often even above normal intelligence. They generally show a pattern of strengths and weaknesses.

If complex cognitive functions are not working correctly many areas of learning and functioning are disrupted. The relevance of determining why a student is having difficulty is important so that proper accommodations and modifications can be made, and alternate presentations of instruction can be used.

We all learn about our world through our senses of sight, sound, touch, smell, and taste. Using the information that we take in through our senses relies on properly functioning areas of the brain, which then interpret the information and make sense of it by connecting it to existing knowledge. The information needs to be processed, stored, and often responded to by some type of output, such as writing, language, or action.

An information processing disorder is a deficiency in a person's ability to effectively use the information the senses have gathered. It is NOT the result of hearing loss, impaired vision, an attention deficit disorder or any kind of intellectual or cognitive deficit. There are many types of information processing, and some overlap, however two important and critical areas are visual processing and auditory processing. Disorders in one or several of these areas of processing can affect academic success.

### Visual Processing
- **Visual Discrimination**: Using the sense of sight to notice and compare the features of different items to distinguish one item from another. Examples include seeing the difference between two similar letters, shapes or objects; noticing the similarities and differences between certain colors, shapes and patterns.

### Auditory Processing
- **Auditory Discrimination**: The ability to discern a shape or printed character from its background. Examples include finding a specific bit of information on a printed page full of words and numbers; seeing an image within a competing background.

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<th>Processing Area</th>
<th>Skill</th>
<th>Possible Difficulties Observed</th>
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<td><strong>Visual Discrimination</strong></td>
<td>Using the sense of sight to notice and compare the features of different items to distinguish one item from another</td>
<td>Seeing the difference between two similar letters, shapes or objects; Noticing the similarities and differences between certain colors, shapes and patterns.</td>
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<tr>
<td><strong>Visual Figure Ground Discrimination</strong></td>
<td>Discriminating a shape or printed character from its background.</td>
<td>Finding a specific bit of information on a printed page full of words and numbers; Seeing an image within a competing background.</td>
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<td><strong>Visual Sequencing</strong></td>
<td>The ability to see and distinguish the order of symbols, words or images</td>
<td>Using a separate answer sheet; Staying in the right place while reading a paragraph. Example: skipping lines, reading the same line over and over; Reversing or misreading letters, numbers and words; Understanding math equations.</td>
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Though information processing disorders are often not named as specific types of learning disabilities, they are seen in many individuals with learning disabilities and can often help explain why a person is having trouble with learning and performance. The inability to process information efficiently can lead to frustration, low self-esteem and social withdrawal, especially when speech/language impairments also exist.

Teachers should learn to recognize what these processing problems look like in the classroom. While it would be acceptable to continue to strengthen an affected area, it is important to present information through a channel that is not a deficit area.
Visual Motor Processing
Using feedback from the eyes to coordinate the movement of other parts of the body
Writing within lines or margins of a piece of paper. Copying from a board or book. Moving around without bumping into things. Participating in sports that require well-timed and precise movements in space.

Visual Memory
There are two kinds of visual memory: Long-term visual memory is the ability to recall something seen some time ago. Short-term visual memory is the ability to remember something seen very recently.
Remembering the spelling of familiar words with irregular spelling
Reading comprehension
Using a calculator or keyboard with speed and accuracy
Remembering phone numbers

Visual closure
The ability to know what an object is when only parts of it are visible
Recognizing a picture of a familiar object from a partial image. Example: A truck without its wheels
Identifying a word with a letter missing. Recognizing a face when one feature (such as the nose) is missing.

Spatial relationships
The ability to understand how objects are positioned in space in relation to oneself. This involves the understanding of distance (near or far), as well as the relationship of objects and characters described on paper or in a spoken narrative.
Getting from one place to another
Spacing letters and words on paper
Judging time.
Reading maps.

Auditory discrimination
The ability to notice, compare and distinguish the distinct and separate sounds in words. This skill is vital for reading.
Learning to read
Distinguishing difference between similar sounds. Example: Seventy and seventeen.
Understanding spoken language, following directions and remembering details.
Seems to hear but not listen.

Auditory figure-ground
The ability to pick out important sounds from a noisy background.
Distinguishing meaningful sounds from background noise.
Staying focused on auditory information being given. Example: following verbal directions

Auditory memory
There are two kinds of auditory memory: Long-term auditory memory is the ability to remember something heard some time ago. Short-term auditory memory is the ability to recall something heard very recently.
Remembering people's names.
Memorizing telephone numbers.
Following multi-step directions.
Recalling stories or songs.

Auditory sequencing
The ability to understand and recall the order of words.
Confusing multi-digit numbers, such as 74 and 47.
Confusing lists and other types of sequences.
Remembering the correct order of a series of instructions.

For information about types of helpful strategies for different areas of processing, please refer to the National Center for Learning Disabilities. (www.ncld.org)

When a learning disability affects the area of language processing, the term dyslexia is used, and reading is one of the critical areas affected. Difficulties may also be seen in writing, spelling and speaking. Dyslexia is a life-long language processing disorder that hinders the development of oral and written language skills. Children and adults with dyslexia can be highly intelligent; however they have a neurological disorder that causes the brain to process and interpret information differently. It is important to identify dyslexia as early as possible and develop strategies and interventions to help a child succeed, since so much of what happens in school is based on reading and writing.

Dyscalculia is the term used to describe difficulties in the area of math. Computation skills, memory of facts and concepts can be greatly affected. There is no single form of math disability, and difficulties vary from person to person and affect people differently in school and throughout life.

Dysgraphia is a term used to describe learning disabilities that can affect spelling, putting thoughts into written language, or motor aspects of writing.
Dyspraxia is a term that refers to a specific disorder in the area of motor skill development. The effects of dyspraxia may change as a person goes through life.
(Adapted from the National Center for Learning Disabilities, Inc. 1999-2008)