

The 19 Learning Disabilities

1. Motor Symbol Sequencing

This capacity is involved in the process of learning and consistently producing a symbolic sequential motor pattern (e.g., writing out the alphabet, or numbers). All sequential symbolic processes involving input through the eye (e.g., reading), output through the hand (e.g., writing) and mouth (e.g., speaking) are impaired when there is a weakness in this capacity. Following are some of the features of this problem.

Misreading - Words are misread due to poorly developed patterns of eye fixations. The person reads "step hall" for a road sign that says "steep hill". A truck driver misreads road signs and bills of lading thus ending up in the wrong locations and taking much longer to do his job than expected despite superior intelligence.

Handwriting is messy and irregular. People with this dysfunction frequently print rather than handwrite. Writing is not automatic. The person has to concentrate on the process of writing and as a result has less attention to focus on the content of what is being written. This also slows down the speed of writing so written assignments and tests often take longer to complete than the allotted time.

Copying material from one location to another (i.e., from the blackboard or a text into a notebook) is slow and often inaccurate. Clerical work is painful and tedious and the person may have a tendency to put it off.

Spelling - The person can spell the same word several different ways on the same page.

Speech - The person tends to ramble and have difficulty getting to the point. There is a tendency to leave out chunks of information, which are necessary for the listener to understand what the person is talking about. The person has this information in his head and thinks he has said it but it does not get expressed in speech. It is difficult to get ideas out in the order of their importance in speech, and the person may go back and forth over several subjects, making his speech difficult for others to follow.

Mathematics - This problem affects accuracy in mathematical computations. The person makes what appear to be careless errors but which are really motor slips. For example the person thinks one number in his head and writes down another number.

2. Symbol Relations

This capacity is involved in understanding the relationships among two or more ideas or concepts. A weakness in this capacity may result in the following difficulties. In more severe cases the child reverses the letters b-d-p-q. The child has some trouble learning how to read a clock (an analog clock). The relationship between the hands are mixed up with the hour hand being read for the minute and vice versa or the minute hand being misread by 5 or 10 minutes.

The person does not understand math concepts. The person can learn math procedures but has no idea of the meaning or "why" of the procedure. Mathematics is mechanical or procedural rather than conceptual. The person does not understand formulas such as $\text{distance} = \text{rate} \times \text{time}$ and therefore has trouble figuring out the formulas for rate and time.

The person has trouble understanding cause and effect relationships or the reasons why events happen. This has implications for learning in school, on the job and in social situations.

The person has trouble understanding grammar and doing grammatical analysis.

The person has to read material over and over again and is never certain as to whether he has understood what is being said.

The person has great difficulty figuring out word problems such as "Sally is shorter than Jane who is taller than Mary. Who is tallest?" because he can't see the relationships.

The person sits in on a seminar and is not able to comment on the points being made because he does not fully grasp the meaning at that moment. After he leaves the seminar he plays the ideas over inside his head, comes to understand what was said and then is ready to comment but the situation is no longer available. This is a very frustrating experience. This can also happen in a discussion in a social situation.

The person can't grasp the logical inconsistencies in what some body is saying, which may leave him prey to destructive friendships or con artists.

There is often personality rigidity or stubbornness associated with this learning dysfunction because the person has difficulty considering several alternatives logically at the same time in order to plan and make decisions. Once the person has made up his mind it is very hard for it to be changed because he has so much trouble holding two or more alternatives in his head simultaneously and looking at the advantages and disadvantages of each. He can't see the relationships between two or more positions.

The individual often has trouble understanding and communicating his own thoughts and feelings to others due to this problem. This can lead to feelings of anger and frustration on the one hand and helplessness, alienation and depression on the other.

The most salient feature is a sense of uncertainty - of never being able to verify meaning but only guess. There is a general difficulty in interpreting the meaning of any symbolic information whether spoken or written and the person is left with a constant sense of uncertainty as to whether he has correctly grasped the meaning intended.

3. Memory for Information or Instructions

This is the capacity for remembering chunks of information such as instructions. A weakness in this capacity results in the following symptoms.

There is difficulty remembering verbal information or instructions. The person has trouble remembering and therefore following lectures or extended conversations or instructions. Instructions often have to be repeated several times before the person is certain of what he is supposed to do, and this certainty doesn't last. The person is often aware that he has forgotten and is too embarrassed to ask again, after having had it explained so many times, and may decide to 'muddle through'.

One example is not being able to follow a radio program because the person could not remember enough of the information as she was listening. When she improved on this capacity she was able to follow the radio to the point that she even won a radio contest. This can also happen when watching TV or a movie - the person can't remember parts of the newscast or movie.

People with very poor memory for instructions/information tend to smile a great deal and not participate in any conversation or discussion because they can't remember enough of the information to follow. They also tend to tune out in lectures, conversations and job situations because they get tired due to the extra effort required to retain the information.

Parents often think their child is stubborn, irresponsible or lazy because they ask him to do something and it doesn't get done because the child forgets. If the child is told to do something and then gets distracted, for example by answering the telephone, the instruction will be totally forgotten, to the point where he may insist that the request was never made.

The child may get home after school and forget what the teacher asked him to do for homework.

When a person with this dysfunction studies there is a gradual degradation of the information he is trying to memorize. The person may memorize information for history, finding it hard initially, and he may have to go over it 10 times, but he feels that he knows a fair amount of the information by the end of studying. An hour later he's got 3/4 of it, a couple of hours later he's got about 1/2 and by the time he writes the exam he is in trouble.

One boy with a severe memory for instructions/information problem did not realize songs had stories in the lyrics because he could never remember the lyrics. This came as a revelation to him when he improved on this capacity.

One man who flies an airplane has trouble remembering the information from the tower (fortunately it is repeated several times) and reported some near misses due to this problem. This same man would be sent out to the grocery store with a verbal list of 4 or more items and would invariably forget several items.

People with this problem tend to compensate by taking notes in order to help them remember information or by developing rigid habits without which their lives fall apart.

4. Predicative Speech

This is the capacity for the sense of how symbols (words and numbers) interconnect sequentially into fluent sentences and procedures. This occurs in thinking, speech and writing. Following are examples of problems caused by weaker functioning in this capacity.

The ability to rehearse and recode information and actions through speech inside one's head (internal speech) is impaired. In any learning situation this impairs the person from being able to actively recode information through internal speech in order to retain the information solidly in memory. Thus the information that can be memorized immediately breaks down over time with a significant loss in long-term retention due to an inability to recode the information. In other words, the person may show an inability to recapitulate or 'put things in his own words'.

The person tends to have stereotypic speech (e.g., a store of memorized or clichéd phrases) because he has trouble elaborating or extending speech. The person tends to speak in short sentences. Written expression is similar. The person does not have a sense of the appropriateness of where recognize where words should be positioned in a sentence. The sentences used often are incomplete and do not make sense even when complete, e.g., "I would ask a loan for the bank."

There is difficulty in following long sentences.

The person lacks tact in what he says and may appear to be rude because there is a failure of active internal mental rehearsal of what he is going to say and what the consequences of this would be. An example: a girl receives a cassette of a rock group for a birthday present and hands the tape back to the giver saying "I don't like this group".

Procedures in mathematics can be learned with some extra effort but there is a breakdown of the steps of the procedure over a relatively short time. A common example is that the steps in a long division question fall apart.

The person does not work out inside his head using internal speech the significance and consequences of doing something before acting so behavior can appear impulsive or ill considered.

The person has very limited ability to say things to himself inside his head to control his behavior. He cannot go through a process of active internal rehearsal of what he should do in various situations. He may feel 'parachuted' into an experience and not be able to develop an effective response to his environment.

The "ASK BEFORE YOU DO" syndrome: Parents report that their child tries to be helpful and goes ahead and does something without asking before he does it. The person is not capable of thinking out the possible consequences of the action beforehand. For example the child washes his father's car that has just been waxed or the child trims the tree in the front yard almost cutting it down.

5. Broca's Speech Pronunciation

This is the ability to learn how to pronounce syllables and then to learn how to integrate the syllables into the stabilized and consistent pronunciation of a word. A weakness in this capacity leads to the following difficulties.

The person feels uncertain as to how a word is pronounced. The pronunciation of words does not achieve stability or consistency hence the person thinks of several ways to say the same word not being certain which is correct. The person mispronounces words or may avoid using words he knows and understands because of this uncertainty about pronunciation. This may restrict the spoken vocabulary to simpler words.

It is difficult to learn and enlist phonics skills in the reading process. The person's silent reading vocabulary is often several grades higher than his oral vocabulary because he recognizes the meanings of words that he can't pronounce.

The speech process requires more concentration than normal so the person has trouble thinking and talking at the same time. The person must concentrate on pronouncing the words and as a result can lose his train of thought. This results in shyness (quietness) in new situations involving talking with people, and a tendency to get drowned out by people who find it easier to speak.

There is great difficulty in public speaking unless working from prepared text.

The speech tends to be flat and monotonous with a lack of rhythm and musical intonation. There is a tendency to mumble.

This impairment also interferes with the ability to learn the spoken aspect of a foreign language.

6. Auditory Speech Discrimination

This is the ability to discriminate between similar sounding speech sounds (e.g., fear - hear, doom - tomb). A problem in this area results in the following difficulties.

The person mishears words in a conversation, discussion, lecture, TV program or series of instructions and therefore misinterprets some of the information he hears. He also has to use active attention in order to discriminate some of the words he hears which can result in his becoming fatigued due to extra effort required to listen and this can lead to his tuning out the conversation. It can also lead to serious misunderstandings if the person interprets what he hears as an insult.

While taking notes the person mishears some words and writes down the wrong words. When he tries to study from these notes he is unable to because the notes do not make sense.

There is a difficulty discriminating foreign language speech sound that makes learning a foreign language through hearing difficult.

A person with this problem has more trouble understanding someone who speaks with an accent. One girl with a severe auditory speech discrimination problem dropped out of grade 13 because she became embarrassed with having to ask the teacher to repeat himself so frequently.

A person with this problem tires in speech listening situations because he has to use extra attention and energy to interpret the words that he cannot clearly hear, even though his hearing for loudness and pitch is normal.

7. Symbolic Thinking

The symbolic thinking capacity is responsible for developing and maintaining plans and strategies for action through the use of language. It is the capacity for mental initiative in symbolic tasks. Problems in this capacity are reflected in the following ways.

The student has great difficulty developing strategies for studying. If shown a study method he will follow this but he cannot develop his own study strategies. This applies to other situations as well; if shown a strategy the person may be able to implement it, but could not originate it.

The person has trouble keeping his attention focused on a language related task to completion. The person is easily distracted from a task and frequently labeled as having a short attention span. The person cannot maintain the focus of his attention in a school, job or social situation.

The person cannot work out an active plan to organize himself so his behavior is disorganized. There is a central lack of self-directed organization.

The person is not self-correcting of his mistakes and is frequently unaware that he has made mistakes. The person has difficulty learning from his mistakes due to this lack of awareness. Along with this, exists a general lack of worry or lack of concern about her/his performance.

At a milder level of impairment the person can worry to some extent about something but does not pull in all the facts and keeps hammering away at one or two things until distracted again. After it has been pointed out, the person becomes aware of the foolishness of his behavior, but can't work out strategies to prevent it from happening again.

The person cannot work out long term goals and plans for himself. He tends to respond to the immediate situation in a 'live for the moment' fashion. Other people may view him as untrustworthy or flighty because of the lack of stability in long range planning.

The person's choice of friends may be based on how 'fun' they are with no consideration of the long-term consequences of the friendship.

If a person does not know the answer to a question immediately he will leave the question. There is no process of active probing

or searching for the answer, no mental initiative. The person is mentally passive.

There is a difficulty in seeing the main point or overall idea of a symbolic activity (e.g., a discussion, a story, a movie, and a math question) and a tendency to get sidetracked by irrelevant details.

The person fails to take into account all the existing elements in a situation before acting and therefore behavior is inappropriate to the specific situation; he cannot look before he leaps.

The person reduces a situation to a stereotype of an already known situation so there is a lack of differentiation between situations and a response that is appropriate in one situation is applied in another where it is not appropriate. For example, the person may think that a strategy developed by a character in a television program is an appropriate strategy to deal with a real life situation.

8. Symbol Recognition

This is the capacity to recognize and remember a word or symbol visually that has been seen before. The following problems occur when this capacity is weak.

The person has to study a word many more times than average before he can visually memorize the word and thus recognize it and say it correctly the next time he sees it. The person literally does not recognize the word "house" as the same word he has seen before. As a result learning to read and spell words is a slow process. A person with this problem has trouble visually recognizing his spelling errors. The person's word recognition level (i.e., words he can see and say immediately) is low.

Reading speed is slow because the person has to rely on sounding out words that he should be able to recognize.

The person has great difficulty visually memorizing symbol patterns in mathematics (e.g., patterns in algebra) or in chemistry (e.g., chemical equations).

9. Lexical Memory

This is the capacity necessary for remembering several words in a series.

A person with this problem has trouble remembering more than three unrelated words in a series.

Auditory acquisition of new words is impaired. The person has to hear the word associated with its meaning several times before he remembers it. The person has trouble recognizing and remembering that one word is a synonym for another. This significantly impairs the reading process.

The person has trouble following oral information due to the limited holding capacity of his memory.

10. Kinesthetic Perception

This is the capacity for perception of where both sides of the body are in space. The following are features of a problem in this capacity. The person has limited awareness of where one or both sides of his body are in space. He has a tendency to bump into objects, doorways, etc. with the affected side of the body.

When driving a car the person is less aware of one side of the car than the other. This can result in scratching the car more frequently on one side, taking corners too wide and driving too close to either the right or left side of the road.

The person is less aware of where his hands and fingers are when cutting with a knife or using tools and as a result may injure himself more often than other people.

If the problem is severe the person may hurt himself on the impaired side and be less aware of where the pain is coming from.

If the problem occurs in the writing hand there is uneven pressure and the person wanders on and off the line when writing.

In more severe cases there is an inability to recognize objects through a sense of touch. A person cannot distinguish between his keys or lighter when feeling in his pocket.

There may be some degree of awkwardness of body movement.

There is also less articulated mouth movement, which results in some speech slurring.

11. Kinesthetic Speech

This is a lack of awareness of the position of the lips and tongue. It results in slurred speech. A person with this problem will have difficulty with rapidly repeating such tongue twisters as "which wristwatch" or "one runway".

12. Artifactual Thinking

This capacity is necessary for the coordination, modulation and interpretation of emotions. The following problems occur when this capacity is impaired.

The person has difficulty registering and interpreting his own emotions. The person's emotions are less refined and differentiated. The person's capacity for being emotionally reactive or responsive is impaired.

The person cannot interpret non-verbal information such as facial expressions and body language and as a result he can't change his behavior according to the signals people are sending him. For example the person cannot read his boss so he is unaware of whether the boss thinks he is doing a good job or not. Similarly the person is unable to interpret a teacher's reactions that can interfere with the learning process. Also the person does not always act appropriately in social situations because he does not perceive the significance of the non-verbal information.

The person tends to talk about something excessively not picking up the cues that other people are not interested in listening and want him to stop.

The person has trouble resisting impulses and can become dominated by them. One example is excessive impulse buying.

There is a lack of anticipatory planning and of developing long-term strategies to deal with situations.

The person does not get worried in situations when he should.

There is a failure of active surveying of visual details to get the all-over picture of a situation. The person prematurely stops looking before taking in all the visual information and hence comes to the wrong conclusion about the situation.

13. Narrow Visual Span

This is the capacity responsible for the number of symbols or objects a person can see in one visual fixation. When the span is restricted to below four symbols the following problems occur.

The person cannot see whole words in a single visual fixation. He must make three to ten times the normal number of fixations to read a line of printed material. This causes severe eye fatigue when reading and in severe cases can result in temporary blindness from overworking the eyes. People with this problem report that they cannot read for more than 30 to 60 minutes without taking a break to rest their eyes. The eyes become bloodshot as the eye muscles are overworked from making visual fixations.

Reading is experienced as jerky and errors occur when the eyes become fatigued and miss fixations. These types of errors also occur in clerical work.

Reading speed is slowed down due to the extra time required to make the increased number of visual fixations.

Navigating in the dark is difficult, e.g., finding a seat in a darkened movie theater or driving in the dark.

14. Object Recognition

This is the capacity for recognizing and remembering the details of visual objects. A weakness in this capacity is indicated by the following characteristics.

A person with this problem takes longer to visually recognize and locate objects that he is looking for. There is difficulty finding items when shopping. The person walks by an item several times before he recognizes it. The person also has trouble locating something in a refrigerator.

A manager of a drugstore with this problem had great difficulty learning to recognize his products and remember their locations in the store.

The person has trouble remembering visual cues such as landmarks to help in the process of remembering the location of places.

The person has trouble recognizing and remembering faces and will miss details in facial expressions both of which cause social and interpersonal problems.

The person has trouble remembering the visual details of pictures.

15. Spatial Reasoning

Spatial reasoning is the capacity to imagine a series of moves through space inside your head before executing them. The following are examples of weak functioning of this capacity.

The person has difficulty visualizing a pathway of movements inside his head. This would result in some difficulty in finding his way through space because the person cannot work out a map inside his head of how to get from one place to another. As a result the person frequently gets lost or takes much longer to get from one place to another. In some cases the person becomes phobic and avoids going anyplace new because of a fear of getting lost. This difficulty applies even to small spaces like tracing out pathways on circuit boards.

When map reading the person has to rotate the map to orient towards the direction he is going. He cannot rotate the map inside his head.

The person does not have a map of how space works inside his head. Several people with this problem report that they cannot imagine how streets connect with one another.

The person forgets spatially where he has left objects resulting in loss of the object or spending extra time trying to find objects.

The person's workspace tends to be messy and disorganized with material stacked in various piles within line of sight. This is because the person cannot imagine how to organize his space. If he puts something away in a filing cabinet or drawer he later has trouble imagining in his head where it is.

The person has more trouble navigating in crowded space because he cannot map a plan of how to get around obstacles ahead of time.

In driving a car the person has trouble planning his moves ahead of time and also has difficulty anticipating the future movements of other cars on the road.

A person with this problem is poor at imagining moves ahead in a game such as checkers or chess. They tend to react to the other person's moves as they happen rather than developing a series of planned moves.

In any sports activity requiring a spatial plan of movements (e.g., planning how you are going to ski from the top of the hill to the bottom, anticipating the movement of the tennis ball and planning where to place yourself on the court to hit it) the person is at a disadvantage.

There is difficulty imagining inside the head different ways to arrange furniture in a room. The person has to physically move the furniture in order to find the best arrangement.

There is difficulty in constructing geometric figures.

16. Mechanical Reasoning

A person with a mechanical reasoning problem has difficulty in imagining how machines operate and in effectively handling and using tools.

17. Abstract Reasoning

A person with an abstract reasoning problem would be impaired in being able to carry out in proper sequence a series of steps in a task such as in computer programming, using tools or in cooking. The person does not understand the sequences, as they need to be set up to get the correct outcome.

18. Primary Motor

This problem interferes with the speed, strength and control of muscle movements on one side of body or the other. This results in some degree of awkwardness of body movement and some degree of less articulated movement on the affected side of the body.

19. Supplementary Motor

A problem in this area impairs a person from carrying out internal sequential mental operations such as doing mathematics inside his head.

The person can be so impaired that simple counting processes break down.

The person has difficulty calculating change.

If this dysfunction is at a moderate level of severity it means that the person is unable to sufficiently hold numbers inside his head to stably learn the addition and multiplication tables. The person cannot make progress in mathematics beyond a grade 4 level. The person resorts to finger or stick counting when solving math questions.

If the problem is less severe the person may be able to eventually learn his math tables but since he cannot do even relatively simple mental operations he cannot carry out the more difficult aspects of dealing with fractions at a grade 4 to 6 level.

At a mild level a grade 10 student was not able to factor algebraically due to the difficulty of not being able to imagine all the possible combinations of factors that could be multiplied together to lead to the algebraic trinomial he was trying to factor.

Anyone interested in a career involving mathematics requires the supplementary motor capacity for mental operations at an above average level to succeed.