



## ARROWSMITH PROGRAM

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### ARROWSMITH PROGRAM CHART OF LEARNING DYSFUNCTIONS AND LEARNING OUTCOMES

<b>Learning Dysfunction</b>	<b>Description</b>	<b>Common Features</b>	<b>Learning Outcomes</b>
Motor Symbol Sequencing	Difficulty learning and producing a written sequence of symbols.	Messy handwriting, miscopying, irregular spelling, speech rambling, careless written errors in mathematics, poor written performance.	Improve handwriting; reduce careless errors in written work; develop fine motor skills, sequential motor memory and motor planning in writing, capacity for hand-eye coordination.
Symbol Relations	Difficulty understanding the relationships among two or more ideas or concepts.	Reversals of b-d, p-q, difficulty reading a clock, needing to reread material to comprehend it, problem understanding cause and effect, trouble with mathematical reasoning.	Develop ability to read a clock; improve capacity necessary for understanding relationships between concepts necessary for logical and mathematical reasoning and reading comprehension affecting all aspects of curriculum and life.
Memory for Instructions	Difficulty remembering chunks of information.	Trouble remembering oral instructions, difficulty following lectures or extended conversations, problem acquiring general information through listening.	Develop auditory memory and the capacity to remember and follow oral instructions and retain information for learning; improve the capacity to remember chunks of information in the correct order.
Predicative Speech	Difficulty seeing how words and numbers interconnect sequentially into fluent sentences and procedures.	Problem putting information into one's own words, speaking in incomplete sentences, difficulty using internal speech to work out consequences, trouble following long sentences, breakdown of steps in mathematical procedures.	Improve the capacity to remember a sentence of increasing difficulty and length; improve the ability to put information into own words; develop the capacity for the sense of how symbols (words and numbers) interconnect sequentially; improve the ability to follow procedures in Mathematics; develop the ability to write and speak in complete sentences.
Broca's Speech Pronunciation	Difficulty learning to pronounce syllables and then integrate them into the stable and consistent pronunciation of a word.	Mispronouncing words, avoiding using words because of uncertainty of pronunciation, difficulty thinking and talking at the same time, flat and monotone speech with lack of rhythm and intonation, limited ability to learn and use phonics.	Develop/improve the capacity for sound-symbol correspondence; develop the phonemic memory necessary for the phonetic aspect of reading; develop the ability to pronounce multi-syllabic words correctly; develop the ability to read with greater oral expression

Symbolic Thinking	Difficulty developing and maintaining plans and strategies through the use of language.	Problem being self-directed and self organized in learning, limited mental initiative, difficulty keeping attention focused on task to completion, trouble seeing the main point.	Develop/improve the ability to grasp the main point of written or orally presented material; develop the ability to state the main idea of a selection using one's own words; develop the ability to maintain plans and strategies for problem solving; develop the capacity to express ideas more clearly in writing; develop the capacity to self-direct, to develop initiative and to remain focused on tasks to completion.
Symbol Recognition	Difficulty in visually recognizing and remembering a word or symbol that has been seen before.	Poor word recognition, slow reading, difficulty with spelling, trouble remembering symbol patterns such as mathematical or chemical equations.	Develop/improve the capacity to visually recognize and remember words or symbols necessary for reading, spelling and mathematics.
Lexical Memory	Difficulty remembering several unrelated words.	Problems with associative memory, trouble learning how to read due to difficulty associating the word with its sound, trouble following auditory information.	Improve vocabulary development and auditory memory for words.
Artifactual Thinking	Difficulty registering and interpreting non verbal information.	Problems interpreting non-verbal information such as body language, facial expression and voice tone, difficulty registering one's own emotions, weak social skills.	Develop the capacity for non-verbal thinking and problem-solving; develop the ability to interpret body language, facial expression and voice tone and to respond appropriately in interpersonal interactions; develop ability to interpret and modulate his/her own emotions.
Supplementary Motor	Difficulty carrying out internal sequential mental operations, such as mental mathematics.	Finger counting, trouble retaining numbers in one's head, difficulty making change, problem learning math facts, poor sense of time management.	Develop the capacity for number sense; develop the capacity for carrying out internal sequential, mental computation of addition and subtraction; develop the ability to use time wisely through scheduling and organization; develop an understanding of quantification related to money, time, space.