G Definition	Characteristics	Academic Difficulties	Interventions

Comprehension-Knowledge involves knowledge of one's culture, as well as verbal or language-based knowledge that has been developed during general life experiences and formal schooling.	• Difficulty acquiring vocabulary and knowledge
	• Difficulty comprehending written and spoken language
	• Difficulty with fact based/ informational questions
	• Use of simplistic sentence structures and lack of variety in language
	• Difficulties with synonyms, antonyms and analogies
	• Difficulty identifying similarities and differences
	• Difficulty using context clues
		<u>Reading</u>
		• Decoding
		  - The words the student is attempting to decode is not in his vocabulary
		• Comprehending due to vocabulary
		
		<u>Math</u>
		• Understanding math terminology
		• Understanding vocabulary in word problems
		
		<u>Writing</u>
		• Grammar
		• Lack of development of ideas & descriptive elaboration
		• Awkward phrasing and unconventional grammar
			• Prior to and after reading, have the student relate an event or character in the story to his/her own life
			• Frequent practice with and exposure to words
			• Research word origins to enhance meaning
			• Include supportive modalities (e.g. visuals, gestures) to increase understanding
			  - Picture It
			  - Sentence Pantomime
			• Teach morphology
			• Provide a language-enriched environment
			  - KWL strategy
			  - Use a variety games and activities for vocabulary reinforcement
			  - Interactive word walls
			• Work on vocabulary building
			  - Vocabulary Word Map
			  - Semantic Map
			  - Describe a Picture
			  - Words in Context
			  - Sketching for Vocabulary
			  - Vocabulary Journal
			• Relate new information to student's own experiences
			  - Record multiple real life examples of vocabulary words
			• Use of graphic organizers
			  - Word Webs
			  - Semantic Grid to show relationship
			  - Cause and Effect
			  - Venn Diagram or T chart
			• Use instructional materials to build lexical knowledge
			  - www.harcourtschool.com
			  - www.vocabulary.co.il/english-language-games
			  - www.jumpstart.com

G Definition	Characteristics	Academic Difficulties	Interventions

Fluid Reasoning (Gf)
 	
Gf
 	
is the ability to reason, form concepts, and solve problems that are unfamiliar.
 	
Involves inductive and deductive reasoning.
	• Difficulty following sequences
	• Inability to recognize cause and effect relationships
	• Inability to make decisions and solve problems
	• Difficulty organizing and classifying ideas
	• Difficulty seeing implication for the broader application of learned rules
	• Difficulty developing new solutions
	• Difficulty solving logic puzzles
	• Difficulty transferring or generalizing learning
		<u>Reading</u>
		• Drawing inferences
		• Determining main idea
		
		<u>Math</u>
		• Problem Solving
		• Reasoning
		• Apprehending relationships between numbers
		• Limited mental math skills
		
		<u>Writing</u>
		• Generalizing concepts
		• Developing a theme
		• Comparing and contrasting ideas
		• Poor narrative sequencing
			• Use demonstrations to externalize the reasoning process
			• Use daily Think Alouds to model the thinking process for answering questions and solving problems
			• Address all levels of Bloom's taxonomy to teach thinking and questioning skills
			• Review problem solving process
			• Guided practice
			• Targeted feedback
			• Cooperative Learning
			• Compare new concepts to previously learned information
			• Provide daily practice of reasoning skills by using real-life questions and problems
			• Provide a graphic organizer
			  - Story Maps
			  - Story Sequence
			• Provide writing organizers/text patterns
			  - Way to sort information
			• Use Planning Strategies
			  - Paragraph labeling
			  - QTIPS (math problem solving)
			  - U R TOPS (Responding to open ended questions)
			  - Procedural Self Talk
			  - Step Sheet
			  - Classificatory Writing

G Definition	Characteristics	Academic Difficulties	Interventions

Long-Term Retrieval
 	
Glr
 	
measures the ability to store information, consolidate it and fluently retrieve it later through association.
	• Frequently knowing material one day and not knowing it the next
	• Repeatedly making the same mistakes
	• Knowing isolated facts but not being able to connect them with related concepts
	• Difficulty remembering details and sequence of stories or events
	• Difficult recalling and completing multistep procedures that have been practiced previously
		Reading
		• Accessing phonological skills in order to decode
		• Paraphrasing
		
		Math
		• Memorizing math facts
		• Recalling math facts
		
		Writing
		• Retrieving vocabulary
		• Note-taking
		• Generating ideas
		• Remembering mechanics of writing
			• Limit the number of facts, words, concepts presented in one session
			• Use mnemonic strategies to encourage memory and retrieval for new or complex information
			• Teach "chunking" strategies
			• Repeated practice with and review of newly presented information
			• Build in wait time for student with fluency of retrieval is an issue
			• Provide overlearning, repetition, and review of concepts
			• Prime memory prior to teaching
			• Use of graphic organizers
			• Use different teaching modalities
			  - Vocabulary Cartoons
			  - Sentence Pantomime
			  - Giving directions in multiple formats
			• Rehearsal strategies
			  - Repeated rehearsal
			  - Peer help with rehearsal
			  - Rehearse information immediately after learning it
			  - Teach student to rehearse information with parents
			  - Rehearse in different ways (e.g., writing, acting, speaking).
			• Have a student paraphrase information read (e.g., Read-Ask-Paraphrase)
			• Method of Loci
			  - Visualization
			  - Imagining yourself in the scene
			  - Using locations to remember information

G Definition	Characteristics	Academic Difficulties	Interventions

Processing Speed
 	
Gs
 	
is the ability to perform simple, repetitive, cognitive tasks quickly and fluently.
 	
It is measured under pressure to maintain focused attention.
	• Difficulty with efficiency in processing information
	• Lose focus when under time constraints
	• Slow to complete work
	• Difficulty understanding lengthy directions or lectures
	• Difficulty with tasks involving rapid hand/eye coordination
	• Difficulty taking notes with speed and ease
	• Difficulty expressing self easily and efficiently
		<u>Reading</u>
		• Fluency
		  - Student has the ability to blend and segment phonemes however does it at a much slower rate
		
		<u>Math</u>
		• Automaticity
		• Slow computational speed
		
		<u>Writing</u>
		• Limited output
		• Slow writing
			• Build fluency through instant letter/word recognition procedure
			• Provide extra visual structure on worksheets and assignments (arrange problems in boxes)
			• Books on tape
			• Choral Repeated Reading
			• Peer Assisted Learning Strategies (PALS)
			• Use CLOZE procedure for writing assignments
			• Have student preview important parts of text to facilitate reading speed
			  - Reading end of chapter summaries before starting chapter
			• Repeated practice
			  - Repeated reading
			• Flash cards
			  - Math facts through incremental rehearsal
			  - Self-monitoring of productivity to increase fluency
			• Allow sufficient time to formulate a response
			  - During oral discussions prompt student ahead of time that a response will be needed
			• Speed drills
			  - Reading relay for fluency
			  - Speedy Alphabet Arch
			  - Hungry Letter Mouse
			• Online activities
			  - www.arcademicskillbuilders.com

G Definition	Characteristics	Academic Difficulties	Interventions

Visual Processing
 	
Gv
 	
is the ability to analyze and synthesize visual information.
 	
Orthographic processing is listed under *Gv*. Orthography refers to the visual patterns of the written language.
	• Difficulty differentiating mathematical signs
	• Trouble remembering how a whole word looks
	• Trouble remembering letter sequences
	• Spelling approach over-relies on phonology
	• Uneven spacing of letters and numbers
	• Inaccurately reading maps, pictures, charts or graphs
	• Unable to accurately judge speed and distance
	• Poor spatial planning of page
	• Difficulty seeing visual patterns
	• Difficulty tracking and scanning
		Reading
		• Orthographic coding (using visual features of letters to decode)
		• Sight-word acquisition
		• Using charts and graphs
		• Comprehension of text using spatial concepts
		
		Math
		• Number alignment during computation
		• Reading and interpreting graphs
		
		Writing
		• Spelling sight words
		• Spatial planning during writing
		• Formation of letters
			• Provide oral explanation for visual concepts (e.g. explain graphs and charts)
			• Use multisensory teaching techniques
			• Capitalize on students' phonemic skills for decoding
			• Teach orthographic strategies for decoding
			  - Cover-Copy-Compare
			  - Word length
			  - Shape of word
			  - Read naturally
			  - RAVE-O
			  - Great Leaps Reading
			• Enhance spatial orientation
			  - Play verbal directions game
			  - Give directions and instructions in terms of physical spatial relationships
			  - Have students take notice when they are using spatial orientation in every subject
			  - Encourage student to describe where an object is in relation to another object
			• Encourage student to notice their spatial perspective as well as others
			• Teach note taking strategies
			  - Cornell
			  - Outlining
			• Use aids to support visual tracking
			  - Graph paper to support number alignment
			  - Allow student to use a place marker or follow with finger when reading
			  - Provide a card with a "window" cut out to highlight small amounts of information at a time
			  - Highlight or color code important information

G Definition	Characteristics	Academic Difficulties	Interventions

Auditory Processing/Ga
 	
involves the ability analyze, and synthesize auditory information.
 	
Phonological Processing is listed under Ga.
	• Difficulty filtering nonessential auditory information
	• Mishear words (e.g. hear circus for circle)
	• Difficulty recognizing partially heard words
	• Difficulty learning a foreign language
	• Recognize larger words parts before individual phonemes
	• Displays better understanding when oral information is accompanied with visual support
		Reading
		• Acquiring and using phonetics
		• Recognizing and producing rhymes
		• Difficulty segmenting words into parts
		• Blending phonemes
		
		Math
		• Reading word problems
		
		Writing
		• Spelling
		• Note-taking
			• Sight-word reading
			• Identify root words or sounds and have the student produce variation of the word
			• Teach comprehension monitoring (e.g., does the word I heard/read make sense in context?)
			• Build in time for clarification regarding missed or misheard items during lecture
			• Teach segmenting
			  - Poker chip method
			  - Introduce segmenting by manipulation first, last, medial
			• Emphasize sound-symbol associations in teaching decoding and spelling
			  - Letter Sound Bingo
			  - Letter Sound Placemat
			  - Write the room
			• Read books to the student that play with and manipulate letters sounds
			  - Dr. Seuss Books
			  - Recite poems
			• Provide instructional supports
			  - Guided notes
			  - Visual aids
			  - Demonstration or concrete example
			• Provide phonological awareness activities (e.g., rhyming, alliteration, imitation, songs)
			  - Soundbags (e.g. phoneme matching activity)
			  - Rhyming games (Which word rhymes?)
			  - www.spellingcity.com

G Definition	Characteristics	Academic Difficulties	Interventions

Short-Term Working Memory
 	
Gwm
 	
is the ability to hold information in immediate awareness, use it within a few seconds, and manipulate it to carry out a goal.
	• Difficulty following directions with multiple steps
	• Difficulty repeating information
	• Losing train of thought easily
	• Commonly asking for the same information over and over
		Reading
		• Reading comprehension
		• Decoding
		• Paraphrasing
		
		Math
		• Rote memorization
		• Remembering procedures to complete problems
		• Multi-step problems and regrouping
		• Extracting information from problems
		
		Writing
		• Spelling multisyllabic words
		• Redundancy in writing
		• Note-taking
			• Highlighting important information
			• Have student write all the steps and show all work to math problems
			• Give the student one task to perform at a time. Introduce the next task only when the student has successfully completed the previous one.
			• Teach chunking strategies
			• Repeated practice and review
			• Paraphrase what is said
			• Use of mnemonics/memory strategies
			  - Acrostic phrases or sentences and acronyms
			  - Use music or rhythm
			• Give information in multiple formats
			  - Use visual, verbal, examples and demonstrations
			• Teach student to use different formats to process information
			  - Drawing picture or picture graphs of information given
			  - Create kinesthetic symbols for what needs to be learned (e.g., using body to form letters)
			• Teach rote strategies
			  - Basic rehearsal and simple repetition
			• Teach semantic rehearsal
			  - Creating a sentence to remember information
			• Provide instructional supports
			  - Guided notes, Study notes, Brief outlines
			  - Visual/Charts/Tables for references
			• Use of visual imagery
			  - Rhyming pegword method
			  - Method of Loci
			  - Vocabulary Cartoons
			  - Teach student to create mental pictures

Definition	Characteristics	Academic Difficulties	Interventions

Executive Function
 	
Responsible for a person's ability to engage in purposeful, organized, strategic, and goal-directed behavior.
	• Difficulty identifying goals and setting goals
	• Begins tasks without necessary materials
	• Difficulty getting started on tasks
	• Does not allocated sufficient time to complete tasks
	• Skips steps in multiple step problems
	• Does not know what is important
	• Disorganized
	• Shifting between activities
	• Does not check work for errors
	• Difficulty foreseeing consequences
	• Difficulty focusing and sustaining attention and effort
		Reading
		• Quick response leads to misinterpreting or misreading words
		• Sequencing and telling a story chronologically
		• Extracting main idea and other important information
		• Drawing inferences from text
		• Does not apply known strategies for comprehension
		
		Math
		• Remembering order of operations
		• Prioritizing what is important when solving word problems
		• Attending to math signs
		
		Writing
		• Generating ideas to write about
		• Sequencing a story
		• Prioritizing main events in the story
		• Lack of elaboration despite knowledge
			• Directly teach the following strategies
			  - Self-Regulation (e.g, Self-Regulated Strategy Development)
			  - Self-Monitoring
			  - Self-Talk, Think-Aloud
			• When teaching strategies do the following:
			  - Determine nature of the problems (e.g. lack of awareness, practice)
			  - Ensure student knows what executive skills are
			  - Ensure students understands what the strategy is used for
			  - When to use the strategy
			  - How to use the strategy
			  - Model the strategy
			  - Have student reflect on how well the strategy worked for them
			  - Provide feedback
			• Create a list of steps of the strategy you want the student to use during a lesson or task. Prompt them to refer to the list when needed.
			• Prior to introducing a task, ask the student to tell you how they plan on completing task (e.g., What questions do you need to be ask yourself do complete this correctly?)
			• Give the student prompts to engage in use of their executive capacities (e.g., Look carefully at every word.).
			• Provide the student with time guidelines and prompts to monitor the length of time it takes to complete an academic task.