Cognitive skills equip students to learn complex tasks, to perform mental math problems, to ignore distractions, to follow multiple step directions, and to plan and think strategically. Equipping Minds gives the cognitive tools for learning: working memory, processing, comprehension, reasoning, attention, and executive functioning skills. You will learn how to strengthen these skills that generalize to academic, verbal and nonverbal abilities, and IQ. Cognitive functions are defined by Feuerstein as "thinking abilities" that can be taught, learned, and developed. Hence, they are the prerequisites of thinking and learning. There are three phases of cognitive functions: input, elaboration, and output. This model can be used by trained teachers and parents to better understand and help the child who is experiencing learning difficulties. The emphasis is on strengthening cognitive abilities to make learning successful and ultimately to reach the full potential God has for our students for His purposes and glory.

We have all read *Recovering the Lost Tools of Learning*, the *Seven Laws of Teaching*, and follow the *Lost Tools Chart*. I would suggest that we also need to *understand and develop the cognitive tools FOR learning*. When learning challenges are present, there are cognitive skills which need to be developed and strengthened. * Do you teach something one day and the next day it's like they never heard it? Do learners have difficulty following multiple step directions? Can they pass a spelling test but are misspelling the same words when writing? Do they have difficulty expressing themselves in writing? Verbally? Are they easily distracted?

Our Son's Story: https://equippingminds.com/our-story/

Biblical Worldview of Human Development: It impacts how we view learners and human development. The human mediator/ teacher is key.

A naturalistic view of human development has been prevalent for over 300 years and has gone unchallenged. Many educators have been looking at learners with neurodevelopmental disorders through Piaget's (1896-1980) eyes rather than God's. Seemingly, the naturalistic view of humanity and human development has been widely accepted. Many religious educators have come to accept the theories of human development embraced by secular educational systems that discount spirituality and have a naturalist worldview rather than a biblical view of human development. Developmental theories have informed our perspectives, expectations, and limitations of learners who have intellectual, behavioral, and physical challenges.

In the 1600s, the father of modern education and reformed theologian, John Amos Comenius (1592-1670) developed a system of progressive instruction according to the stage of human development a learner had reached, which was a precursor to developmental psychology. Piaget states, "Comenius was the first to conceive a full-scale science of Education." While Piaget had great admiration for Comenius' work, he dismissed and misunderstood Comenius' theistic worldview. According to Jean Piaget, Comenius' seventeenth century views on metaphysics and theology as presented in *The Great Didactic* were not relevant in the twentieth century.

In The Great Didactic, Comenius presents the first principles of human development and instruction as he brings theology, education, and human development together. Chapter 1 titled, "Man is the highest, the most absolute, and the most excellent of things created," admonishes the reader to, "Know thyself, O man and know me, me the source of eternity, of wisdom and of grace; thyself, my creation, my likeness, my delight." As man is the center of God's creation, Comenius believes, "Man is naturally capable of acquiring a knowledge of all things, since, in the first place he is the image of God. "Comenius' insights into the potential and unlimited capacity of the human mind truly were hundreds of years before his time, as well as the scientific discovery of neuroplasticity as he states, "The mind; neither in heaven nor anywhere outside heaven, can a boundary be fixed. "Comenius reminds the reader that God is not a respecter of persons, and no one should be excluded because of their intellect. He believed that those with weak intellects need assistance by a mediator: "We do not know to what uses divine providence has destined this or that man; but this is certain, that out of the poorest, the most abject, and the most obscure, He has produced instruments for His glory."

Read full journal article "Naturalist or biblical worldview of human development."

Understanding the Tools for Learning: Cognitive Skills Defined

Memory

- **Short-term memory** is the ability to screen out unimportant information, to keep important information for further processing (1/1000 of a second), and to hold onto information for up to 30 seconds until you decide to throw it out or send it to your working memory (desktop) for further processing.
- Working memory is the ability to hold two or more pieces of information in the mind while performing a mental operation or manipulating the information such as listening and taking notes, reading, spelling, writing, and mathematics. Working memory is a stronger predictor of academic success than an IQ score.

Signs of weak working memory:

1. A student may read a word and forget it a few lines later.

- 2. Difficulty following multistep directions.
- 3. Difficulty keeping multiple sounds and letters in order for reading and spelling.
- 4. Difficulty remembering basic math facts and steps to math problems.
- 5. Difficulty listening and taking notes.
- 6. Difficulty making decisions.
- 7. Difficulty getting thoughts on paper and remembering the sequence of a story, grammatical rules, spelling, and letter formation.
- 8. Difficulty remembering site words.
- **Long-term memory** is the ability to store and recall information for later use. This may involve recalling sequences, math facts, or rules, reproducing a design and/or several pieces of information in an organized fashion.

Does the student have difficulty recalling information?

Attention

Visual and auditory sustained attention is the ability to stay on task for a sustained period of time.

Visual and auditory selected attention is the ability to attend to one input while not being distracted by other inputs.

Divided attention is the ability to attend to two activities at the same time, such as taking notes and listening to the teacher.

Flexible attention is the ability to shift focus quickly when necessary.

Processing

- **General processing** speed is the rate at which the brain handles information.
- **Visual processing** is the ability to perceive, analyze, and compare images by seeing the differences in size, color, shape, distance, and orientation of objects. You are able to create a mental image or a movie in your mind. Tracking and convergence of eyes
- Auditory processing is the ability to hear the differences in sounds, break words apart, and manipulate and analyze sounds to determine number, order, sequence, and the sounds that go with each word (phonemic awareness). This is necessary for reading.

Logic and Reasoning

Logic and reasoning give the mind the ability to form a logical and practical plan, prioritize, analyze, and solve problems, handle setbacks, and learn from mistakes, failures, and conflicts.

Executive Functioning

There are three components of executive functions: inhibitory control, working memory, and cognitive flexibility.

Comprehension

Comprehension is the ability to remember and understand what you read. One can "see" the details of a passage, as well as understand the general concepts. The ancient Greeks were the first to grasp the importance of imagery, or, as we may say today, "making a movie in your mind," when reading or listening. Many students are taught to simply read the questions at the end of the chapter and find the answers which is NOT reading comprehension.

Signs of Weak Comprehension:

- Difficulty following directions
- Getting the parts but missing the whole
- Information seems to go in one ear and out the other
- Difficulty with written and oral language comprehension
- Difficulty with expressing language orally and in writing
- Difficulty grasping humor
- Difficulty with abstract thinking

It is important to realize that full development of the prefrontal cortex does not occur until you are 25 years of age. You will see "immature" behavior such as difficulty controlling impulses, inability to predict the consequences of actions or see cause and effect relationships, and lack of motivation. Handling stress is also very difficult for children and adolescents. Trauma greatly impacts learning.



Yes, students with learning differences can be classically educated.

- 1. Learning differences refers to the diverse ways and rate that students learn.
- 2. Learning difficulties refers to factors such as personal or family trauma, ineffective instruction, absenteeism, learning in their second language, and inadequate support at home.
- 3. Learning disabilities refers to students of average or above average intelligence who have a discrepancy between their potential and their performance. Thirty-three percent of students are diagnosed with a *Specific Learning Disorder* which combines the diagnosis of dyslexia or reading disorder, dyscalculia or mathematics disorder, dysgraphia or a written disorder, and learning disorder not otherwise specified.

How can we develop these cognitive skills?

The research in neuroscience confirms the brain can change with the right tools and instructional methods. Cognitive Psychologist, Reuven Feuerstein believed a human mediator is essential to take the learner beyond the natural limitations to reach his or her full cognitive potential and generate new cognitive structures. Higher order cognitive skills and executive functions are developed through this experience. The mediated learning experience (MLE) is an interaction between the learner and the mediator who possesses knowledge and intentionally conveys a particular skill or meaning. The learner is then encouraged to relate the meaning to another experience or thought. Meaningful human interaction with a mediator also impacts social and emotional development. All teaching is not mediation, but all mediation is teaching.

*Stroop Effect- **Cognitive competition between two conflicting stimuli and interruptions of** *irrelevant stimuli while performing a given task. It requires processing, selective attention, working memory, cognitive flexibility which are known as executive functions.*

The methods and games that you will learn today have been used with children and adults of all ages and abilities. The cognitive gains have generalized to academics, and those results are published in peer reviewed journals. https://equippingminds.com/research/research-studies/

Since 2009. I have been developing cognitive games that use numbers, colors, letters, shapes, sounds, and images. By taking what the student knows, these cognitive skills are increased and impact reading, math, writing, language, social skills, attention, self-regulation, and behavior.

Visualization of letters is foundational for reading and spelling. Visualization of numbers is foundational for math. Visualization of images is foundational for comprehension.

This does NOT come by academic tutoring.

Play is an incredibly powerful tool for brain development. "It takes 400 repetitions to create a new synapse in the brain-unless it's done with play, in which case, it takes between 10 and 20 repetitions." Dr. Karen Purvis "I will strengthen you and help you." Isaiah 41:10 Tell your students, "I will help you." "Stop and Think" When they make an error say "check." "Hard is good" "Struggling Well"

- 1. Tic Tac Toe with numbers, letters, animals, colors, presidents to impact reading, math, spelling, logic and reasoning, visual spatial skills, comprehension, and self-regulation.
- 2. Blink, Equipping Minds cards, and deck of cards are foundational for increasing processing, working memory, and cognitive flexibility.
- 3. Stroop Animal Page increases a learner's ability to following multi-step directions say, **"I see you"**
- 4. Number Hunt 1-5 increases number sense, handwriting, visual tracking, math, executive functioning.

Number Hunt 1-5 Number, Color. Symbol/Animal

5. Vowel Hunt improves rapid naming, working memory, reading, and phonemic awareness

Vowel Hunt in the Classroom

- 6. Arrows impacts visual processing, executive functioning skills, directionality, reading, and writing.
- Aristotle's Ten Categories are the foundation for intelligent thinking. Stare Cards and *Yo, Millard Fillmore* can be used to impact comprehension, social skills, language, and writing.
- 8. Spot It increases visual and auditory memory, language, and grammar.
- 9. Color Code: planning, visualize transporting, and visual spatial reasoning.

A	B	С
D	E	F
G	Η	

A	B	С
D	E	F
G	Η	

1	2	3
4	5	6
7	8	9

1	2	3
4	5	6
7	8	9

Tic Tac Toe - President



Watch the "Yo, Millard Fillmore" video on youtube: https://www.youtube.com/watch?v=L-p_CINFJwE

Purchase the book on Amazon.

BROWN	WHITE	PURPLE	YELLOW	BLUE
GREEN	BLACK	ORANGE	RED	ORANGE
BLUE	GREEN	WHITE	YELLOW	RED
PURPLE	BROWN	BLACK	WHITE	BROWN
RED	BLACK	YELLOW	BLUE	GREEN
PURPLE	ORANGE	GREEN	WHITE	PURPLE
ORANGE	BROWN	BLACK	BLUE	RED
BLUE	YELLOW	ORANGE	RED	PURPLE
BROWN	WHITE	BLACK	GREEN	YELLOW

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Equipping Minds

brown	white	purple	yellow	blue
green	black	orange	red	orange
blue	green	white	yellow	red
purple	brown	black	white	brown
red	black	yellow	blue	green
purple	orange	green	white	purple
orange	brown	black	blue	red
blue	yellow	orange	red	purple
brown	white	black	green	yellow

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Equipping Minds

Animal Set 1



Animal Set 2



2	1	5	4	1	3
3	4	1	2	5	4
1	4	3	5	2	5
3	1	5	4	3	2
1	3	4	5	2	1
3	1	4	2	5	3
2	4	3	2	1	5
4	1	5	4	3	2

Vowel Hunt with Colors

а	е	i		U	e
i		а	u	е	
е	u		а	i	а
	i	а	е	U	i
u	а	e	i		U
а	e	i		u	
	u	а	i	u	e

Colored Arrows: Up & Down and Left & Right



Aristotle & Socratic Questions for Mediated Learning

Ask these questions when beginning a lesson and addressing a problem. These support the Cognitive Functions of Reuven Feuerstein and are the foundation of Equipping Minds.

Collecting	Processing	Expressing
CollectingWhat or who do you see, hear, feel, taste, touch, and smell?What can you visualize or imagine in your mind?What is the name of what you see or are thinking?Where are you starting?Do you have the correct information and materials?	ProcessingWhat am I to do?Problem, what problem?What do you need to figure out?What is relevant to the problem?What is needed, and what can be ignored/omitted?What is similar?What characteristics are different?	ExpressingWhat does the other person believe and why?How does the other person feel?Can you imagine how you would feel in their position?How would the other person want to be viewed and treated?Have you thought through what you want to say or write?Are your words relevant to the
What parts do you need, and what order will you need to follow to make the finished product?	Consider: number, color, shape, size, direction, position, feeling	situation? Is your language clear to the audience?
What do you know to be true, or what is constant and does not change?	What different categories do you see?	Do you need to take a break and attempt later or tomorrow?
What is to your right? What is to my right? If you are facing in this direction, what is to your right? Left? Front? Back? East? West? North? South?Northwest? Southeast?	How are these related to each other? Ask: What is your plan? What are the steps you will follow and the reasons? Avoid trial and error! Have a plan.	Perseverance! "Continuous effort—not strength or intelligence—is the key to unlocking our potential." —Winston Churchill "You will never do anything in this world without courage. It is the greatest quality of the mind next to honor."—Aristotle
When do you see this happening – past, present, future? How long did the event occur? In what order did it happen?	Does this make sense? If this is true, then what else must be true? Are there different possibilities? How can you see if this is true?	"If we all did the things, we were capable of doing, we would literally astound ourselves." —Thomas A. Edison "Many of life's failures are people who did not realize how close they were to success when they gave up." —Thomas A. Edison

Aristotle's "Ten Categories of Being" and "Talking Points"

Reading comprehension is the ability to "see pictures/images" of what you're reading. "What did you see happening?" Keep each of these areas in mind when reading to increase your understanding and memory. Begin by describing pictures.

	Quantity	
What/Who	Number or other measurable characteristic	Quality
Object, animal, person	Age of person	Size, color, shape, smell, sounds, taste, texture
"What is the main thing or person you see?"	Weight	"How big?" "What color(s) do you see?" Describe the shapes you see.
	"How many do you see?" "How old is the person?" "What is the weight?"	
		Time/When
	Place	Past, present, future Morning, afternoon, evening
Action	Where/location	Length of time- 5 minutes, hour, month, vear
"What do you see them doing? What do you hear?" (talking, singing, yelling)	"Where do you see him walking, playing, etc.?" "What else do you see besides the boat?" (cloudy sky, waves, dolphins leaping up, etc.)	Summer, winter, spring, fall "When do you see this happening? Early morning, at night, a long time ago? In what year or season?" "What length of time?" (minutes, hours, days, years)
Clothing/ Accessories	Position	Relation
"What is he wearing or carrying?"	Standing, sitting, leaning, forward	Above, below, near, far Friend, parent, stranger
Feelings/Reaction	First, second Left, right, front, back North, South, Fast West	Brother, sister, aunt Teacher, husband, wife Grandparent, uncle. cousin, boss
Angry, scared, joyful, confused		
"How does he look like he feels?" (angry, sad, happy, etc.)	"Is he standing? Leaning forward?" (right, left, front, back, north, south)	"Is this your friend?" "How close or far?" "Is this a family member?"

Handout for additional games:

https://equippingminds.com/wp-content/uploads/2019/05/2021-Equipping-Minds-To-Reac h-Their-Full-Potential-1-2.pdf

1	\bigcirc	Bear		a	Α	January
2	\times	Fish		e	В	February
3		Snake	397	i	С	March
4		Elephant		0	D	April
5		Turtle		u	E	May
6	\	Horse			F	June
7	(Carnel			G	July
8	()	Spider			Н	August
9		Pig	Į,			Sept.

Equipping Minds Cheat Sheet

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Cognitive Functions

Reuven Feuerstein defines cognitive functions as "thinking abilities" that can be taught, learned, and developed. Feuerstein has categorized the cognitive functions according to the three major phases of the mental act—namely, input, elaboration, and output. Although artificially separated into three phases, they don't necessarily occur separately in life. However, the subdivision is useful to analyze and describe thinking as well as determine what factors might negatively affect thinking. This model can be used by teachers and parents to better understand and help the child who is experiencing difficulties with a particular task.

For example, if a child fails in the task of classification, it is not enough to comment on the child's poor intelligence or inability to classify, but rather, the underlying causes of the difficulty, which can be found in one of the three phases of thinking, should be sought. The inability to classify, for instance, may be due to underlying functions such as imprecise data gathering at the input phase, or poor communication skills at the output phase." A detailed analysis of a student's cognitive functions requires an in-depth understanding of the three phases of the mental act." — Feuerstein Institute

GA TH EP	EFFICIENT/INEFFICIENT THINKING ABILITIES (COGNITIVE FUNCTIONS)	EM GAMES *	GOOD QUESTIONS (MEDIATION)
IN G/	Focus and perceive data through senses. Blurred and sweeping perception	ALL EM Games	What do you see? How many? What color? What direction? What do you hear, feel, taste, touch, smell?
IN PU T	Systematically search. Systematically approach new objects or information Unplanned, impulsive, and unsystematic exploratory behavior	EM Cards, Animals, Numbers, Vowels: read/search left to right Spot It: starting at 12:00 and going clockwise	Where are you starting?
	Use labels Without a name, one can't think about it.	EM Cards, Spot It, Blink, Set: naming objects	What is the name of what you see? What is the <i>best</i> name for that? What is another name for that?

Lack of/impaired receptive verbal tools which affect discrimination (objects, events, relationships do not have appropriate labels)		What else do you see?
Know orientation in space Lack of/impaired spatial orientation (lack of stable systems of reference)	Colored Arrows: L/R/U/D and N/S/E/W EM Cards arrows Stare: boy's right, in front, etc.	What is to <i>your</i> right/left/front/back? What is to <i>my</i> right/left? North/south/east/west/northeast?
Aware of time How much, how old, how often, sequence of events Lack of/impaired temporal concepts	Timed exercises Stroop Animals Stare and Presidents: 10 categories	When do you see this happening? Past/present/future? In what order did this happen?
Conserve Constancies What attributes must stay the same for an object to retain identity? Lack of/impaired conservation of constancies (size, shape, quantity, orientation)	EM Cards, Spot It: constant card N-back: symbols and colors become constants	What do you know to be true? What is constant and does not change?
Collect precise and accurate data Lack of/deficient need for precision and accuracy in gathering data	Color Code Let's Match/ Xtreme Memory	Do you have the correct information/materials? What parts do you need to finish this project/problem?
Use more than one source of information 2 ideas in the mind at same time assists in comparing/higher order thinking Lack of capacity for considering 2+ sources of information at once	N-Back: remember sequence	Can you tell me what you think about and How are they similar? Different?

Ρ	EFFICIENT/INEFFICIENT	EM GAMES	GOOD QUESTIONS
D	THINKING ABILITIES		(MEDIATION)
Λ	(COGNITIVE FUNCTIONS)		
0	Define problem	Color Code	Tell me what's happening.
С	What am I to do?		What else do you see/know?
Ε	Inadequacy in perception of		Is there a strategy you think you can use?
S	existence/definition of problem		Have you ever had this problem before?
S	Search for relevant cues	Color Code	What do you need? What part is
	What is relevant to the problem?	Stare cards	relevant/important?
	Inability to select relevant vs		
Ν	nonrelevant cues in defining a problem		
G	Spontaneous need to compare	EM Cards, Blink: sort	Tell me why you chose that one? How are they similar? Different?
/	Seek similarities/differences on their own	Finding a SET :	
Ε	Lack of spontaneous comparative	how are they the	What does it mean to compare?
	behavior	different	How do you know that's a good choice?
		Stare	, ,
A		Tic Tac Toe	
B			
0	Recall and use several pieces of	N-back	Can you make a picture in your mind
R	information (working memory)	Make a List	while I read to you? Do you see in color or black and white?
A	Narrowness of psychic field/focus	Reading	
–		comprehension	
	Understand reality/cause and effect	Tic Tac Toe, Drawing and	If you do this, what will happen?
	Episodic grasp of reality, live from	Erasing	
0	moment to moment		Stop and think. If you put your cube on
N			that card first, what card can you play next?

Use logical evidence Lack of/impaired need for pursuing logical evidence	Stare	Does this make sense? Why or why not? I wonder why this worked so well? How did you know to do it this way?
Abstract thinking/visualizing Lack of/impaired internalization	N-back (Who's in Charge?) Tic Tac Toe/Xtreme memory (with symbols): symbols have meaning	What do you see in your mind right now? Can you draw what you saw on the card from memory?
Use hypothetical thinking If this is true, what else must be true? Lack of/impaired inferential hypothetical thinking	Perplexors N-back: "If this was number, whose turn is it?"	If you do this, what will happen? What do you predict will happen next?
Test hypothesis Lack of/impaired strategies for hypothesis testing	Color Code	What strategies do you have? How can you prove that this is true? HmmmI wonder how you could find out?
Form categories Understand relationships, apply conceptual labels Non-elaboration of certain cognitive categories because the verbal concepts are not part of individual's verbal inventory on receptive level, nor mobilized at the expressive level	Animals/Spot It: categories Blink: sort, say "same number/color/sh ape"	What is one thing all these things have in common? What category do all these things belong to? (colors, shapes, numbers, months)
Understand big picture Lack of/impaired summative behavior	Stare: What's the main idea? How many things are there?	What steps do you need to do this? What do you need to do 1 st , 2 nd , 3 rd , etc. Are there enough? Will there be extra?
Make a plan States steps and reason Lack of/impaired planning behavior	Color Code	What is your plan? What's the first thing you need to do?

EFFICIENT/INEFFICIENT THINKING ABILITIES	EM GAMES	GOOD QUESTIONS (MEDIATION)
Consider another point of view Only see the world through own eyes	Tic Tac Toe Stare and Presidents: which hand or side?	Where do I want to put my cube next? If you were the person in the picture, what is on your right?
Project Virtual Relationships Difficulties in projecting virtual relationships	Stare Using dots to teach how to make a square, triangle	Can we solve this by thinking about other times we faced a problem like this? How are these two things related?
Perseverance Blocking	All exercises	I will help you. Hurray, you got the first step done! Do you want to try it again, or are you ready for the next part? How does it feel to do something difficult/easy?
Just moment Let me think Trial and error	N-back Stare	Stop and think. Did you take a moment to think about it? I'll give you some time to think about what you want to do.
Give a thoughtful response Lack of/impaired tools for communicating adequately elaborated responses	Stare/Presidents	Stop and think a moment, what is the best way to say that? No rush, think before you answer me.
Use precision and accuracy Do it right, take your time; say or complete it accurately Lack of/impaired need for precision and accuracy in communicating one's responses	1-9 Numbers Extreme Memory	I can see you are working hard at that. Compare it to the model, is there anything you want to change?
Visual Transporting Deficiency of visual transport	Tic Tac Toe	Look herenow thereare they the same or different?

Self-Control:	Tic Tac Toe	I know it's hard to wait, but how can
Think before speaking or acting	Color Code	you help yourself be patient?
Impulsive, acting out		

Take My Hand and Run with Me!

When people look at me,

A great student they see, Spoken well of by the faculty, Who constantly excels academically, Who will go into vocational ministry, This path has been far from easy, For me, nothing ever came naturally, Since a child I worked more rigorously, Than all my fellow classmates, Always falling behind in my classes, No matter how much effort, It never looked well on my report, Despite my failures, I pressed forward, Discouragement was constant, yet I endured, The hope and love my parents showed, And the Lord's hand of providence, Brought me from shame and disgrace, To a place filled with faith and grace, Fellow student, have hope and rejoice, For you also can be set free, From all these struggles and miseries, For nineteen years it haunted me, But now I can run with ease, See and learn from me, oh please! I wish to see you at peace, So take my hand during this race, We will run a steady pace, Confident with hope and success, Until we unlock your gifts.

> By Clayton Brown 2014 Graduate of Boyce College B.S. Biblical Counseling

