

DYSLEXIA, DYSCALCULIA AND DYSGRAPHIA: AN INTEGRATED APPROACH

PESI Presentation
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Disclosures

- **Relevant Financial**
 - Coddling Hollow Associates
 - Charis Learning Center, Inc.
 - PESI
 - Products mentioned – no financial relationship
- **Relevant Non-Financial**
 - None

Access to materials

- Charis Learning Center, Inc. Website at
 - www.charislearningcenter.com
 - Click on Dyslexia dropdown
 - Slide handouts – links to info in presentation – Supporting Documents - Activities

Physical Development - Coordination

- Ability to move and use different parts of the body together to perform a certain action
- Required for successful motor sequencing

Physical Development - Coordination

- Cross lateral – both sides of the body completing the same lateral movement: balances the hemispheres
- Crossing midline engages both hemispheres, activates corpus callosum, heightens cognitive function

Physical Development - Coordination

- Mismatched movement – “pat your head and rub your tummy” – engages problem solving and critical thinking skills; requires inhibition and replacement

Physical Development Motor Planning/Sequencing

- Required for all physical movements including speech
- Aspects of visualization, prediction, control, execution, satisfaction
- Foundation for linguistic and cognitive tasks

Warm-Up

- Free printables or digitals online (search Would You Rather)
- Small cost printables or digitals (Pinterest, TPT, search engine)
- There's an app for that! (Instagram, iTunes)



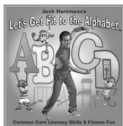
Would you rather? Game

Music and Movement



- Warm-Up: Sing, Stomp, Clap

Home > Music CDs and Downloads > Jack Hartmann



Jack Hartmann: Let's Get Fit To The Alphabet

CD or Album Download

Common Core Literacy Skills & Fitness Fun! Get a good workout while learning the basic language arts principles and early reading skills. The following concepts are covered in this movin' and groovin' CD:

- *Understand Basic Features of Print
- *Recognize & Produce Rhyming Words
- *Blend & Segment Onsets & Rimes
- *Characters, Settings, Events in a Story
- *Phoneme Deletion & Identifying Words
- *Pronounce, Blend & Segment Syllables
- *Add, Substitute & Isolate Phonemes
- *Common High Frequency Words
- *Isolate & Pronounce Initial Sounds
- *One-to-One Correspondence
- *Vowels & Corresponding Sounds
- *Recognize Letters of the Alphabet

Click to listen to sound clips:

- | | |
|--------------------------------------|-----------------------------------|
| 1. Let's Get Fit To The Alphabet | 15. Exercise to Onsets & Rimes |
| 2. The Way We Read | 16. Phoneme Deletion Freeze |
| 3. booyah, booyah | 17. Vowel Sound Workout |
| 4. What Letter Is It? | 18. Vowel Shape Up |
| 5. Get Up to Get Down | 19. Stretch, Reach, Blend & Blend |
| 6. Zig-Zag Ziggity Zee | 20. Sight Word Spelling |
| 7. Zig-Zag Ziggity Zee (open) | 21. Word Family Workout |
| 8. Play With Sounds and Dance Around | 22. Super Hero Song |
| 9. Beginning Sound Workout | 23. Look Out for Bossy R |
| 10. Clap Our Syllables | 24. Workout for Bossy R |
| 11. I Can Make Words That Rhyme | 25. Separating Sounds & Stretch |
| 12. Workout As We Rhyme | 26. Tell Me Where We Are |
| 13. Jump Out Words | 27. Work On My Mind |
| 14. Sports Syllable Song | 28. You Make a Difference |
| | 29. Shoot for the Stars Today |

When you purchase this album, you will be able to download the printable lyrics in PDF format at no additional charge.

Like 385 Tweet + Save 10

Options	Price	Quantity
CD with Printable Lyrics <small>CD with Downloadable Lyrics in PDF Format</small>	\$14.99	1

Songs for Teaching

www.songsforteaching.com

Options	Price	Quantity
CD with Printable Lyrics <small>CD with Downloadable Lyrics in PDF Format</small> Item: 9373-CDUPDF	\$14.99	1 Add To Wish List
Album Download with Lyrics <small>Zipfile of MP3 Tracks with Printable Lyrics in PDF Format</small> Item: 9373-OLAL Important Download Information	\$9.98	1 Add To Wish List

Music and Movement YouTube Channel examples

- Jack Hartmann -
<https://www.youtube.com/user/JackHartmann>
- Lyrical Life Science
- IMPORTANT:
 - Simple Rhythm
 - Explicit, uncluttered both visually and linguistically
 - Of good quality
 - Appeal to age range

DSM-5 Definition and Diagnostic Criteria

Specific Learning Disorder

- Elimination of the IQ-achievement discrepancy requirement and its replacement with four criteria (A – D), all of which must be met.

Subcategories

- **315.00 With impairment in reading –**
Dyslexia
- **315.2 With impairment in written expression -**
Dysgraphia
- **315.1 With impairment in mathematics -**
Dyscalculia

DSM-5 Definition and Diagnostic Criteria

Specific Learning Disorder

- **A.** Ongoing difficulties in the school-age years learning and using at least one academic skill (e.g. reading accuracy/fluency; spelling accuracy; written expression competence and fluency; mastering number facts).

DSM-5 Definition and Diagnostic Criteria

- **B.** These difficulties have persisted and failed to improve as expected, despite the provision of targeted intervention for at least six months. This intervention should be recognized as evidence-based and ideally delivered by an experienced and qualified person.

DSM-5 Definition and Diagnostic Criteria

- **C.** Substantially and quantifiably below those expected for age
- Cause impairment in academic, occupational, or everyday activities
- Confirmed by individually administered standardized achievement measures and comprehensive clinical assessment.

DSM-5 Definition and Diagnostic Criteria

- **C** Age at onset of problems is during the school-age years, although may not fully manifest until young adulthood in some individuals,
- The exception is where problems occur in upper-primary or secondary school once the demands on student performance increase significantly.

DSM-5 Definition and Diagnostic Criteria

- **D** Not diagnosed if there is a more plausible explanation for the difficulties being experienced by the student. For example – intellectual disability; chronic absenteeism; inadequate proficiency in language of instruction; or, not received appropriate instruction and/or intervention.

Co-morbidity

- Dyslexia can co-occur with –
 - Dysgraphia
 - Dyscalculia
 - ADD/ADHD
 - OCD
 - Tourette's
 - Autism

*If one neurologically based difference is present,
there is likely to be more than one!*

Average Range

- Sometimes students are identified with a learning disability even though they are performing within the average range. This is only the case when it can be shown that the student is achieving at this level due to unusually high levels of effort and ongoing support.

Severity levels

- **Mild:**

- difficulty in one or two academic domains
- individual may be able compensate or function well provided appropriate accommodations and supports

Severity levels

- **Moderate:**

- "Marked" difficulties in one or more academic domains
- individual is unlikely to become proficient without intervals of specialized and intensive teaching during the school years

Severity levels

- **Severe:**

- difficulties in learning skills affecting several academic domains
- individual is unlikely to learn those skills without ongoing individualized and specialized teaching for most of the school years

Twice Exceptional (or “Stealth Dyslexia”)

- NOT a clinical or diagnostic term
- Describes students who show potential for high achievement, who also meet eligibility criteria for one or more disabilities as defined by federal or state law
- This IS Specific Learning Disorder!

Prevalence

- Estimated to occur in 5 – 10% of the population
- Source:
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2528651/>
- Some sources estimate as high as 15%

“Red Flags” (not diagnostic)

- In general, students diagnosed with dyslexia have average to above average intelligence
- Sample Case -
 - IQ score: 120 Expressive Language: 90
Receptive Language: 92

“Red Flags” (not diagnostic)

- Speech Sound Disorder
 - Developmental Phonological Process Disorder – not just articulation!
 - “...severity of the disorder, persistence of the disorder, and errors associated with the disorder—are linked to risk for reading difficulties...”
- Cabbage, K.L., Farquharson, K., Iuzzini-Seigel, J & Zuk, J. (2018). Exploring the Overlap Between Dyslexia and Speech Sound Production Deficits. *Journal of Language, Speech, and Hearing Services in Schools*, 49(4) pp. 774-786

“Red Flags” (not diagnostic)

- “...children with speech sound disorder beyond the age of 6 years, regardless of initial severity...are at increased risk for reading difficulty...”
- Cabbage, K.L., Farquharson, K., Iuzzini-Seigel, J & Zuk, J. (2018). Exploring the Overlap Between Dyslexia and Speech Sound Production Deficits. *Journal of Language, Speech, and Hearing Services in Schools*, 49(4) pp. 774-786

“Red Flags” (not diagnostic)

- “...children who produce atypical or unusual speech errors (e.g., non-developmental phonological processes such as initial consonant deletion, backing) are at greater risk for later reading difficulty...”

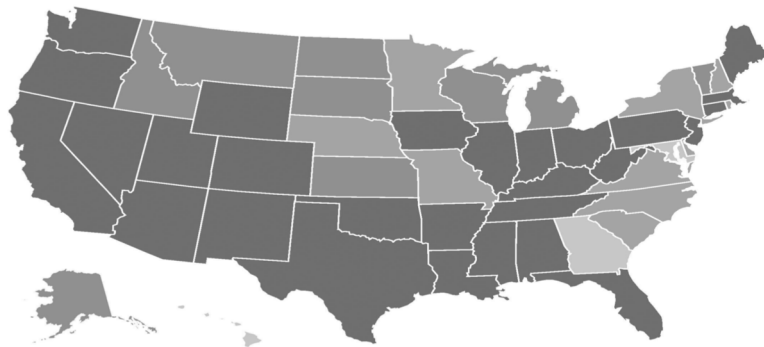
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Educational Dx vs Medical Dx

- Specific Learning **DISABILITY** – category of eligibility for special education
- Specific Learning **DISORDER** – clinical/medical diagnosis

The State of Dyslexia: Recent Legislation and Guidelines for Serving School-Age Children and Adolescents With Dyslexia

Dyslexia Laws in the U.S.



■ Law Pre-2015
 ■ No Law
 ■ Law Post-2015
 ■ Other Initiative or Resolution

Language, Speech, and Hearing Services in Schools, Volume: 49, Issue: 4, Pages: 810-816,

https://doi.org/10.1044/2018_LSH-SS-DYSLC-18-0002

Date of Download: 04/20/2019

National dyslexia laws

- Guidance on Dyslexia from the Office of Special Education and Rehabilitative Services (see handout)
- See Dyslexia and Accommodations – New ADA Guidelines in manual



DEFINITIONS

Definition of Dyslexia

- Difficulties with accurate/fluent word recognition, poor spelling and poor decoding
- Includes a phonological component that is “unexpected” for age

Definition of Dyslexia

- **Not** an indicator of low intelligence
- Persists despite classroom instruction
- May affect reading comprehension
- May reduce reading experience: affect vocabulary and fund of general knowledge

What's it like to experience Dyslexia?

...reading is a difficult task that poses constant academic and emotional challenges.

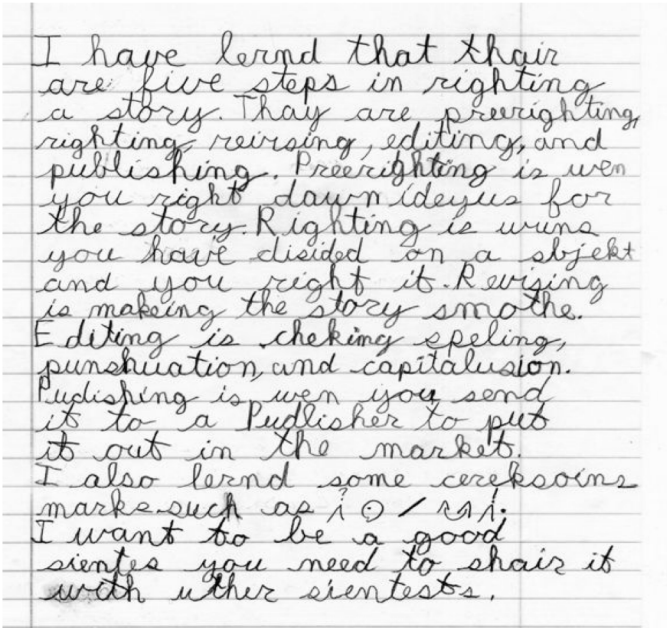
a=/z/ b=/y/ c=/x/ d=/w/ e=/v/ f=/u/ g=/t
/ h=/s/ i=/r/ j=/q/ k=/p/ l=/o/ m=/n/ n=/
m/ o=/l/ p=/k/ q=/j/ r=/i/ s=/h/ t=/g/ u=/f
/ v=/e/ w=/d/ x=/c/ y=/b/ z=/a/

ivzwrmt drgs wbhocrz rh vcszfhgrmt

- Retrieved from [Edutopia on Facebook](#)

Definition of Dysgraphia

- Neurological disorder
- Could present as –
 - Spelling difficulties
 - Poor handwriting
 - Disorganized composition



I have leard that thair
 are five steps in righting
 a story. Thay are, preerighting,
 righting, reirising, editing, and
 publishing. Preerighting is wen
 you right down ideyes for
 the story. Righting is wen
 you have disided on a sbject
 and you right it. Reirising
 is making the story smathe.
 Editing is cheking speling,
 punshuation, and capitalusion.
 Publishing is wen you send
 it to a Pudlisher to put
 it out in the market.
 I also leard some cereksoms
 marks such as i o / r n i.
 I want to be a good
 sientes you need to shair it
 with uthr sientests.

Figure 1

An example of a second grade student's handwriting with dysgraphia.

THIS IS A SAMPLE OF
MY BEST HANDWRITING
I WILL LOOK AT IT
AGAIN THEN I WILL SEE
HOW MY WRITING HAS
IMPROVED

Sharks

Sharks are fishes. They have large jaws and sharp teeth. A shark's brain is small. Sharks eat anything. Sharks have smooth, tough skin. They are grey, white or brown. Bull sharks look like a "mako". Bull sharks look very fierce. They live in the ^{ocean} and they are sometimes found in rivers. Sharks are found in the sea. You also find them near the beach.

Resource

- **Dysgraphia: What You're Seeing**

- Pre-K thru High School
- At home and at school
- Lists of accommodations

Definition of Dysgraphia

- Language-Based
 - Sound/symbol correspondence: difficulties writing sounds of language and remembering/producing sound sequences
 - Challenges with composing grammatically correct sentences (word order, use of conjunctions to combine sentences, staying on topic etc.)

Definition of Dysgraphia

- Non-Language-Based
 - Difficulty with forming readable letters
 - Challenges ordering letters to make words
 - Unable to stay “on the line”, or to appropriately distance letters that are above, on, or below

Definition of Dysgraphia

- Non-Language-Based
 - Challenges with word spacing
 - Challenges with consistently sizing letters

• Source: <https://dsf.net.au/what-is-dysgraphia/>

Definition of dyscalculia

- Developmental neurological disability
- Affects one's ability to understand, remember, or manipulate numbers or number facts
- An inability to conceptualize numbers as abstract concepts of comparative quantities ("number sense")

• Source: <https://www.mindwell.us/dyscalculia/>

Dyscalculia: indications in early childhood

- Difficulties with applying counting strategies (1:1 correspondence, counting on, sense of
- Challenges with identifying numbers
- Inability to know or tell which of two numbers is larger (e.g. "Which is more...10 or 2?")

Dyscalculia: indications in elementary/middle school

- Difficulty solving word problems
- Confusion in which operation should be applied (example: adding rather than subtracting)
- Challenges understanding sequence of time: days of the week, months of the year
- Lack ability to read an analog clock



OVERVIEW

Areas implicated

Not diagnostic criteria but included in literature since the 1960's

Anxiety

Executive Function - Auditory Processing

Visual Processing - Phonemic/Phonological Awareness

ACADEMIC TESTING FOR DIAGNOSIS

Shaywitz Dyslexia Screen

- Sally Shaywitz - Audrey G. Ratner Professor in Learning Development at the Yale University School of Medicine, and co-director of the Yale Center for Dyslexia & Creativity.
- Grades K-3 (5:0 – 9:11)
- Digital/Online administration and scoring through Qglobal, Shaywitz Universal Screening App, or Aimsweb
- Phonological, Linguistic, Academic

Test of Integrated Language and Literacy Skills

- Age 6-18 years
- Screen for language or literacy disorders, including dyslexia and written expression
- Sound and Word level + Sentence/Discourse level
- Diagnostic when administered by qualified professional (yes – SLP where allowed)

Standardized testing that meets diagnostic criteria

- Woodcock-Johnson Tests of Achievement
- Weschler Individual Achievement Test
- Gray Oral Reading Test
- Woodcock Reading Mastery Test
- Test of Written Language

Standardized testing that meets diagnostic criteria

- CELF-5 Reading Comprehension and Written Expression
- OWLS II Reading Comprehension and Written Expression
- Comprehensive language testing including higher-level language

Evaluators

- Special Educator or Psychologist – gather the data
- Speech-Language Pathologist – gather the data
- Psychologist – make the diagnosis



ANXIETY

Anxiety

- Difference between ability and performance can exacerbate feelings of anxiousness
- Affect on classroom performance
- Affect on other students
- Inhibit ability and response

Anxiety

- Decreased language ability
- Diminished neurological resources
- Impacts social interactions
- Could result in highly undesirable behaviors

Indications of anxiety

- Behavioral – demonstration of frustration, intolerance), fleeing, loss of internal control, “acting out”
- Vocal – expressions stress, concern over finishing, stating lack of ability, angry words, shouting

Indications of anxiety

- Biological – upset stomach, headaches, lack of appetite, frequent illness
- Social – impaired interactions with students and adults.....and many more

A graphic of a clipboard with a white sheet of paper. The text 'ADDRESSING ANXIETY' is centered on the paper.

ADDRESSING ANXIETY

Who can diagnose anxiety

- Licensed clinical psychologists, Neuropsychologists, Psychiatrists –
 - Highest level of education and expertise
 - Experienced in diagnosis/treatment of children/adolescents with anxiety disorders
- Medical Doctors
 - Very generalized education and experience

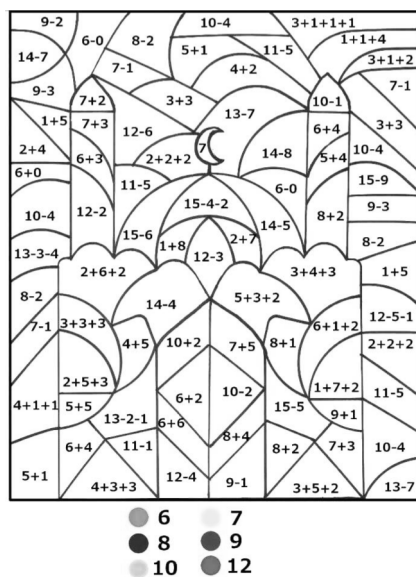
Consistent predictable formats

What are they?

- Formats for worksheets, organizers, assignments, tasks that always look the same

What do they do?

- Reduce processing load
- Focus on content not format
- Reduce need for assistance
- Increase likelihood of success



Jump through these math problems! Add the numbers.

1. $\begin{array}{r} 3 \\ +5 \\ \hline \end{array}$
2. $\begin{array}{r} 1 \\ +7 \\ \hline \end{array}$
3. $\begin{array}{r} 1 \\ +6 \\ \hline \end{array}$
4. $\begin{array}{r} 1 \\ +2 \\ \hline \end{array}$
5. $\begin{array}{r} 2 \\ +7 \\ \hline \end{array}$
6. $\begin{array}{r} 3 \\ +1 \\ \hline \end{array}$
7. $\begin{array}{r} 6 \\ +3 \\ \hline \end{array}$
8. $\begin{array}{r} 4 \\ +3 \\ \hline \end{array}$
9. $\begin{array}{r} 5 \\ +2 \\ \hline \end{array}$
10. $\begin{array}{r} 3 \\ +6 \\ \hline \end{array}$
11. $\begin{array}{r} 3 \\ +2 \\ \hline \end{array}$
12. $\begin{array}{r} 2 \\ +3 \\ \hline \end{array}$

Dealing with time constraints

- Negotiate to adjust targets to what is achievable in allotted time
- Provide appropriate accommodations and supports
- Be encouraging
- Make allotment of time explicit (Time Timer)
- Start small – work toward more

Remember – the anxiety impedes brain resources and slows the work!

Balancing ability with performance

- Set the student up for success
- Balance ability and expectations – Zone of Proximal Development
- Provide meaningful feedback
- Set reasonable goals over time
- Chart increased performance (which is also a math activity!)

“Direct from the horse’s mouth”

- Sitting towards the front and closet to the door
- Or having somewhere to go when I’m anxious and someone that I can trust to talk to
- Being able to remove myself from situations that make me anxious
- Not being pushed to do something that makes my anxiety kick in
- Like presenting in front of a large class or group of people
- The coloring one would drive me crazy and be confusing



EXECUTIVE
FUNCTION



Executive function

Frontal cortex: center of higher-level thinking. Regulates:

Impulse control

Emotional control

Flexible thinking

Working memory

Planning and prioritizing

Task Initiation

Organization

• Great Resource: <https://www.understood.org/~media/040bfb1894284d019bf78ac01a5f1513.pdf>

Executive function

- Executive Function abilities “drive the bus”
 - Taking action toward a goal
 - Process and synthesize information fluidly
 - Understand consequences and influences of behavior
 - Infer and predict based upon incomplete information

Executive function

- EF limitations can affect -
 - Task completion
 - Keeping a schedule
 - Organizing materials, projects, homework
 - Planning
 - Written expression
 - Comprehension....*and that's a short list!*

ASSESSING AND TREATING EXECUTIVE FUNCTION DEFICITS

Assessing executive function

- Psychologist, Neuropsychologist, SLP
- Assess:
 - Attention • Inhibitory Control • Working Memory • Organization/planning • Concept Formation • Set Shifting • Word and Idea Generation

Executive Function Tests

List of tests that assess Executive Function abilities:

[Understood.Org List](#)

Executive function intervention

Address these challenges:

- Recognizing the passage of time
- Controlling impulses
- Getting things started
- Accurately following directions

With a few simple supports...

Executive function intervention

- We all use visual supports!
 - Lists
 - Calendars
 - Stop signs!
- Static information which can be referenced as necessary (verbal information = dynamic and fleeting)
- Students never outgrow their visual schedules!

“A picture is worth a thousand words”

Google Calendar

- Upside:
 - It's free, collaborative and accessible
- Downside:
 - TOO much information!
 - Expectations for student creation/use
 - Depends on tech access



Illustrating the passage of time and reinforcing concept of movement across the day

www.schKIDules.com



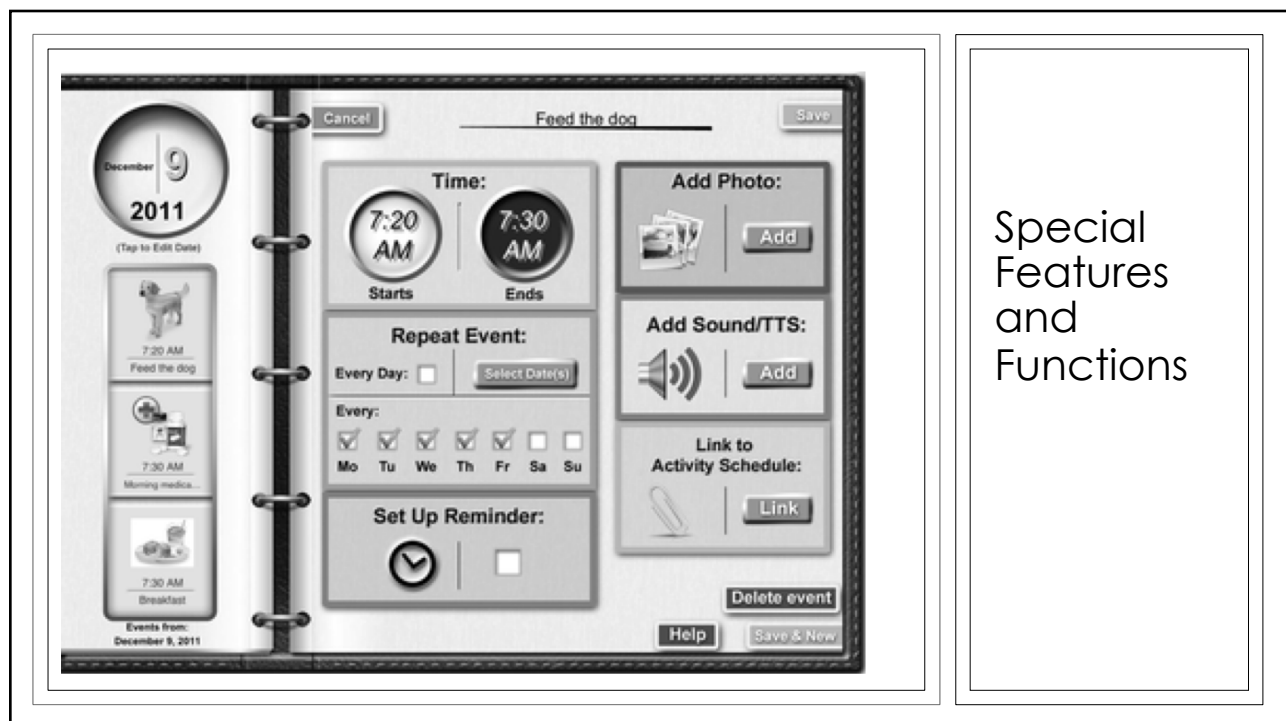
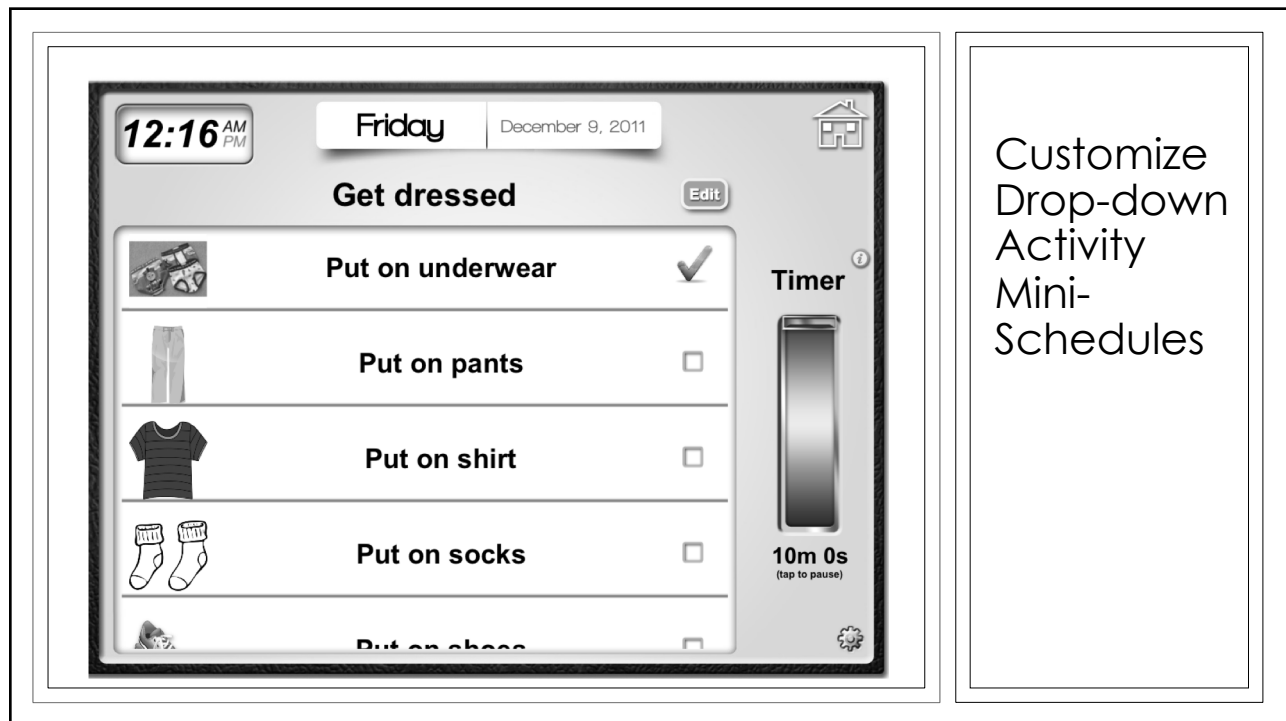
•Visual Schedule Planner from Good Karma Apps

\$14.99 on the app store

Daily, Monthly, Weekly view

Optional mini break-out schedules

Option to insert video models





Insert
Video
Models



Corkulous
\$8.99 on the app
store
IOS only
Nested Cork
Boards
Connectivity
DropBox

Pictures and Familiar Information Support Executive Function and Working Memory

The Periodic Table of the Elements, in Pictures

Color Key














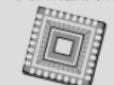




- Solid
- Liquid
- Gas
- Human Body
- Earth's Crust
- Atmosphere
- Water
- Plants
- Animals
- Minerals
- Metals
- Nonmetals
- Transition Metals
- Superheavy Elements
- Rare Earth Metals
- Actinide Metals

Legend

- Alkali Metals Group 1
- Alkali Earth Metals Group 2
- Transition Metals
- Noble Gases Group 18
- Superheavy Elements
- Rare Earth Metals
- Actinide Metals

Superheavy Elements

radioactive, never found in nature, no uses except chem. research

B ■ Boron  Sports Equipment	5 C ■ ★ Carbon  Basis of Life's Molecules	6 N ☁ ★ Nitrogen  Protein	7 O ☁ ★ ☁ Oxygen  Air	8 F ☁ Fluorine  Toothpaste	9 Ne ☁ Neon  Advertising Signs
Al ☐ ☁ Aluminum  Airplanes	13 Si ☐ ☁ Silicon  Stone, Sand, and Soil	14 P ☐ ★ Phosphorus  Bones	15 S ☐ ★ Sulfur  Eggs	16 Cl ☁ ★ Chlorine  Swimming Pools	17 Ar ☁ Argon  Light Bulbs
Ga ☐ Gallium  Light-Emitting Diodes (LEDs)	31 Ge ☐ Germanium  Semiconductor Electronics	33 As ☐ Arsenic  Poison	34 Se ☐ Selenium  Copiers	35 Br ☐ Bromine  Photography Film	36 Kr ☐ Krypton  Flashlights

Comprehensive Resource

- Center on the Developing Child - Harvard University
- Suggestions for 7-12 year olds
- Strategies for Adolescents



AUDITORY PROCESSING

Auditory processing

- Ability of the brain to translate auditory signal in to meaningful language
- People can hear normally and have auditory processing deficits
- Discriminate between sounds/sound patterns

Auditory processing

- Recognize patterns as words with meaning
- Formulate responses to what is heard based on perception of incoming message

Auditory processing

- Evidence of auditory processing deficit in developmental dyslexia for both speech and non-speech stimuli
- Phonological deficits could be secondary to more general deficits in auditory processing ability

ADDRESSING AUDITORY PROCESSING DEFICITS

Assessing auditory processing disorder

- Diagnosed by audiologist
 - Dichotic Testing: locating a speaker in the presence of multiple auditory signals
 - Speech in noise
 - Comprehending distorted speech
 - Auditory Evoked Potentials (measuring the activity of the auditory neural pathways)

Addressing auditory processing deficits

•Teach strategies:

- Seat child away from visual, auditory, and motor distractions, such as fans, heaters, windows, doors, etc.
- Allow him/her to move to a quiet area when doing silent reading and independent work.

Addressing auditory processing deficits

- Wait for the room to become quiet before giving instructions or directions.
- Enforce appropriate speaker-listener manners for all children in class – one person talks at a time; others listen quietly.

Addressing auditory processing deficits

- Speak clearly, with a moderate rate, and stand in one place, facing child.
- Allow child a longer time to respond, beyond what you might consider normal, when asking questions.

Addressing auditory processing deficits

- Encourage the student to USE strategies:
 - Keep your eyes on the speaker
 - Use good listening behavior — quiet body and closed mouth.
 - Ask to have directions repeated or clarified

- Re-auditorize, repeat information quietly to yourself, after directions or information are presented orally.
- Ask someone to explain what words mean, or use a dictionary or electronic thesaurus, when you aren't sure.

Fast ForWord

- Software programs for individualized learning – language (elementary), literacy (secondary), reading
- Requires a teacher or lab coach to monitor Students work at their own place
- Can be used for a whole classroom
- Generates data collection and reports
- Evidence-based <https://www.scilearn.com/results/research-independent-reviews>

Auditory bombardment

1. Lists of words that all have the same sound in initial, medial or final position
2. One resource for lists: <https://speech-language-therapy.com/pdf/listeninglists2010pf.pdf>
3. First – student just listens
4. Next – student completes an action when they hear the sound (Level 1: all the same – Level 2: discrimination)

Auditory bombardment activity

- | | |
|----------|---------|
| 1. tan | 2. tall |
| 3. tag | 4. tar |
| 5. toad | 6. tail |
| 7. tin | 8. toil |
| 9. taste | 10. top |

Auditory discrimination

Listen to 2 sounds at a time - discrimination

(Building on previous activity) – Listen to sets of two words and identify whether the same or different (practice – review!) TAPS-3

Example: set/set OR set/sat

Blind/blind or blind/blink

Auditory bombardment activity

- | | |
|----------|----------|
| 1. tan | 2. tall |
| 3. beep | 4. tar |
| 5. bale | 6. tail |
| 7. tin | 8. bob |
| 9. taste | 10. beet |
| 11. ball | 12. toil |

Auditory discrimination

Sound Bingo – Student covers letter associated with sound name (*for ease of play, use long vowels*)

Students listen to familiar sounds (animal noises, traffic noises, household noises) and sort picture/text cards into categories

Play sound bingo!



<https://www.amazon.com/Sound-Bingo-Kindermusik/dp/0811871851>

Free Printable:
<http://www.sassysanctuary.com/2012/01/abcs-bingo-free-printable.html>

aBINGO				
Ee	Yy	Jj	Zz	Ii
Oo	Bb	Mm	Ff	Rr
Tt	Gg	Qq	Kk	Hh
Cc	Uu	Dd	Aa	Pp
Ww	Ll	Vv	Ss	Nn

VISUAL PROCESSING

Visual Processing

- Lobier, et al (2012) – “strong evidence that poor VA (visual attention) span performance in dyslexia stems from a parallel visual processing deficit” on non-verbal as well as verbal tasks
- Reading involves multiple linguistic, visual, attentional and auditory processes
- Could involve – ability to attend to visual input across the span of text; slow visual processing speed; differences in brain organization for visual shape extraction

Visual processing disorder

- Visual Processing is the ability of the brain to “make sense” of visual input: to translate incoming signal into recognizable objects
- Like Auditory Processing Disorder, VPD can occur in persons who have typical 20/20 eyesight
- Several possible areas of visual differences contribute to VPD:

Form constancy

- The ability to recognize and name an object even when viewed from a different perspective, or when the object changes size, color
- Impaired form constancy can affect –
 - The ability to recognize numbers and letters when the font changes
 - The ability to recognize numbers and letters when the context is different (e.g. at home vs. at school)

Visual discrimination

- The ability to tell whether one object is different from another, even when the differences are subtle
- Impairments in visual discrimination can affect –
 - The ability to match (clothing, socks, pictures, letters, numbers)
 - The ability to identify small details in pictures and books.
 - The ability to see differences between letters and words that look the same (b/p, car/cat)

Visual memory

- The ability to recall the details of what has been seen
- Impairments in visual memory may affect –
 - The ability to copy words and sentences
 - The ability to remember what a particular letter sounds like, or what letter "goes with" a sound
 - The ability to learn and remember sight words
 - The ability to remember how sentences should be capitalized and punctuated

Visual sequential memory

- The ability to remember the visual details in sequence presented
- Impairments in visual sequential memory could affect
 - The ability to read and spell, as letters must be recalled and processed in sequential order
 - The ability to correctly copy math problems/calculations from the book or board
 - The ability to relate narratives in sequential order

Visual-motor processing

- The ability to use feedback from the eyes to coordinate movement with other parts of the body
- Impairments in visual-motor processing can affect –
 - The ability to write within the lines or margins
 - the ability to walk down the halls without bumping in to things!
 - the ability to produce legible handwriting
 - The ability to accurately complete fine motor tasks

Visual-spatial processing

- The ability to tell where your body and other objects are in space – relative to other objects
- Impairments in visual-spatial processing affect –
 - The ability to judge distance between objects, both from the person and from one another
 - The ability to understand/perceive movement of objects and/or characters in written or spoken narrative
 - The ability to comprehend the passage of time

ADDRESSING VISUAL
PROCESSING
DISORDER

Occupational therapist

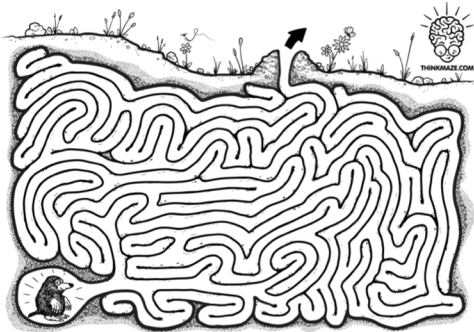
- Can assess visual processing as part of the sensory system
 - Visual responsivity, over-active and under-active
 - Visual discrimination
 - Visual-motor skills

- Measure functional use of vision
 - how smoothly the eyes move from point to point (tracking)
 - how easily each eye can shift focus from near to far
 - how well the eyes can work together (convergence)
- Design and implement therapies to treat Visual Processing Disorder

Visual processing treatment

- Exercises to train the eyes to work together
- Improve tracking
- Improve accuracy of eye movements in close-up work (reading!)
- Improve overall functionality
- See <http://www.ot-mom-learning-activities.com/behavioral-optometrist.html>

Visual processing activities



Mazes –

- Executive function skills
- Visual attention
- Visual memory
- Visual spatial
- Hand-eye coordination

Visual processing activities

School Life

H	L	S	R	R	P	B	A	C	K	P	A	C	K
O	O	R	R	E	N	E	P	R	A	H	S	E	S
M	L	E	E	S	A	C	L	I	C	N	E	P	E
E	S	K	S	O	T	C	R	A	Y	O	N	S	N
W	C	R	G	C	I	I	R	R	I	N	S	S	O
O	E	A	L	B	I	E	S	L	A	L	E	R	T
R	T	M	I	C	R	S	X	K	I	N	E	B	E
K	C	S	T	B	O	T	S	C	O	S	S	O	B
C	R	P	T	S	C	M	N	O	A	O	O	O	O
K	S	E	E	N	A	E	P	R	R	C	B	O	O
B	N	N	R	C	P	C	E	A	K	S	C	R	K
P	L	S	K	O	N	S	K	S	S	R	M	L	S
L	U	N	C	H	B	O	X	O	K	S	E	C	N
P	I	S	K	S	K	N	R	S	C	R	S	C	A

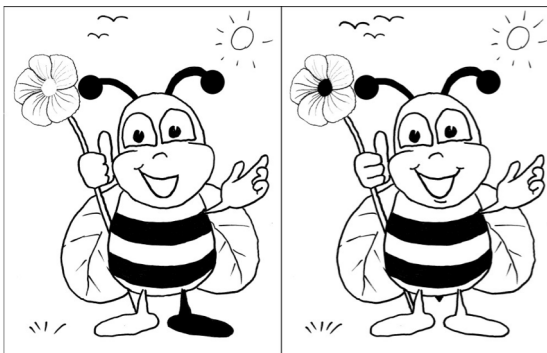
CRAYONS
SCISSORS
NOTEBOOK
MARKERS
ERASER
PENCILS
LUNCH BOX
COMPASS
BACKPACK
SHARPENER
PENS
PENCIL CASE
BOOKS
HOMEWORK
GLITTER

Word Search –

<http://thewordsearch.com/puzzle/37/school-life/>

- Visual scanning
- Visual attention
- Visual memory
- Letter recognition
- Word recognition
- Matching

Visual processing activities



Find the Difference –

- Visual scanning
- Visual discrimination
- Visual form constancy
- Visual memory

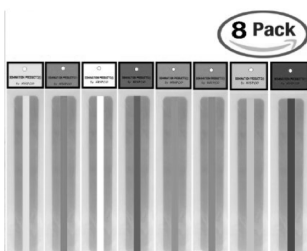
Irlen syndrome

- Perceptual processing syndrome related to sensitivity to light
- May co-occur with dyslexia
- Use of covered overlays and lenses to improve visual access to written material



Irlen syndrome

- Students will express a definite preference for certain colors so assess many different ones
- Assess line-by-line strips, or whole-page 'covers'



Backgrounds and contrasting font colors

For some readers, the font and background colors of a page can have an impact on their ability to read.

Contrasting colors can make it difficult to track from one line to the next and the letters can appear to become fuzzy and even move around the page.

When the font and background colors are uncomfortable, it is also taxing on the eyes. In addition, it can become difficult to focus.

For some, white paper and black letters can create confusion just like blue letters on a red background.

If this is happening to your students or children, consider changing the background and font colors on your computers.

Also have a selection of color overlays so the background color of books can also be altered to a more soothing option.

© Dr. Erica Warren

Font Preferences

- Does font preference influence reading performance?
- Will the Dyslexie or OpenDyslexic font lead to more accurate and faster reading?
- Do children demonstrate a preference for either the Dyslexia or OpenDyslexic font?

Font Preferences

- Dyslexie Font does not benefit reading in children with or without dyslexia
- No improvement in reading rate or accuracy for group as a whole
- Participants did not report preferring to read material presented in that font

PHONEMIC/PHONO
LOGICAL
AWARENESS

Phonological awareness

- What influences acquisition of phonological knowledge:
 - Genetics
 - Intelligence
 - Memory
 - Vocabulary
 - Experiences with oral and written language

Phonological awareness

- The ability to hear, recognize and manipulate sound patterns in the language (examples: ight/ite psy = sy and "ch" can equal /k/!)
- Critical skill for word-attack, sound-symbol correspondence, decoding

Phonemic awareness

- Phonemic Awareness – the ability to hear, recognize and manipulate individual sounds in the language
- Critical skill for word-attack, sound-symbol correspondence, decoding

Phonemic/Phonological Awareness

- Ability to access phonological knowledge related to the efficiency with which one can retrieve phonological codes from memory
- Causal relationship between phonemic/phonological awareness and literacy, as shown that intensive phonological instruction improves literacy

Phonemic/phonological awareness

- Children learn about successively “smaller” parts of words as they grow and learn
- Developmental progression:
 - Detect and manipulate compound words
 - Then onset and rime
 - Then whole syllable
 - Then individual phonemes in multi-syllabic words

Phonemic/phonological awareness

- Can discriminate words that sound the same from words that are different before manipulating sounds within words
- Can blend before they can segment
- Continue to improve phonemic/phonological awareness skills while acquiring new ones



ADDRESSING PHONEMIC/PHONOLOGIC AL AWARENESS

Assessing phonemic/phonological awareness

- Comprehensive Test of Phonological Processing (CTOPP)
- Test of Auditory Processing Skills-3rd Edition (TAPS-3)
- The Phonological Awareness Test 2 (PAT 2) –
Linguistics (Ages 5-9)
 - Rhyming, Segmentation, Isolation, Deletion, Blending, Decoding and more!

“A My name is”

Each participant follows the alphabet as they say the following poem:

“A” My name is...Alice

I come from...Arizona

And I like...Almonds

...and on through the alphabet...

“A my name is”

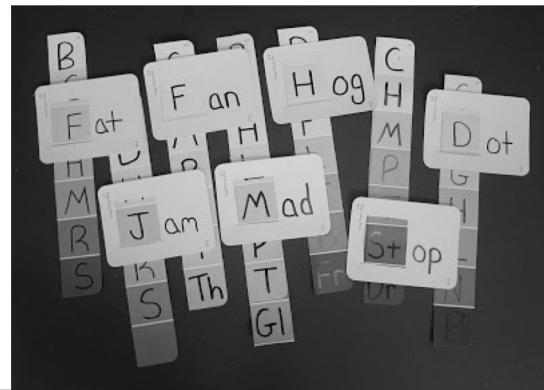
- Names are made up (memory, critical thinking)
- Locations can be states, cities, community places...use imagination ☺
- “Likes” can be specified categories (foods, parts of speech, animals...) or anything the player wants to mention
- 2 people can play, up to a large group

“A my name is” adaptations

- Possible Variations:
 - Bounce a ball
 - Alternate hands as you bounce (crossing midline)
 - Throw the ball up and catch it
 - Toss ball to next player
 - Clap- set a pattern or rhythm that everyone does

Word families

- Manipulate
 - Single sounds or blends
 - Word family ending
 - Rearrange to create different words



Word families

- “Be systematic”
- “Provide multiple opportunities to spell and master each spelling pattern before moving on”
- “Provide explicit instruction for how to segment and blend written syllables”
- Great resource: <http://dyslexiahelp.umich.edu/professionals/dyslexia-school/spelling/how-should-spelling-be-taught/more-on-spelling>



READING

Structured Literacy

- Umbrella term used by the International Dyslexia Association to describe all of the programs that teach reading in essentially the same way.
- The foundation for effective reading instruction for students who struggle to learn to read

Structured Literacy

- Phonology
- Sound-Symbol Association
- Syllables
- Morphology
- Syntax
- Semantics

Structured Literacy

- Systematic and Cumulative
- Explicit
- Diagnostic

Recommended Reading Programs

- Orton-Gillingham
- Wilson Reading Program
- Barton Reading Program
- Lively Letters/Reading with TLC
- Reading Mastery

Resources

- LearningAlly

- Large library of human-read audio books
- Manage assignments and track students' reading
- Tools and resources for teachers
- Student engagement opportunities

Resources

- Bookshare

- Free for qualified students (those with learning disabilities)
- textbooks, bestsellers, children's books
- Read on any device

Resources

- SnapandRead on Google Chrome
 - Text to Speech
 - Screenshot Reader
 - Simplifies Text
 - Translates
 - Reads PDFs
 - \$3.99 per student per month



MATH

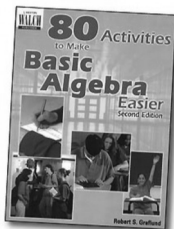
Math-in-the-box

- Touch Math: multi-sensory, sequential, practice and review
 - <https://www.touchmath.com/pdf/UsingTouchMathwithStudentswithLearningDisabilities.pdf>
- Stern's Structural Math: manipulative, clear visual cues to numeracy, sequential practice and review (see handout in manual)
- More choices: <http://learningabledkids.com/mathematics/mathematics.htm>

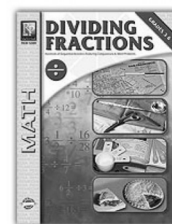
Math-in-the-box

- Remedia Publications

<http://www.rempub.com/math>



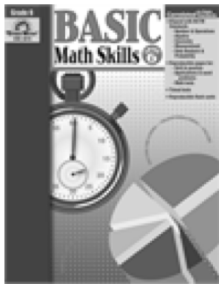
- Low Cost
- Consistent and predictable
- Functional math
- Grades K - 12



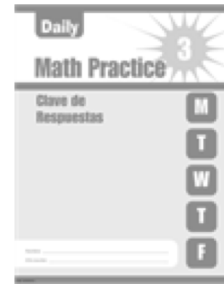
Math-in-the-box

- Evan Moor

<http://www.evan-moor.com>



- Low Cost
- Consistent and predictable
- Functional math
- Grades K - 12



Learn math through song and rhythm!

CLAVE – an African/Cuban rhythm pattern used as a tool for temporal organization.

See this YouTube video for use in class:

 <https://youtube/aLD9l8foH-k>

Just one of many examples!

Be careful of appropriateness, “clutter”, clarity of content

Why Khan Academy?

- Consistent and predictable – same every time
- Clear and not cluttered, with visual support
- YouTube videos – cluttered, distracting, not consistent (mostly)
- Instruction – practice – feedback – record progress
- Caution: language loaded!

Khan Academy

[All](#) [Videos](#) [Articles](#) [Exercises](#) [Programs](#)

[Intro to order of operations \(video\) | Khan Academy](#)



This example shows the steps and clarifies the purpose of **order of operations**: to have ONE way to interpret a mathematical statement.

[Order of operations example \(video\) | Khan Academy](#)



The **order of operations** tells us the order to solve steps in expressions with more than one operation. First, we solve any operations inside of parentheses or ...

[Order of operations \(practice\) | Khan Academy](#)



Practice evaluating expressions using the **order of operations**.

[Worked example: Order of operations \(PEMDAS\) \(video\) | Khan ...](#)



Work through a challenging **order of operations** example with only positive numbers.

[Order of operations with negative numbers \(practice\) | Khan Academy](#)



Practice evaluating expressions using the **order of operations**. Numbers used in these problems may be negative.

[Order of operations challenge \(practice\) | Khan Academy](#)



Practice solving more challenging problems using the **order of operations**.

Khan academy

Simplify $8 + (5)(4) - (6 + 10 \div 2) + 44$

$8 + \underline{(5)(4)} - (6 + (10 \div 2)) + 44$
 $8 + 20 - \underline{(6 + 5)} + 44$
 $8 + 20 - 11 + 44$
 $28 - 11 + 44$
 $17 + 44$

Parentheses
 Exponents
 X, ÷
 +, -

And then 17 plus 44- I'll scroll down a little bit.

The power of playing games

- Interest
- Attention
- Social Engagement
- Goal-Directed
- Problem-solving
- Intrinsic reward (satisfaction)
- Consistent, predictable formats

The power of playing games

- Choose games that have measurable, observable objectives
- Online math games (search engines)
- Choose games that are complex enough to stimulate learning but simple enough that students can be successful
- Use items, objects, colors of interest
- Set up a culture of play where everyone can be involved.

The power of playing games

- Sequence Numbers by Jax
- Math Wars multiplication game cards
- UNO
- Equate: The Equation Thinking Game
- Mathopoly

More Resources

- Dyscalculia.org

<http://www.dyscalculia.org>

- Education.com

<https://www.education.com/activity/math/>

- Card games to practice math facts

[https://www.granby.k12.ct.us/uploaded/faculty/wyzika/Dice
and Card Games to Practice Math Facts.pdf](https://www.granby.k12.ct.us/uploaded/faculty/wyzika/Dice_and_Card_Games_to_Practice_Math_Facts.pdf)



ORGANIZING WRITING

Neurological impact of handwriting

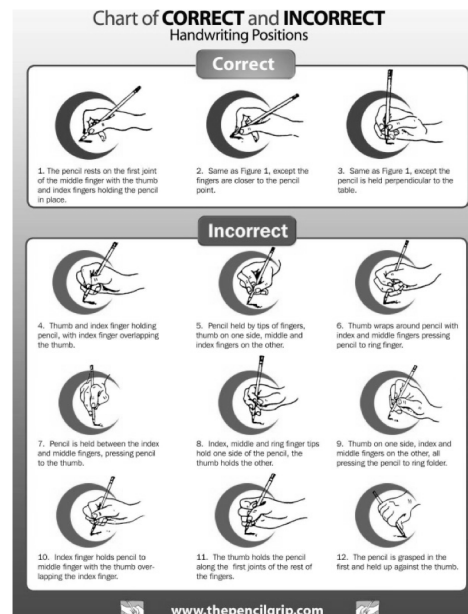
- Activates sensation, exercises movement control, requires planning and execution, utilizes higher-level thinking
- Printing = discrete: Cursive = fluid, connected
- Writing cursive activates areas of the brain that are not activated in print or keyboarding
- Teaches the brain to integrate information from several modalities

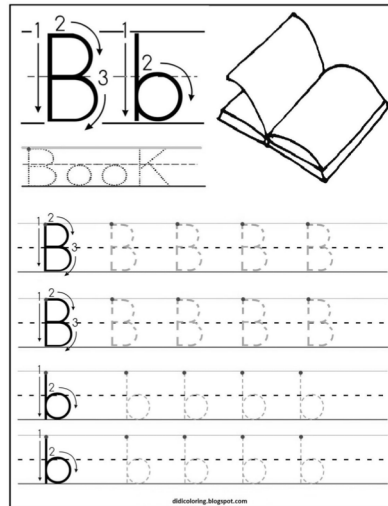
State of Utah – Importance of Handwriting

- Studied handwriting during 2012-2013 school year
- Added Utah Core Standards that include teaching manuscript and cursive writing and also include building fluency in reading cursive writing
- Extensive list of research and resources:
[State of Utah Resources](#)

Addressing fine motor skills: Occupational Therapy

- Exercises such as squeezing a foam ball or playing with clay can strengthen hand muscles
- Improve fine motor (small muscle) skills
- Improve arm position and body posture
- Adaptive writing implements
- Alternative sensory activities to stimulate hand/eye coordination and movement associated with writing





- Brief history of the artist
- Placement in time and relevant (brief) current history
- Why was this socially relevant?

- **Provide vocabulary**
 - Color names
 - Movement descriptors
 - Emotion words

- **Provide structure**
 - Number of words
 - Number of sentences
 - Sentence frames
 - Examples

- **Do not judge the work!**
 - Don't correct for spelling!



Picturing Writing

- From their website: <http://www.picturingwriting.org>

- **“Picturing Writing: Fostering Literacy Through Art** is a dynamic evidence-based approach to teaching writing that uses simple crayon resist art techniques and the study of quality picture books to teach the art of writing. It has been proven effective for a wide range of learners, including Title I students, Special Education students, English learners, and boys (who are outperformed by girls in writing across the country).

Picturing Writing

- “During Artists/Writers Workshop, students draft their ideas in pictures first. They learn how to create pictures that *tell* a story and write words that *paint* pictures. As students become fluent in the language of pictures *and* the language of words, they are able to approach the reading/writing process from a position of personal strength and enthusiasm. They also activate higher order thinking skills.”

Resources

- Free printable sentence builder program from Speech-Language Pathology Resources
<http://www.speechlanguage-resources.com/sentence-builder-program.html>
- Rainbow Sentences App and Sentence Builder app from Mobile Education Store (on the app store)



ASSISTIVE
TECHNOLOGY

Read and Write

- www.TextHelp.com
- 12 month subscription for one user = \$145.00
- Bulk pricing for schools
- Text to Speech
- Speech to Text
- "Ear Read" anything!

Read and Write

- Very high quality customizable voices
- Dictionary and Picture Dictionary
- Spell check in context
- Study tools
- Free Trial!!

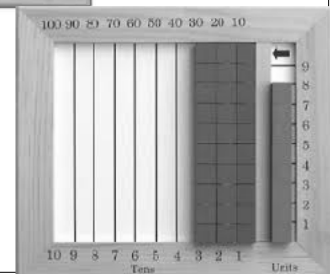
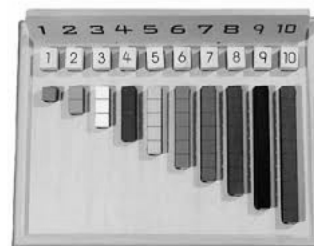
Time timer

- Time Timer
 - IOS or Android: Google Play or iTunes: 0.99 to \$4.00
 - Visually represents the passage of time
 - Requires less cognitive processing



Manipulatives! (low-tech)

- Manipulative Blocks
- 2D and 3D geometric shapes
- Picture boards
- Abacus
- Math Template paper (Panther)
- Math Fact Cards
- Tactile Rulers
- Jumbo Rulers



More resources

- 7 Reading Readiness Apps for Special Needs Students
- 6 iPad apps for Creative Writing
- 50 Writing Prompts for All Grade Levels

WRITING AN
EFFECTIVE IEP OR
504 PLAN

Cover page

- How would you name the students' primary disability?
- Secondary disability? (If any listed)
- Who are the members of the students' IEP team (by profession, not name)
 - Pay particular attention to "others with knowledge of the child"

Present levels

- Describe the disability
 - Here is where you get to name and describe the diagnosis, not just the educational category of disability.
- How does the student's diagnosed disability impact the student's learning
 - Remember...the impact you describe here drives goals, services and accommodations

Goals

- What areas need to be addressed, according to assessment results?
 - Reading? What areas?
 - Math? What kind of math?
 - Written Expression? Content or Mechanics, or both?
 - Speech-Language?

Goals

- What areas need to be addressed, according to assessment results?
 - Fine and/or Gross Motor?
 - Visual?
 - Auditory?
 - Mental Health?

Accommodations and supports

- Refer to the Accommodation Tip Sheet in your manual
- Based on your assessment information (what you know), choose (as a team) the accommodations your student will need
- What (if any) assistive technology supports will your student need? Include software, iPad apps, devices etc.

504 plans

- 3 gates to special education eligibility:
 - Disability
 - Adverse affect
 - Need for services
- If the student has a diagnosed disability but does not show adverse affect and does not require special education services, a 504 plan may be developed

504 plans

- 504 is a civil right law that provides for accommodations appropriate to the students' diagnosed disability that are designed to insure academic success
- 504 law includes procedural protections for conduct related to the disability, such as behavior support plan, counseling, 1:1 support, alternative placement

504 plans

- A 504 plan provides for necessary accommodations not for specialized or individualized instruction
- Examples of accommodations and supports:
 - Assistive technology
 - Testing accommodations
 - Classroom read-aloud accommodations
 - Homework accommodations

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