

**DYSLEXIA, DYSCALCULIA AND  
DYSGRAPHIA:  
AN INTEGRATED APPROACH**

**PESI Presentation  
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Coddling Hollow Associates, Inc.**

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**Disclosures**

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

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**Access to materials**

- Charis Learning Center, Inc. Website at
  - [www.charislearningcenter.com](http://www.charislearningcenter.com)
  - Click on Dyslexia dropdown
  - Slide handouts – links to info in presentation – Supporting Documents - Activities

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### Physical Development - Coordination

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

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### 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

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### 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

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### Cross-Lateral Movements

- Reach arm across body – push outward with heel of hand – switch – repeat
- Lift one knee and touch with opposite hand – switch – repeat
- Kick out one leg – reach out with opposite hand – switch – repeat

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### Physical Development - Coordination

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

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### Mismatched Movement

- Lift both arms over head – drop one arm straight in front while one arm goes to the side – lift arms again and switch – repeat, at end, drop both arms together (adaptation of Mountain Pose)
- Stomp then Clap (switching feet)

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## 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

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## Music and Movement



- Warm-Up: Sing, Stomp, Clap

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### Jack Hartmann: Let's Get Fit To The Alphabet

Copyright © 2014 Jack Hartmann. All rights reserved. This is a copyrighted work. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without prior written permission from the publisher.

- Check out the other books in the series:
- Let's Get Fit To The Alphabet
  - Let's Get Fit To The Numbers
  - Let's Get Fit To The Colors
  - Let's Get Fit To The Shapes
  - Let's Get Fit To The Days of the Week
  - Let's Get Fit To The Months of the Year
  - Let's Get Fit To The Seasons
  - Let's Get Fit To The States
  - Let's Get Fit To The Countries
  - Let's Get Fit To The Planets
  - Let's Get Fit To The Animals
  - Let's Get Fit To The Insects
  - Let's Get Fit To The Birds
  - Let's Get Fit To The Fish
  - Let's Get Fit To The Reptiles
  - Let's Get Fit To The Amphibians
  - Let's Get Fit To The Mammals
  - Let's Get Fit To The Monkeys
  - Let's Get Fit To The Dinosaurs
  - Let's Get Fit To The Prehistoric Animals
  - Let's Get Fit To The Ancient Civilizations
  - Let's Get Fit To The Ancient Egypt
  - Let's Get Fit To The Ancient Greece
  - Let's Get Fit To The Ancient Rome
  - Let's Get Fit To The Ancient China
  - Let's Get Fit To The Ancient India
  - Let's Get Fit To The Ancient Japan
  - Let's Get Fit To The Ancient Korea
  - Let's Get Fit To The Ancient Persia
  - Let's Get Fit To The Ancient Mesopotamia
  - Let's Get Fit To The Ancient Egypt
  - Let's Get Fit To The Ancient Greece
  - Let's Get Fit To The Ancient Rome
  - Let's Get Fit To The Ancient China
  - Let's Get Fit To The Ancient India
  - Let's Get Fit To The Ancient Japan
  - Let's Get Fit To The Ancient Korea
  - Let's Get Fit To The Ancient Persia
  - Let's Get Fit To The Ancient Mesopotamia

### Songs for Teaching

www.songsforteaching.com

\$14.99  
CD with PDF Lyrics

Add to Cart  
Add To Wish List

\$9.98  
Album Downloads with Lyrics

Add to Cart  
Add To Wish List

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

Options	Price	Quantity
CD with Printable Lyrics	\$14.99	1

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### 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

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### Go Noodle

- Careful of cluttered, ambiguous content
- Mindfulness Section!

Go Noodle

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### Mr. Colin Dodds (Math)

- POWERS

Power =  
Multiply a number  
by itself  
(one or more times)

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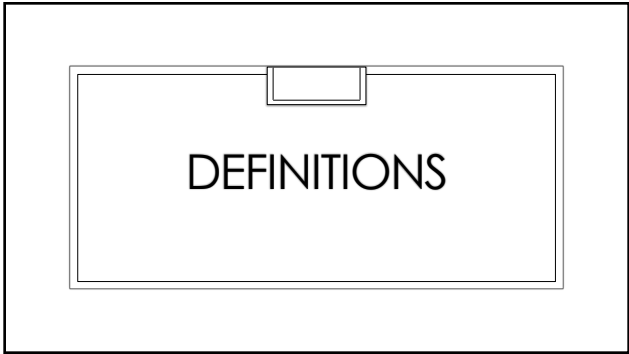
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**Definition of Dyslexia**

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

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**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

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## Definition of Dysgraphia

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

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I have found that there are five steps in writing a story. They are planning, writing, revising, editing, and publishing. Pre-writing is when you write down ideas for the story. Writing is when you have decided on a subject and you write it. Revising is making the story smoother. Editing is checking spelling, punctuation, and capitalization. Publishing is when you send it to a publisher to put it out in the market. I also found some common marks such as / or / and. I want to be a good writer so you need to check it with other sentences.

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## 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 swimming in rivers. Sharks are found in the sea. You also find them near the beach.

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## Resource

### • Dysgraphia: What You're Seeing

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

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## 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.)

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## 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

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### Definition of Dysgraphia

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

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

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### 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/>

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### 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?")

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**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

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**DIAGNOSIS**

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**SPECIFIC LEARNING DISORDER**

- Ongoing difficulties in the school-age years learning and using at least one academic skill
- **NEURODEVELOPMENTAL**
- Elimination of the IQ-achievement discrepancy requirement and its replacement with four criteria (A – D), all of which must be met.

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### Subcategories

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

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### 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).

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### 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.

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### 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.

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### 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.

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### 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.

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### Severity levels

•**Mild:**

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

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### 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

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### 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

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### 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!*

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### Educational Dx vs Medical Dx

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

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UNIVERSAL  
SCREENING

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Selecting, Implementing Screener  
Identifying Characteristics

- New Jersey Dyslexia Handbook

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**Shaywitz Dyslexia Screen**

- Sally Shaywitz - 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

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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)

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## ACADEMIC TESTING FOR DIAGNOSIS

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### Evaluators – Medical/Clinical Diagnosis

- Special Educator or Psychologist – gather the academic data
- Speech-Language Pathologist – gather the data
- Psychologist – complete clinical observation/interview
- Psychologist – make the diagnosis

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### 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

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**Standardized testing that meets diagnostic criteria**

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

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**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.

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**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!

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### 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 – 20%
- 80% of students with reading difficulties = Dyslexia

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### “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

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### “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

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### **“Red Flags” (not diagnostic)**

- Deficits in
  - phoneme awareness
  - letter-sound knowledge
  - rapid automatized naming
  - in the preschool years and beyond

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### Other types of reading disorders?

- Specific Reading Comprehension Deficits or S-RCD
- Link to article:  
<https://news.vanderbilt.edu/2013/06/14/reading-disabilities-not-dyslexia/>
- Can decode/read fluently – does not comprehend

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### Dyslexia Recommendations: Kansas

- [Kansas Association of School Boards](#)
- [Initiatives and Resources, Kansas Department of Education](#)
- Search: Kansas Dyslexia Law

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### 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

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### 504 PLAN

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### 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

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## 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

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## 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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## OVERVIEW

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### Areas implicated

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

#### **Anxiety**

**Executive Function - Auditory Processing**

**Visual Processing - Phonemic/Phonological Awareness**

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## ANXIETY

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### **Anxiety**

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

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## Anxiety

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

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## 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

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## Indications of anxiety

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

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## ADDRESSING ANXIETY

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### 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

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### Addressing Anxiety in the Classroom

#### **MOST IMPORTANT:**

Anxiety is a mental health disorder.  
 Children with anxious parents are more likely to be anxious.  
 Unless you are a mental health professional, you are NOT the front line for treating anxiety!!

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## Addressing Anxiety in the Classroom

### **Mindfulness/Movement**

- Deep, cyclical breathing
- Take a walk – preferably outside
- Movement, preferably with soothing rhythm "In the moment" – not future, not past: right NOW
- Practice gratitude

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## Addressing Anxiety in the Classroom

### **Team Favorites**

- J. S. Bach – Goldberg Variations, Inventions, Sinfonias
- Chopin Nocturnes Piano not full orchestra
- Pharrell Williams – Happy
- Bruno Mars – Count on Me
- Steven Tyler – I Make My Own Sunshine
- LEGO Movie or Minions – Everything is Awesome

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## Addressing Anxiety in the Classroom

### **Linguistic**

- Define what student is anxious about: write it down
- What is the worst thing that could happen?
- What is the size of the problem? (Social Thinking)
- What can I do to solve the problem?
- How will solving the problem relieve my anxious thoughts?

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## 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

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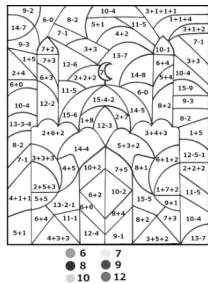
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Jump through these math problems! Add the numbers.

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.  $\begin{array}{r} 2 \\ +3 \\ \hline \end{array}$

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## 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!*

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## Addressing Anxiety in the Classroom

### List of Accepted Accommodations

[Understood.org](http://Understood.org)

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### "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

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## EXECUTIVE FUNCTION

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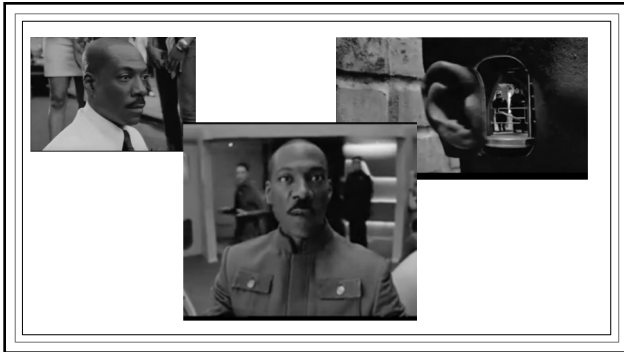
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### Executive function

- Executive Function abilities "drive the bus"
  - Taking action toward a goal
  - Process and synthesize information fluidly
  - Initiate and sustain attention
  - Keep track of what you're doing – stay on task
  - Managing emotions (Self-Regulation)

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### Executive function

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

Impulse control	Emotional control
Flexible thinking	Working memory
Planning, Prioritizing, Problem Solving	
Task Initiation	
Organization	

• Great Resource: <https://www.understood.org/-/media/040bfb1894284d019b78ac01a5f1513.pdf>

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### 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!*

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### ASSESSING AND TREATING EXECUTIVE FUNCTION DEFICITS

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### Assessing executive function

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

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## Executive Function Tests

List of tests that assess Executive Function abilities:

[Understood.Org List](#)

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## Executive function intervention

**Address these challenges:**

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

**With a few simple supports...**

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## Executive Function Skills on Edutopia

[Edutopia Video](#)

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### 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"**

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• 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

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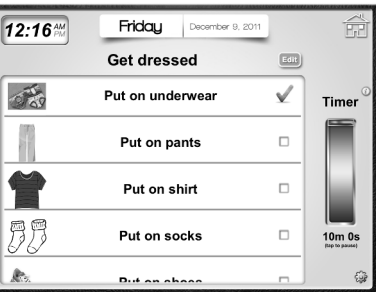
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Customize Drop-down Activity Mini-Schedules

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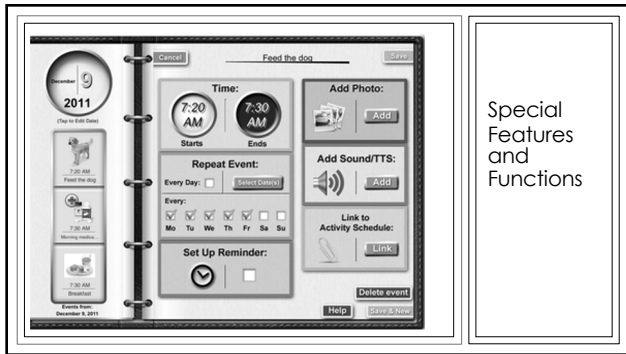
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Special  
Features  
and  
Functions

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Insert  
Video  
Models

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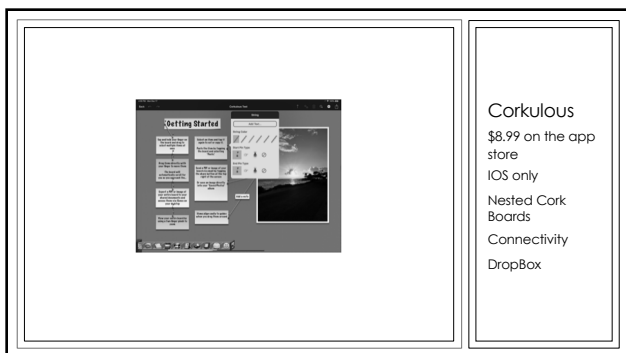
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Corkulous  
\$8.99 on the app  
store  
iOS only  
Nested Cork  
Boards  
Connectivity  
DropBox

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# Pictures and Familiar Information Support Executive Function and Working Memory

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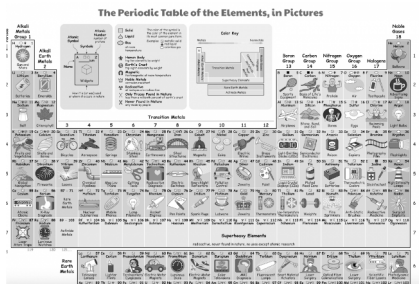
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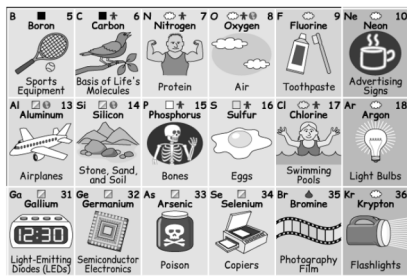
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## Comprehensive Resource

- Center on the Developing Child - Harvard University

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## AUDITORY PROCESSING

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## **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

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### **Auditory processing**

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

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### **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

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### **ADDRESSING AUDITORY PROCESSING DEFICITS**

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### 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)

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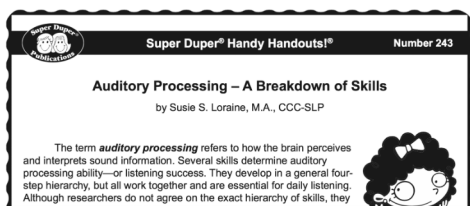
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### Auditory Processing Skills



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### Activities That Address Auditory Processing Deficits

- Auditory discrimination
- Auditory sequencing
- Auditory memory
- Auditory figure-ground discrimination

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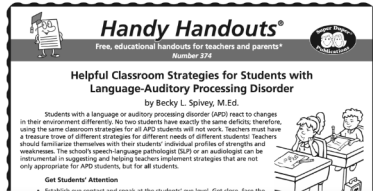
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## Auditory Processing Classroom Strategies

From Super Duper Publications



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## Fast ForWord

- evidence-based, adaptive reading and language program
- brain-based approach targets the root causes of reading difficulty
- personalized and differentiated
- Dyslexia, ELL, Struggling Readers, Title 1, Special Education
- Consistent, Predictable, Repetitive
- FUN!! [FastForWord Website:](http://www.fastforword.com)

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## brainHQ

- Online VisualAuditory/Memory Processing Training
- Video
- Sign up for free access to limited number of exercises
  - One training program per day
  - Move up in levels through successes
  - Progress tracking
- Subscribe - \$14 a month or \$8 a month yearly subscription (\$96)



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## 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

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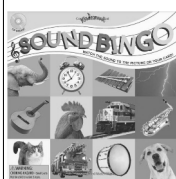
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## Play sound bingo!



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

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

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

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## Auditory Sequencing

- Spelling – out loud!
- Use handbells, drums, keyboard or similar. Familiarize the student with the instrument by playing a sound, then having them repeat the sound. Help them learn which bell or drum or key makes which sound. Then, with students' eyes closed, play a 3 sound sequence and ask them to repeat it. Gradually increase length of sequence.

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### Auditory Sequencing

- Provide the student with building blocks, LEGOS, craft items or similar. Build, or put together, a design of your own. Place a screen between you and the student. Give the student one to three instructions at a time, allowing them time to complete the step(s). When complete, remove the screen and compare constructions.

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### Auditory Memory

- Provide recordings of environmental sounds, in categories. Provide the student a worksheet with columns, each column labeled with one of the categories and a couple with categories not included in your sound inventory. Play the sound, have the student make a check mark in the category column that matches the sound. When finished, count up the check marks and see if they match with the sound you played.

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### Auditory Memory

- Prepare recordings of environmental sounds. Ask the student to listen to three sounds, then name the sounds they heard. Gradually increase to 5, 7 or more sounds.

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### Auditory Memory

- Prepare a set of picture/noun cards starting with at least 2 syllables. Ask the student to clap the syllables without saying the name out loud. Gradually increase number of syllables.



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### Auditory Figure-Ground

- Provide a recording of white noise or background music. With white noise playing, say or play speech or environmental sounds and ask the student to name the sound.
- Provide a variety of picture noun/verb/adjective cards. With white noise or background music playing, ask the student to point to the card you name.

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### VISUAL PROCESSING

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## 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

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## 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:

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## Visual Attention

- The ability to take in important visual information while filtering out the rest
- Also the ability to sustain or focus on visual information for periods of time AND shift focus when necessary.

READING – WRITING – DOING MATH!!

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### 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)

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### 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)

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### 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

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### 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

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### 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

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### 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

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## ADDRESSING VISUAL PROCESSING DISORDER

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### **Occupational therapist**

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

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- 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

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## 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>

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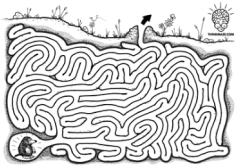
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## Visual processing activities



Mazes –

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

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## Visual processing activities

School Life

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

Word Search –

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

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

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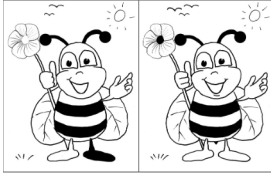
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## Visual processing activities



Find the Difference –

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

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## Visual Search – Figure/Ground

- I Spy
  - Books available on [scholastic.com](http://scholastic.com)
  - Some CDs available on Amazon and WalMart, Etsy, Ebay
- Hidden Picture Puzzle - Highlights apps
- Where's Waldo
  - Books available online

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## More Visual Processing

- Tangrams (search and find the places; match pattern)



- Puzzles



- Blokus

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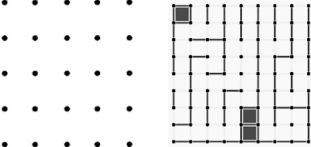
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- Guess Who




- The Dot Game

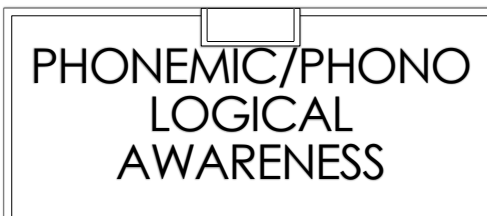
[illegible]

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- Simon - demonstration

A circular Simon memory game. It has a black plastic base with a central black circle containing the word "simon" in white lowercase letters. Surrounding this center are four colored segments: a light gray segment at the top, a dark gray segment at the bottom, a white segment on the left, and a medium gray segment on the right. The entire device is shown from a top-down perspective.[illegible]

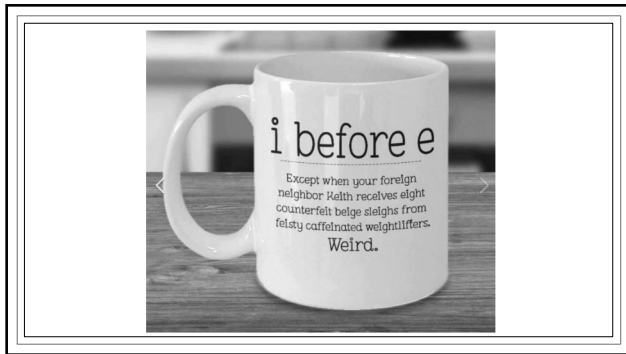
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PHONEMIC/PHONO  
LOGICAL  
AWARENESS

[illegible]

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### 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

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### Phonological awareness

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

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### 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

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### 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

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### 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 words

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### 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

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### ADDRESSING PHONEMIC/PHONOLOGIC AL AWARENESS

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### Assessing phonemic/phonological awareness

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

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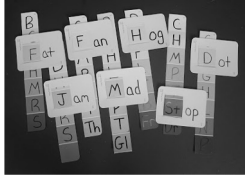
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# Word Family Slides

Make Your Own



Free or Low Cost on Teachers Pay Teachers



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# Skills to practice (in this order)

- Onset and rhyme
- Syllabication
- Phoneme manipulation
- Blending
- Segmentation

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READING

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## 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

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## Structured Literacy

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

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## Structured Literacy

- Systematic and Cumulative
- Explicit
- Diagnostic

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Reading Programs that meet  
Structured Literacy principles

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

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Skills to Acquire

ARTICLE

- Phonemic Awareness linking sound to symbol
- Knowledge of complete phonetic code: multiple vowel sounds, consonant digraphs, vowel-combinations, r-controlled vowels, exceptions
- Directional Tracking: Left to Right, reduce tracking errors, reduce "looking around"

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Skills to Acquire

ARTICLE

- Blending
- Attention to (visual) detail
- Skill in handling multi-syllable words
- Fluency (related to all above!)
- Vocabulary
- Comprehension (affected by decoding/fluency)

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## Vocabulary – Two Rules!

**ALWAYS DEFINE WORDS**

**USE DEFINITIONS STUDENTS CAN  
UNDERSTAND AND REMEMBER**

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## Effective Vocabulary Instruction

- Vocabulary instruction that improves comprehension generally has the following characteristics:
  - Multiple exposures to instructed words
  - Exposure to words in meaningful contexts
  - Rich or varied information about each word

Zaner-Bloser

Nagy and Herman, 1987; Beck, et al., 2002; Beck, et al., 1987

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## Effective Vocabulary Instruction

- The establishment of ties between instructed words and students' own experience and prior knowledge
- An active role by students in the word-learning process"

Zaner-Bloser

Nagy and Herman, 1987; Beck, et al., 2002; Beck, et al., 1987

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### Tar Heel Reader

- Tar Heel Reader
- Choose book
- Skim for words that would be unfamiliar
- Create student-centered definitions
- Record definitions in student personal dictionary

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### Google Images (or similar)

- Multiple representations of items in a variety of contexts
- What do you notice?
  - Firey
  - Explosion volcano
  - Cloud
  - smoke

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### Volcanic Eruption

- A fiery explosion of a volcano that produces a cloud of smoke

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## Differentiation

### Video from Edutopia

- Consistent and Predictable
  - Multi-Modal
- Everybody works w/ the teacher
- Content is the same....adapted for skill level

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## Resources

### • LearningAlly

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

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## Resources

### • Bookshare

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

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## Resources

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

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MATH

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## Math-in-the-box

- Touch Math: multi-sensory, sequential, practice and review
  - <https://www.touchmath.com/pdf/UsingTouchMathwithStudentswithLearningDisabilities.pdf>
- Evidence Base
- All grade levels
- Multi-sensory, Explicit, Cumulative

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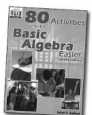
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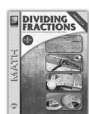
## Math-in-the-box

- Remedia Publications

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



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




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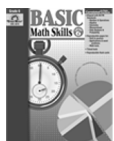
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## Math-in-the-box

- Evan Moor

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



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




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## The Life of Fred

- Website
- Math concepts, calculation and practice in the context of a consistent character (Fred Gauss) and "real life" circumstances
- Bonus: Humor, Social-Emotional Learning, Student Buy-in



**Life of Fred:  
Pre-Algebra Set**

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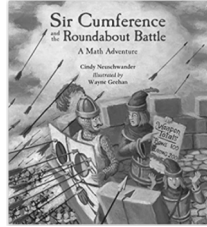
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## Sir Cumference

- Website
- Fun, engaging math problem solving in the context of a fantasy Knight and his humours encounters.



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## The Warlord's Beads

- Website
- Young Chuan creates a counting frame to help his father keep track of the Emperor's treasure



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## 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!

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## Khan Academy

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

**Intro to order of operations (video) | Khan Academy**  
This example shows the rules 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 Academy**  
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.

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## Khan academy

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

*Handwritten solution:*

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

$$8 + 20 - (6 + 5) + 44$$

$$8 + 20 - 11 + 44$$

$$28 - 11 + 44$$

*Handwritten notes:* And then 17 plus 44- I'll scroll down a little bit.

*Handwritten list:* Parentheses, Exponents,  $\times, \div$ ,  $+, -$

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## The power of playing games

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

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## 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)

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## ORGANIZING WRITING

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## 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

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### 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

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### 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

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### Traceable Letters (Cursive preferable)



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## 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).

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## 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."

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- 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!



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## Writer's Notebook

- Blank notebook, pencil or pen, gel pen, marker, Sharpie, colored pencil...whatever!
- Adaptive writing implement for comfort
- Students write or draw in their notebook, for at least a few minutes every day.
- Writer's notebook is never graded. Designed to encourage writing practice and nurture creativity.
- A writer's notebook removes the pressure of "getting it right".

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## Writer's Notebook

**"Don't use 'Writer's Notebook Time' as a fast-finisher activity or a reward!**

**The value and benefits of class time spent on a writer's notebook is that students of all ability levels (and all behavioral traits!) have the opportunity to find their own writing confidence."**

- **Source:** <https://www.teachstarter.com/us/blog/how-to-get-kids-writing-writers-notebook-us/>

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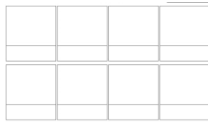
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## Writer's Notebook

### STORY BOARD



Hi-Tech: Google Images (or other) – copy and paste into board  
Lo-Tech: Magazines, newspapers, photos, drawing



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## Writer's Notebook

### COLLAGE



- Magazines
- Photos
- Books (old textbooks)
- Found Items
- Embellishments
- Cut – Place – Glue
- Words
  - Name
  - Describe
  - Action
  - Remind
  - Emotion
  - Even better in cursive!

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## Online Solutions

- Visual Writing Prompts Widget
- StoryboardThat

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## “From Writer’s Notebook to Polished Piece”

- “The distinguished teacher, Bev Gallagher of Princeton Junior School, suggests following these four steps:
- **Word Work** – the unstructured, free-flowing work generated in a writer’s notebook.
- **Moving to Paper** – copying words or a section of writing from the notebook onto paper to play with form, word-choice, and structure.
- **Revising/Editing** – marking edits and changes onto the paper draft to help the piece evolve.
- **Final Form** – the final presentation of the piece, handwritten or printed, on paper or electronically”

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## 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)

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## ASSISTIVE TECHNOLOGY

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## Read and Write

- [www.TextHelp.com](http://www.TextHelp.com)
- 12 month subscription for one user = \$145.00
- Bulk pricing for schools
- Text to Speech
- Speech to Text
- "Ear Read" anything!

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## Read and Write

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

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## More resources

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

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## WRITING AN EFFECTIVE IEP

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### 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"

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### 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

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### 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?

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## Goals

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

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## 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.

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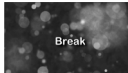
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## BREAK TIME (10m)

We are now on an estimated **10 minute break**

There may be no audio during this break time. There is nothing wrong with your computer – the audio will return once the presentation resumes.



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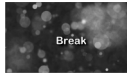
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BREAK TIME (15m)

We are now on an estimated **15 minute break**

There may be no audio during this break time. There is nothing wrong with your computer – the audio will return once the presentation resumes.

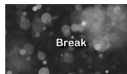


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BREAK TIME (1hr 10m)

We are now on an estimated **1 hour 10 minute lunch break**

There may be no audio during this break time. There is nothing wrong with your computer – the audio will return once the presentation resumes.



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## BIBLIOGRAPHY

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