

# The Intersection of Dyslexia & Dysgraphia

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WTAMU  
10.2.23

# How Did I Get Here?

And why do I stay?





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# 01

## Written Language

Development of Reading and Writing Skills

# Pathway to Reading & Writing

**ORAL LANGUAGE**



Listening  
Receptive

Speaking  
Expressive

Reading  
(decoding)  
Receptive

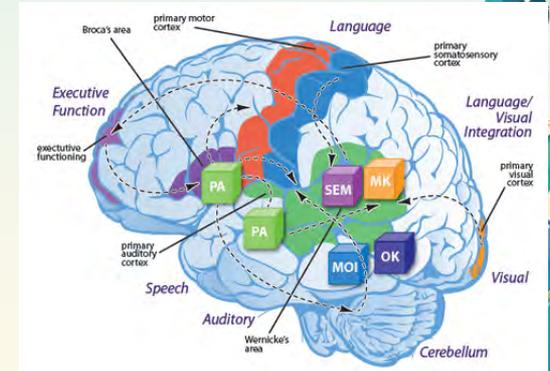
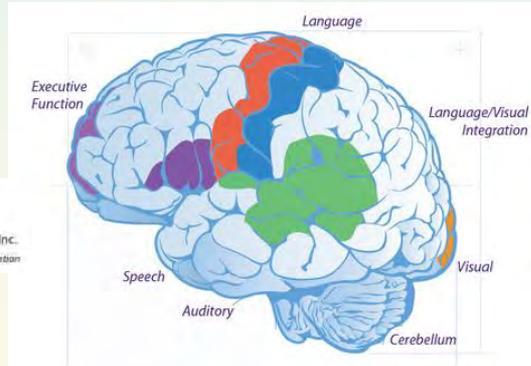
Writing  
(encoding)  
Expressive

**WRITTEN LANGUAGE**



# Language

	Oral Language	Written Language
Receptive	Listening	Reading
Expressive	Speaking	Writing
Brain “Real Estate”	biologically hardwired automatic process	repurpose & rewire make new circuits & connections



**Reading, writing, spelling – It's about oral language and building the brain for literacy...**

# National Reading Panel 2000

ORAL LANGUAGE



## #1 PHONEMIC AWARENESS

Phonemic awareness is the ability to identify the different sounds that make up speech.

Word games, rhymes, and tongue twisters can help children identify the individual sounds in words and begin to match the sounds to letters of the alphabet. So, keep talking!



## #2 PHONICS

Phonics helps kids match sounds to letters or letter groups.

Phonics is the key to decoding new words. Breaking words down into sounds and syllables allows young readers to connect words on paper with the words they hear and speak every day. Remember, Sam-I-Am did not like green eggs and ham!



## #3 FLUENCY

Fluency is the ability to read accurately and quickly.

Fluency is achieved when the reader can concentrate on the meaning of the text, not the individual words. Guided practice helps children learn to read fast enough to keep up with their brains!



## #4 VOCABULARY

Vocabulary is the key to knowing more about everything.

Kids absorb language like sponges, learning new words every day. Help expand their vocabulary by talking to them, reading aloud, and even singing with them. Use all the words!



## #5 COMPREHENSION

Comprehension happens when the words become ideas.

Once a child is reading fluently with a strong vocabulary, they can read for understanding. Comprehension is that "Oh! I get it now!" moment, repeated. Help with comprehension by asking questions about what they are reading.



<https://www.nichd.nih.gov/sites/default/files/publications/pubs/nrp/Documents/report.pdf>

<https://www.azed.gov/sites/default/files/2017/11/5%20pillars%20infographic%20Poster.pdf?id=5a1c969e3217e10144257f54>

# Reading Development

$$WR \times LC = RC$$

Word Reading/  
Decoding



Language  
Comprehension



Reading  
Comprehension

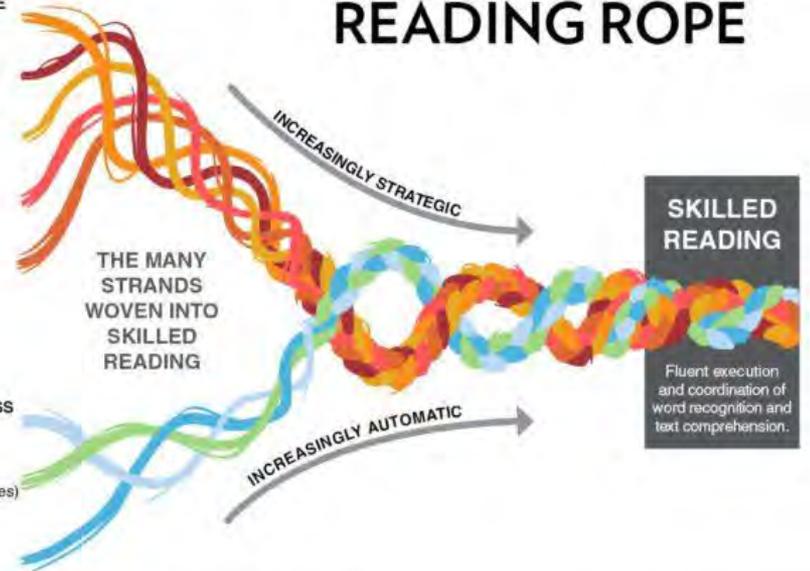
## LANGUAGE COMPREHENSION

- BACKGROUND KNOWLEDGE**  
(facts, concepts, etc.)
- VOCABULARY**  
(breadth, precision, links, etc.)
- LANGUAGE STRUCTURE**  
(syntax, semantics, etc.)
- VERBAL REASONING**  
(inference, metaphor, etc.)
- LITERACY KNOWLEDGE**  
(print concepts, genres, etc.)

## WORD RECOGNITION

- PHONOLOGICAL AWARENESS**  
(syllables, phonemes, etc.)
- DECODING**  
(alphabetic principle,  
spelling-sound correspondences)
- SIGHT RECOGNITION**  
(of familiar words)

## SCARBOROUGH'S READING ROPE



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Graphic modeled after the illustration from the *Handbook of Early Literacy Research*, by Susan B. Neuman and David K. Dickinson (2001) who re-envisioned researcher and author Hollis Scarborough's visual metaphor of the Reading Rope.

# Simple View of Writing

TEXT GENERATION  
Content, Ideas, Voice

VERBAL  
WORKING  
MEMORY

TRANSCRIPTION SKILLS  
Handwriting, spelling,  
spacing, punctuation,  
capitalization

EXECUTIVE FUNCTIONS  
Attention, planning,  
reviewing, revising, self-  
regulation

# Writing Development



Style- High School  
Fluency for Composition

Voice - Middle School  
Fluency for Composition

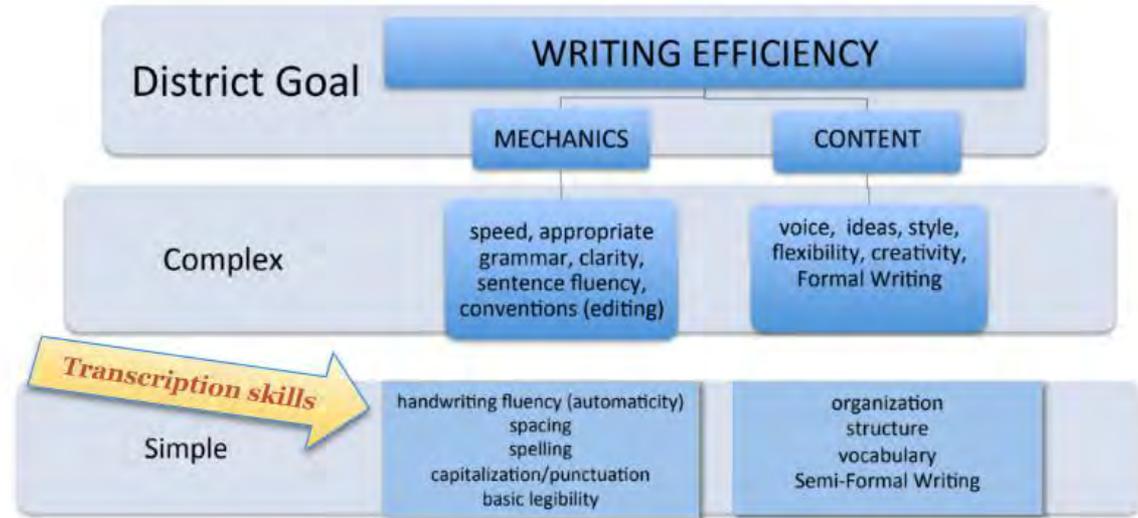
Automaticity- Ages 11-14  
Fluency for Composition

Developing - Ages 8-10  
Handwriting fluency

Graphemes/Spaces- Ages 6-7  
phoneme-grapheme correspondence  
placement

Approximates - Ages 3-5  
Letter Like Shapes

Imitates - Ages 2-3  
Scribbling/Drawing



	<b>MOTOR</b>	<b>PERCEPTION</b>	<b>COGNITIVE</b>	<b>SOCIAL &amp; EMOTIONAL</b>	<b>LANGUAGE</b>
<b>Foundational</b>	fine motor dexterity visual motor neuromuscular - tone - strength - posture	directionality spatial relations visual perception binocularity auditory processing tactile processing proprioception	Executive Function Working Memory Attention Focus Plan/Organize Initiate/Monitor	anxiety self esteem motivation avoidance behavior PK exposure	Letters - form & sound Words - VC, CVC, CVCC, etc. Parts of Speech - noun, verb, adjective, etc. Sentence structure Casual Writing

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**Domains of Development**



02

# Dyslexia

Written Language Disorder: Impacts Reading

Definition

*specific learning disability that is neurobiological in origin*

What teacher sees first

*characterized by **difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities***

Cause

*deficit in the **phonological component of language** that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction.*

What teacher sees later

***Secondary consequences** may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge*

# Dyslexia

Adopted by the IDA Board of Directors, Nov. 12, 2002

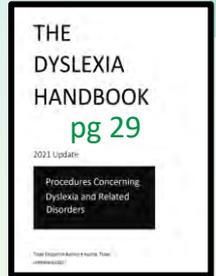
SPED  
pathway  
only

# Dyslexia Evaluation



**Figure 3-4. Areas for Evaluation**

<u>Academic Skills</u>	<u>Cognitive Processes</u>	<u>Possible Additional Areas</u>
<ul style="list-style-type: none"><li>• Letter knowledge (name and associated sound)</li><li>• Reading words in isolation</li><li>• Decoding unfamiliar words accurately</li><li>• Reading fluency (rate, accuracy, and prosody are assessed)</li><li>• Reading comprehension</li><li>• Spelling</li></ul>	<ul style="list-style-type: none"><li>• Phonological/phonemic awareness</li><li>• Rapid naming of symbols or objects</li></ul>	<ul style="list-style-type: none"><li>• Vocabulary</li><li>• Listening comprehension</li><li>• Verbal expression</li><li>• Written expression</li><li>• Handwriting</li><li>• Memory for letter or symbol sequences (orthographic processing)</li><li>• Mathematical calculation/reasoning</li><li>• Phonological memory</li><li>• Verbal working memory</li><li>• Processing speed</li></ul>



Academic Skills Impacted:

LK  
RWI  
NWI  
RF - R/A/P  
Spelling

Important to look at student's skills  
in comparison with grade level  
expectations at BOY/MOY/EOY  
benchmarks

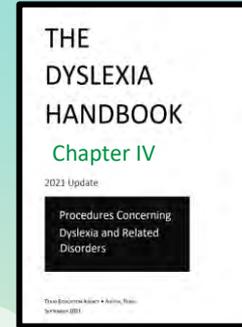


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# Dyslexia Intervention

## Components

*Phonological Awareness*  
*Sound Symbol Association*  
*Syllabication*  
*Orthography*  
*Morphology*  
*Syntax*  
*Reading Fluency*  
*Reading Comprehension*



## Methodology

*Simultaneous, multisensory (VAKT)*  
*Systematic and cumulative*  
*Explicit instruction*  
*Diagnostic teaching to automaticity*  
*Synthetic instruction*  
*Analytic instruction*



03

# Dysgraphia

Written Language Disorder: Impacts Writing

Definition

*Neurodevelopmental disorder*

What teacher sees first

*manifested by **illegible or inefficient handwriting** due to difficulty with letter formation*

Causes

*deficit in deficits in **graphomotor** function (hand movements used for writing) and/or **storing and retrieving orthographic codes** (letter forms).*

What teacher sees later

*Secondary consequences may include problems with spelling and written expression*

# Dysgraphia

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pathway  
only

# Dysgraphia Evaluation

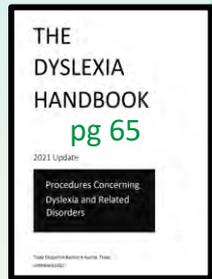


pg 61

Figure 5.2. Areas for Evaluation of Dysgraphia

<u>Academic Skills</u>	<u>Cognitive Processes</u>	<u>Possible Additional Areas</u>
<ul style="list-style-type: none"><li>• Letter formation</li><li>• Handwriting</li><li>• Word/sentence dictation (timed and untimed)</li><li>• Copying of text</li><li>• Written expression</li><li>• Spelling</li><li>• Writing fluency (both accuracy and fluency)</li></ul>	<ul style="list-style-type: none"><li>• Memory for letter or symbol sequences (orthographic processing)</li></ul>	<ul style="list-style-type: none"><li>• Phonological awareness</li><li>• Phonological memory</li><li>• Working memory</li><li>• Letter retrieval</li><li>• Letter matching</li></ul>

Graphomotor  
Function  
(pgs 60-61)



Primary features:  
Handwriting Legibility (accuracy)  
Handwriting Rate (fluency)

Academic Skills Impacted:  
Dictation  
Copying  
Written Composition  
Spelling

Data re: written task demands in classroom  
  
Student Performance vs peers/expectations



# Deeper Dive into Causes

Dysgraphia can be due to:

- Impaired feedback the brain is receiving from the fingers
- Weaknesses using visual processing to coordinate hand movement and organize the use of space
- Problems with motor planning and sequencing
- Difficulty with storage and retrieval of letter forms (Levine, 1999)

## *Dowdy OT on Graphomotor*

1. *Sensory Input* - feedback from the joints, skin, and eyes (proprioceptive, tactile, visual)
2. *Perceptual/Motor* - visual perception and visual motor integration
3. *Motor Output* - bilateral integration, hand dominance, crossing midline, grip (in hand manipulation skills, hand/finger strength), posture (proximal stability), wrist stability in extension, open webspace

Orthographic Codes can be:

- Letter Forms
- Letter sequences (spelling)

# Experience a Graphomotor Difficulty

- Find a space to write on your paper
- You will print your full name (manuscript)
- If you have extra time start writing the lowercase alphabet in order



1. **Stand Up** to do this activity
2. Put your dominant index finger on where you will start
3. Use your **NON-dominant** hand to write
4. **CLOSE** your eyes

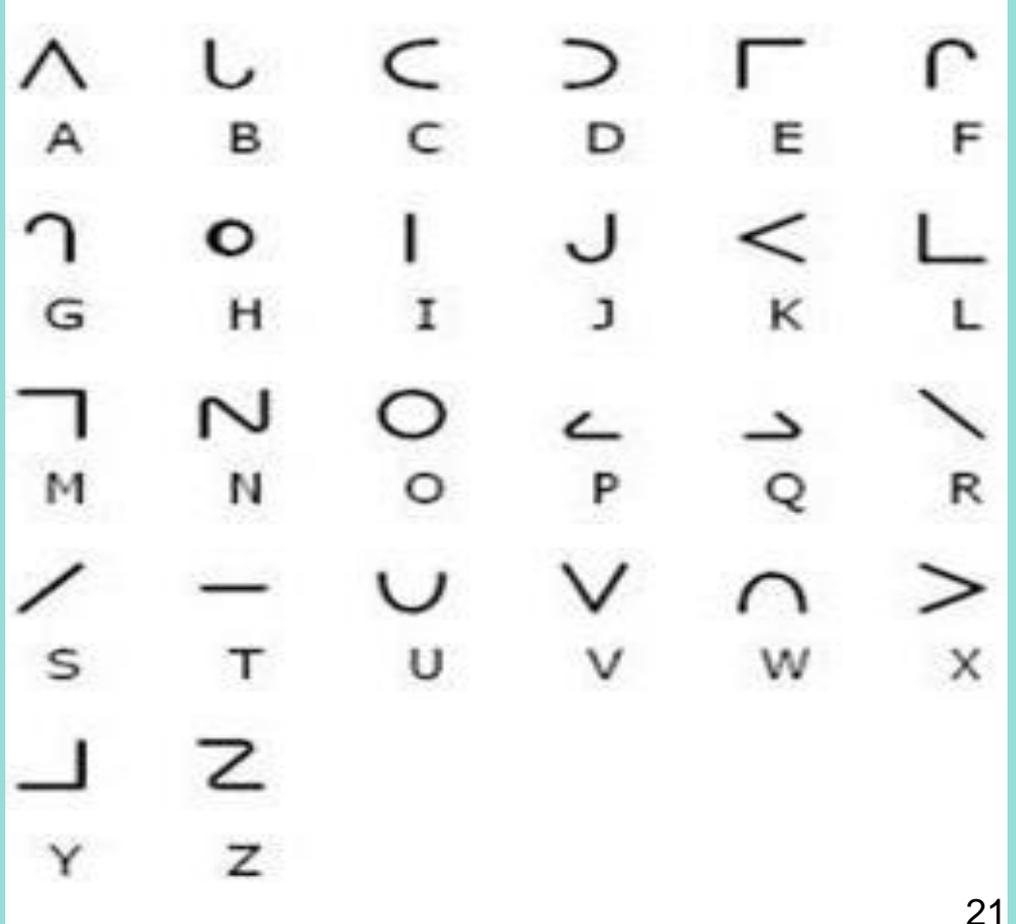
# Experience an Orthographic Difficulty

Using the code on the next slide,  
I would like you to write until I say stop.

**Writing Prompt:**  
**What is your favorite thing about fall?**

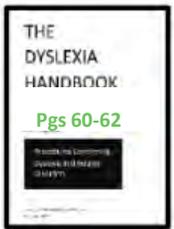
*You must use the code without  
any use of actual letters.*

You may begin as soon as the code appears...



# Linking Characteristics to Causes

- Variably shaped (OP), poorly formed letters (GM), improper letter slant (GM)
- Poor spacing between letters and words (GM), inability to copy correctly (GM)
- Letter and number reversals beyond early stages of writing such as “b” and “d” reversals (OP)
- Difficulty with unedited written spelling (OP), inability to recall orthographic patterns for words (OP)
- Awkward, inconsistent pencil grip (GM), Excessive erasures and cross-outs (OP) > (GM)
- Heavy pressure/hand fatigue or inadequate pressure (GM)
- Overuse of short familiar words “big” (OP)
- Slow or labored writing & copying with legible or illegible handwriting (GM/OP)
- Low volume of written output & problems w/other aspects of written expression (GM/OP)
- Inability of student to read what was previously written (GM/OP)
- Avoidance of Written Tasks (GM/OP)



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only

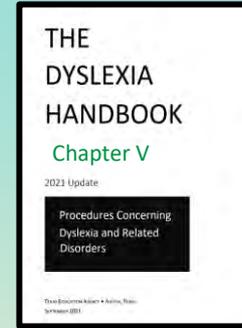
# Dyslexia Intervention

## Components

**Handwriting:** Posture, Grip, Letter Formation

**Spelling:** Phoneme-Grapheme Correspondence, Letter order and sequence patterns, orthographic conventions: syllable types, orthographic rules, irregular words; meaning (morphology), etymology (origin)

**Written Expression:** strategies for composing including planning, generating, reviewing, evaluating, and revising different genre including narrative, informational, compare and contrast, and persuasive compositions



## Methodology

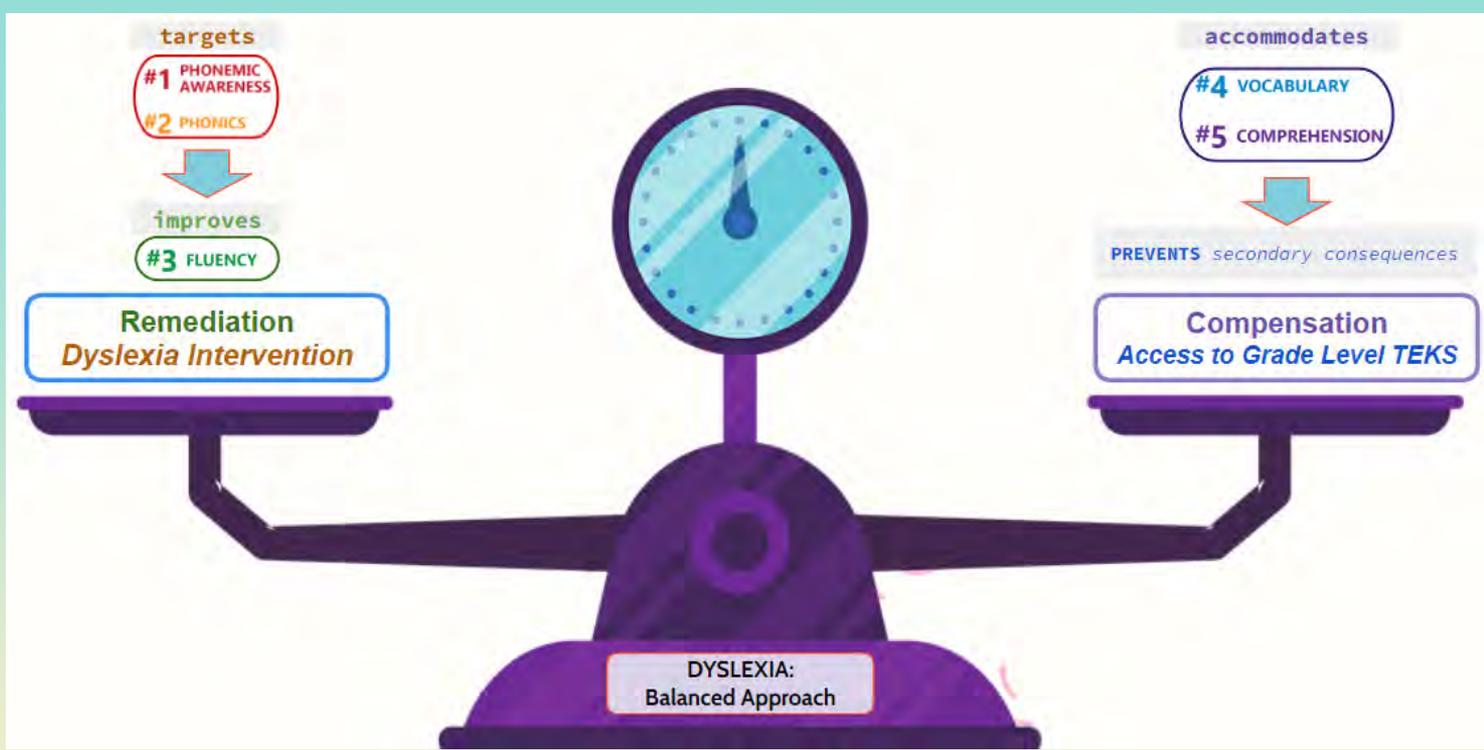
*Simultaneous, multisensory (VAKT)*  
*Diagnostic teaching to automaticity*  
*Systematic and cumulative*  
*Explicit instruction*



04

# Accommodations

for Written Language Disorders

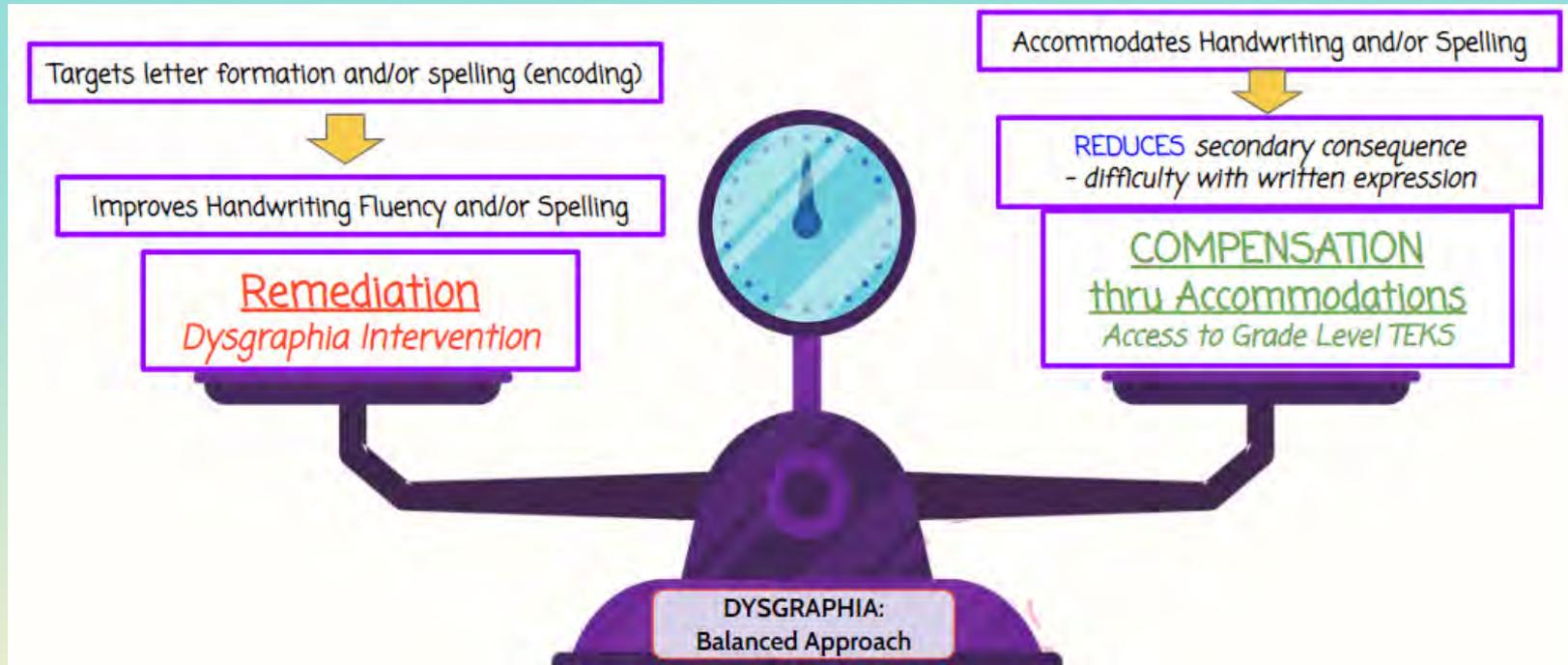


### Common Accommodations for Dyslexia:

- Text-to-Speech (TTS)
- Extra time on assignments and testing
- Spell Check (orthographic errors) or Phonetic spelling assist (phonological errors)
- Content & Language supports

### AT IS ESSENTIAL!

The barrier of difficulty with decoding/reading fluency limits or prevents access to grade level text



### Common Accommodations for Dysgraphia:

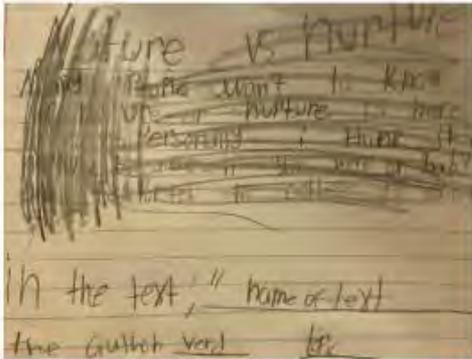
- Access to word processor
- Copy of class notes prior to lecture (no attempt required)
- Speech-to-Text (STT)
- Standard Spell Check (orthographic errors)
- PDF annotator & Access to classroom content PDFs
- Word prediction software

### **AT IS ESSENTIAL!**

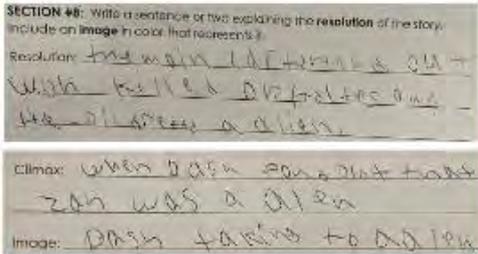
Dysgraphia impacts dictation (taking notes), copying and written composition

# 6th Grade ELAR - Argumentative Essay

## Without Accommodations



## Pre-Write Samples



## Grade Level Expectation

ead4ward Snapshot – Grade 6 English Language Arts and Reading

Writing

Composition: listening, speaking, reading, writing, and thinking using multiple texts.

**6.10 Writing process.** The student uses the writing process recursively to compose multiple texts that are legible and uses appropriate conventions.

**6.11 Genes.** The student uses genre characteristics and craft to compose multiple texts that are meaningful.

Application	Tools to Know (Writing Process) (I)
6.11(A) compose literary texts such as personal narratives, fiction, and poetry using genre characteristics and craft	6.10(A) <b>plan a first draft</b> by selecting a genre appropriate for a particular topic, purpose, and audience using a range of strategies such as discussion, background reading, and personal interests.
6.11(B) compose informational texts, including multi-paragraph essays that convey information about a topic, using a clear controlling idea or thesis statement and genre characteristics and craft (R)	6.10(B) <b>develop drafts</b> into a focused, structured, and coherent piece of writing by: <ul style="list-style-type: none"> <li>(i) organizing with purposeful structure, including an introductory, transitional, coherence within and across paragraphs, and a conclusion (R)</li> <li>(ii) developing an engaging idea reflecting depth of thought with specific facts and details (R)</li> </ul>
6.11(C) compose multi-paragraph argumentative texts using genre characteristics and craft (R)	6.10(C) <b>revise drafts</b> for clarity, development, organization, style, word choice, and sentence variety (R)
6.11(D) compose correspondence that reflects an opinion, registers a complaint, or requests information in a business or friendly structure (S)	6.10(D) <b>edit drafts</b> using standard English conventions, including: <ul style="list-style-type: none"> <li>(i) complete complex sentences with subject-verb agreement and avoidance of splices, run-ons, and fragments (R)</li> <li>(ii) consistent, appropriate use of verb tenses (R)</li> <li>(iii) conjunctive adverbs (R)</li> <li>(iv) prepositions and prepositional phrases and their influence on subject-verb agreement (S)</li> <li>(v) pronouns, including relative (S)</li> <li>(vi) subordinating conjunctions to form complex sentences and correlative conjunctions such as <i>either/or</i> and <i>neither/nor</i> (S)</li> <li>(vii) capitalization of proper nouns, including abbreviations, initials, acronyms, and organizations (S)</li> <li>(viii) punctuation marks, including commas in complex sentences, transitions, and introductory elements (R)</li> <li>(ix) correct spelling, including commonly confused terms such as <i>its/it's</i>, <i>affect/effect</i>, <i>there/their/they're</i>, and <i>to/two/too</i> (R)</li> </ul>
	6.10(E) <b>publish written work</b> for appropriate audiences

Asking a student with dysgraphia to limit their written output to what they can compose by hand is not only frustrating, it is **PUNITIVE**.

Just because a disability is “invisible” does not mean it does not impact the student in multiple ways during the school day.

## With Accommodations after Revising & Editing

Which is more powerful: nature or nurture? Does it matter what genes you are born with, or is how you're raised more important?

DNA is the code you are born with. Doctors study maps of human DNA to determine why people become sick. DNA maps also indicate why we act a certain way. Some people think this is mapped out like a code similar to a video game that is hard to beat. You can try and try to change the code, but it can seem impossible. If nature was most important then we could never change anything.

Nurture relates to how parents or people who love you help raise you. Nurture is a sense of love and being cared for. Being full of nurture is how I feel about my dog B. B. which stand for Baseball Boy. I love and care for B. B. and offer the dog a sense of nurture.

Personally, I think nurture is more important because where you're from shouldn't really affect you for your whole life. You can not choose who your parents are or choose what family you are born to, that is up to God. Everyone has a choice to decide what to do, and that does not rely on your DNA. It doesn't mean that nature is negative. Both nature and nurture have pros and cons. Whether struggling with a DNA map, a video game, or the choices family has made, or choosing to love others through the idea of nurture, if I had to choose between nature and nurture, I would choose nurture because then I have a choice of my future pathway.

# 7th Grade - Impacts of Dysgraphia Across the Curriculum

RELA

Argumentative Essay Break Down

**INTRODUCTION**  
Hook Sentence - write here a sentence that grabs the reader's attention for your topic  
When it is a bad  
ALSO ASKING STARTER

Background - write 1-2 sentences with some information about your topic  
Amazing how  
to L...  
AND ALSO...

Claim & reasons - write a sentence that explains what side of the argument you will write about (for or against) and state 3 reasons why. You will go into more detail on the reasons in the body paragraphs.  
**Case**

**BODY PARAGRAPH 1**  
Reason 1 - write a topic sentence that introduces the first reason for your argument  
Cause my brother  
and he stole  
because

Evidence - write a sentence using evidence from your research  
Not only  
Are

PT 9 only Essay Planner NAME

Name \_\_\_\_\_  
Date \_\_\_\_\_  
Class \_\_\_\_\_

Record your prompt here (you can copy and paste):  
You have shown how

Write your claim here:  
Remember that a claim is the topic, your position, and your reasons, all in one or two sentences.  
The... are...

Reason 1: Write down the proof (facts and statistics) for reason 1 here take visit	Reason 2: Write down the proof (facts and statistics) for reason 2 here incorporate bel...	Reason 3: Write down the proof (facts and statistics) for reason 3 here take
---	---	--

Write down the counterargument here:  
What would someone say if they were arguing against you?  
Another... some...

Write down your rebuttal here:  
How will you prove their counterargument wrong?  
The... are...

Concluding Sentence - write a sentence that summarizes your points in this paragraph  
My phone  
broke at 5:00

**BODY PARAGRAPH 3**  
Reason 1 - write a topic sentence that introduces the third reason for your argument  
My phone no more  
because it stole

Evidence - write a sentence using evidence from your research  
My brother  
some names  
it filled

Analysis - write 2 or more sentences that explain how your evidence supports your argument  
before and more  
space, and that

Concluding Sentence - write a sentence that summarizes your points in this paragraph  
to be a man  
so much

**BODY PARAGRAPH 4**  
My... + broke

# 7th Grade - Impacts of Dysgraphia Across the Curriculum

## SS: Texas History

NAME \_\_\_\_\_ DATE \_\_\_\_\_ CLASS \_\_\_\_\_

### Early Explorers of Texas

#### Lesson 1: The Spanish Explore Texas, continued

**2 Describing**

5. What did Cortés and his men do after landing in Mexico?

They explored the area and found gold.

**3 Defining**

6. What is a mission?

A place where missionaries lived and worked to convert people to Christianity.

**4 Marking the Text**

7. Circle the names of four conquistadores discussed in the text at the right.

Cortés, Pineda, Cabeza de Vaca, Narváez

**5 Identifying**

8. Who were the first Europeans to enter what is now Texas?

Spanish explorers.

In February 1519, a Spanish conquistador named Hernán Cortés landed in what is now Mexico. There he and his small army conquered the great Aztec Empire. They tore down the Aztec capital, Tenochtitlan (ten-oh-chee-tee-ahn). They stole the city's treasure. On the city's ruins, they built Mexico City. It became the capital of New Spain. New Spain was the Spanish empire in the Americas.

More Spanish conquistadores followed Cortés. They seized other parts of the Americas. Spanish settlers followed the conquistadores. They built towns and roads, and opened mines. They started farms and ranches.

Among the Spanish settlers were Catholic priests and nuns. Spain was a Roman Catholic nation. Its rulers wanted to convert the Native Americans to Catholicism. Priests and nuns built missions, or religious settlements. Often the mission was the first Spanish settlement in an area.

Also in 1519, Alonso Álvarez de Pineda (ah-lon-see-ah-AH-lah-vah-ray-dah peeh-NAH-ee-ah) became the first European to explore the Texas coast. He mapped the coastline from what is today Florida all the way to Mexico. He reported his findings to the governor of Jamaica. Then he went back to Mexico to start a settlement. He died there during a Native American uprising in 1520.

In 1527, Alvar Núñez Cabeza de Vaca (ah-lah-vah-NOO-nvayz kah-bee-ah-dah-VAH-kah) joined a large expedition led by the conquistador Panfilo de Narváez (pah-n-fee-eh-loh-dah nah-VAH-eh-yehs). They went the first Europeans to enter what is now Texas. Narváez hoped to conquer the area between Florida and Mexico, but he failed. Then a storm drove his group onto an island near what is today Galveston. Cabeza de Vaca named the island *Malhado*, which is Spanish for "the island of misfortune."

The castaways were met by the Karankawa people who lived on the coast. The Karankawa helped the Spanish. They built fires and brought fish and roots for the Spanish to eat.

Still, most of Narváez's force soon died from disease and cold. Disease killed many of the Karankawa, too. Cabeza de Vaca survived with the help of the Karankawa. He settled on a small island and became a trader. For some years, he survived by trading goods with people living on the mainland.

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### Central Plains

- 2nd largest
- Size: 2nd largest
- Location: North Texas
- Climate: Cold in winter, hot in summer. Less rainfall than South
- Landforms: plains, hills
- Products: meat & grain
- Major Cities: Fort Worth, Dallas, Wichita Falls, Sonoma

### Mountains and Basins

- 4th population
- Size: 4th
- Location: far west of Texas
- Climate: dry, hot, dry
- Landforms: Basins, hills, plateau, butte, escarpments
- Products: oil & natural gas, grain & trade & maquiladoras factories
- Major Cities: El Paso

### Geographic Features

- Guadalupe Peak is the tallest mountain in Texas
- Guadalupe Peak is located in the Central Plains region of Texas
- Caprock Escarpment is located in the Central Plains region of Texas
- Balcones Escarpment is located in the Central Plains region of Texas
- Because the land is dry in the northwest, almost all water in Texas run to the southeast and flow into the Gulf of Mexico
- Texas rivers are called "wrong way" rivers because they carry water from the west (driest) to the east (wettest) parts of Texas
- Aquifer - underground water or underground lakes
  - o Two major Aquifers: Ogallala & Edwards
- Big Bend National Park is the only natural lake in Texas
- Escarpment: hills
- Plain: plains
- Urban: cities
- Rural: country

### Texas Geography

What is geography? study of earth

Texas is the 2nd largest state in the U.S.

Oil is the most important mineral resource in Texas

### Coastal Plains

- 1st population
- Size: 1st region
- Location: next to the Gulf of Mexico; Southeast Texas
- Climate: mild climate; humid along the coast
- Landforms: plains, rolling hills, rivers, & edwood
- Products: lumber, farming, food, tourism, ranching, oil & petroleum industries
- Major Cities: (2/3) of the Texas population lives here. Houston, San Antonio, Dallas, Corpus Christi, Laredo, San Antonio

### Great Plains

- 3rd population
- Size: 2 largest
- Location: northwest Texas
- Climate: dry, not a lot of rain; cooler summers, winters cold
- Landforms: plains, hills, rivers, Ogallala Aquifer, hills, escarpments & escarpments
- Products: oil & gas industries, food, grain
- Major Cities: Lubbock, Midland



# 7th Grade - Impacts of Dysgraphia Across the Curriculum

Math

**PARTY PLANNING:**

A. Which is the better buy? Circle one: Bottles, Cans, Neither

Bottles 4P $\frac{3.20}{1oz} = \frac{3.20}{1}$	Cans 3 $\frac{2.16}{1oz} = \frac{2.16}{1}$
---	---

B. Which is the better buy? Circle one: New Deal B, Old Deal A

New Deal B $\frac{12}{1oz} = \frac{12}{1}$	Old Deal from Above ↑ What was the cost from above?
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C. Which is the better buy? Circle one: 24oz Bag, 39oz Bag

24 oz Bag $\frac{24}{1oz} = \frac{24}{1}$	39 oz Bag $\frac{39}{1oz} = \frac{39}{1}$
--	--

3 1/2 kg = <del>3500</del> $\frac{3500}{9} = 388.89$	4.5 g = <del>450</del> mg $\frac{450}{9} = 50$
5.8 g = <del>580</del> mg $\frac{580}{9} = 64.44$	3.5 kg = <del>3500</del> $\frac{3500}{9} = 388.89$

5,500 mL = <del>5.5</del> L $\frac{5500}{1000} = 5.5$	3.75 L = <del>375</del> mL $\frac{375}{100} = 3.75$
2 1/2 L = <del>2500</del> mL $\frac{2500}{1000} = 2.5$	7,750 mL = <del>77.5</del> L $\frac{7750}{1000} = 7.75$

Find the unit price and compare.

- At Price Right Grocery Store apples are \$2.20 for 4 apples. At Always Fresh Grocery Store the same apples are selling for \$4.40 for 10 apples. Which store has the better buy?

Handwritten work for Question 1:

Price Right:  $\frac{2.20}{4} = 0.55$

Always Fresh:  $\frac{4.40}{10} = 0.44$

Conclusion: Always Fresh has the better buy.

- Game Start is selling video games for \$45. Video World is selling the same video games at \$ for \$56. Which store has the better price per game?

Handwritten work for Question 2:

Game Start:  $\frac{45}{1} = 45$

Video World:  $\frac{56}{1} = 56$

Conclusion: Game Start has the better price per game.

Glue this panel to your notebook.

**Examples**

1 1/4 km = <del>1.25</del> m $\frac{1.25}{1000} = 0.00125$	5.4 cm = <del>54</del> mm $\frac{54}{10} = 5.4$
550 cm = <del>5500</del> mm $\frac{5500}{10} = 550$	6.5 km = <del>6500</del> m $\frac{6500}{1000} = 6.5$
4.2 m = _____ mm	95.5 m = _____ mm

### Units of Length (Metric)

- 1 centimeter (cm) = ~~10~~ millimeters (mm)
- 1 meter (m) = ~~100~~ centimeters (cm)
- 1 meter (m) = ~~1000~~ millimeters (mm)
- 1 kilometer (km) = ~~1000~~ meters (m)
- 1/2 kilometer (km) = ~~500~~ meters (m)

A top-down view of various colorful school supplies scattered on a light grey surface. In the center, a large white thought bubble contains the word "Questions?". Surrounding the bubble are numerous items: several colored pencils (brown, blue, red, yellow, green), markers in various colors (pink, blue, green, yellow), paper clips in different colors (pink, yellow, blue, green), a pink calculator, a blue zipper, a blue mesh bag, a blue ball, a green ball, and several sheets of paper and sticky notes in various colors (orange, blue, green, purple).

**Questions?**



# Thanks!

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