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Objectives

Consider Characteristics & Risk Factors for Dyslexia

Consider A process for assessment and identification

Consider Best practices for dysgraphia intervention
  • Appropriate intervention strategies
  • Possible accommodations

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DYSGRAPHIA CHARACTERISTICS & RISK FACTORS
So, what is dysgraphia?

There is not one definitive definition for dysgraphia.

- Because of this, it is important for the stakeholders a district to agree upon a definition or characteristics that can be included in its locally developed guidelines.
Developing a District Definition of Dysgraphia

Many research-based definitions of dysgraphia exist:

• Review the 5 different research-based definitions of dysgraphia.

• Look for the commonalities between definitions.
Commonalities???

Difficulties with...

- Handwriting
- Spelling
- Getting Thoughts on Paper
Texas Law and Dysgraphia

The Dyslexia Handbook-Revised 2014: Procedures Concerning Dyslexia and Related Disorders

- Provides guidance for dyslexia
- Does not contain guidelines for related disorders (i.e., dysgraphia)

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Local Procedures Concerning Dysgraphia

It is up to each district to develop its own guidelines for the testing and treatment of related disorders that follow state and federal laws.
Texas Education Code §38.003 (State Law)

Screening and Treatment for Dyslexia and Related Disorders

(a) Students enrolling in public schools in this state shall be tested for dyslexia and related disorders at appropriate times in accordance with a program approved by the State Board of Education.

(b) In accordance with the program approved by the State Board of Education, the board of trustees of each school district shall provide for the treatment of any student determined to have dyslexia or a related disorder.

(d) In this section (page 47):

(2) “Related disorders” includes disorders similar to or related to dyslexia, such as developmental auditory imperception, dysphasia, specific developmental dyslexia, developmental dysgraphia, and developmental spelling disability.
Not-So-Simple View of Writing

Text Generation
(words, sentences, discourse)

Executive Functions
supervisory attention, goal setting, planning, reviewing, revising, strategies for self-monitoring and regulation

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supervisory attention, goal setting, planning, reviewing, revising, strategies for self-monitoring and regulation

*Activates long-term memory during composing and short-term during reviewing

Berninger, 2003
Possibilities for the Differences

Why did you have more difficulty with the second activity?

Activity #1

- The skills required were automatized.
- Didn’t have to consciously think about how to form letters, how to spell words, or where to put end punctuation.
- Able to devote the majority of working memory to the quality of the message.

Activity #2

- Forced to bring skills to the conscious level and hold more information in working memory (letter formation, spelling, end punctuation, etc.).
- Therefore, couldn’t focus solely on the message.

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Possibilities for the Differences

Students with dysgraphia struggle with automaticity. Because of this their working memory is taxed and they have a hard time juggling all the processes involved in producing quality writing.
Four Language Systems

What skills are needed for efficient handwriting to take place?
“Despite the widespread beliefs that handwriting is purely a motor skill or that only multisensory methods are needed to teach handwriting, multiple language processes are also involved in handwriting. Handwriting draws on language by hand (letter production), language by ear (listening to letter names when writing dictated letters), language by mouth (saying letter names), and language by eye (viewing the letters to be copied or reviewing for accuracy the letters that are produced from memory).”
Graphomotor Processing

Monitors the serial motor movements required for handwriting, including the planning, controlling (monitoring/revising), and executing functions.

This affects **legibility**, speed and volume of written output.

Orthographic Processing

**Orthographic coding** and memory retrieval processes

Affect the automaticity of letter production and spelling.
The brain and the hand don’t play well together.

Handwriting Legibility

- Body posture
- Handedness
- Pencil grip
- Letter formation
- Controlled strokes
- Slant
- Size consistency
- Organization on the page
- Erasures

Graphomotor Processing

- Monitors the serial motor movements required for handwriting, including the planning, controlling (monitoring/revising), and executing functions.

  - This affects **legibility**, speed and volume of written output.

Orthographic Processing

- Orthographic coding and memory retrieval processes

  - Affect the automaticity of letter production and spelling.

**The Big Picture**

Students with weak orthographic processing may:

- Have difficulty picturing a letter before creating it.
- Have difficulty picturing whole words, which can lead to spelling delays.
- Leave as much space between letters as between words.
- Make frequent letter reversals.
- Make letters different ways.
- Cross out letters and words.

Levine, 2002

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Orthographic Processing

Considerations

Forgets how letters look

Confuses letters with similar appearance (e.g., n for h)

Has trouble remembering basic sight words

Misreads little words in text (e.g., were for where)

Reverses letters when spelling (e.g., b instead of d)

Transposes letters when reading or writing (e.g., on instead of no)

Mather & Goldstein, 2001
Orthographic Processing

Additional considerations

- Transposes letters when reading or writing (e.g., on instead of no)
- Has difficulty copying from a book or board to paper
- Spells the same word in different ways
- Spells words the way they sound rather than the way they look
- Reads at a slow rate
- Stamina and legibility deteriorate over time

Mather & Goldstein, 2001
Activity Reflection

What was challenging about this activity?

Did you lose your place?

Did you have to look at the paragraph many times?

Where was your energy focused?

What accommodations could you provide for students with this challenge?
Time for Reflection

• What are three primary characteristics of dysgraphia?
Dysgraphia is not due to damage to motor systems of the brain

Dysgraphia is not due to other developmental difficulties that may incorporate difficulties with fine motor (i.e. intellectual disability, autism spectrum disorder, pervasive developmental disorders)

Not due to generalized fine-motor deficit or coordination difficulties

Not due to other conditions such as fetal alcohol syndrome, cerebral palsy, significant prematurity, meningitis, etc.

The Complexity of Written Composition

“Separate from the motor skills of writing, students must generate ideas, and translate those ideas into written form using language processes that involve lexical knowledge and retrieval, semantic knowledge, phonological coding, and syntax.”

Automaticity

Handwriting abilities as well as handwriting speeds develop over time.

Composing requires more reflection and thought, so it is not unexpected that letter-per-minute or word-per-minute rates would be lower for tasks requiring composing than for copying tasks.

DeCoste, 2005
Assessment Process

Data gathering → Individualized Assessment → Committee considerations when making a determination
Data Gathering

School Records:

• Is there a history of difficulty with handwriting, spelling, composing?
• Is there information about the student’s medical history?
• What assessments have been completed by the school or an agency outside of the school that would be helpful in identifying dysgraphia?
• Has the student’s vision been checked recently (distant and near)?
• Are there any other difficulties noted in the student’s records besides difficulties in the area of handwriting?
Data Gathering

Collect samples of the student’s written work from as many different contexts as possible

Collect information on how much time and effort it took for the student to complete the assignment (automaticity)
Examples of Writing Samples

- Worksheets or answers to questions in a textbook
- Spelling tests
- Journal writing
- Short classroom assignments (three to four paragraphs)
- Reports or essays (more than one page)

- Examples of note taking
- Homework assignments
- Unedited samples
- Brainstorming
- Quick writes
- Math samples
- Other content areas
Individual Assessment

Areas to consider for assessment:

- Handwriting automaticity (rate & accuracy)
- Spelling
- Ability to get thoughts on paper
- Graphomotor processing
- Orthographic processing
- Phonological processing
- Keyboarding (optional)
- Areas not reliant on writing

Note: These may vary depending on locally established district procedures.
DYSGRAPHIA INTERVENTION
Dysgraphia

Target the Primary Characteristics:

- Handwriting
- Spelling
- Getting Thoughts on Paper

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Handwriting: Instruction or Accommodations?
Effective Handwriting Instruction

Short sessions
- 10-15 minutes daily

Teach letter identification
- Name each letter as it is practiced

Provide a model of the letter marked with numbered arrows

Teach correct pencil grip and paper position

Practice all learned letters instead of practicing one letter over and over

Students practice writing letters from memory

Develop writing fluency

Steve Graham, 2010
First Things First: Establish Handedness & Pencil Grip

An awkward pencil grip should be addressed as soon as possible. Once it becomes habit, it is very difficult to change.

Steve Graham, 2010
Letter Formation

• Keep it fun!
• Have students PLAY and develop large (gross) motor control.
  • Throw a ball
  • Jump rope
  • “Paint” the house (using water)
  • And MORE!
Letter Formation

• Keep it fun!
• Find multisensory ways to practice letter formation.
  • Sand trays
  • Ziploc bags filled with paint, hair gel, hand sanitizer, etc.
Teaching the letters in ABC order may not be the best approach.

- The easily confused letters b and d are too close together.
- The easily confused sounds of letters are also close together (vowel sounds like bad, bed).
- Therefore, be sure to separate easily confusable letters/sounds.
- Teach letters in a sequence that allows for quick word writing (a, m, p, s, t, i).

Sequence of Instruction
Cursive

- The same considerations we discussed for manuscript apply to cursive.

- Teaching the cursive letters in groups according to the approach stroke is a way to help students recall the motor sequence.
Approach Stroke Groups

Swing up, stop.

\[ r t s r j u w \]

Push up, over, down.

\[ r m m n y o x g \]

Under, over, stop.

\[ r a d g o c q \]

Curve way up, loop left.

\[ l f h k b e \]

Letter Formation

Teach handwriting *first* for legibility and *then* for automaticity.

Berninger & Wolf, 2016
Best Practices

• Model correct formation
  • Visually and verbally
• Use numbered arrows to help students remember which way to move the pencil next.
• Encourage practice using visual memory.
  • Look, say, cover, write, check
• Practice letters in isolation then within words
• Encourage children to critique their own handwriting (circle your best R)

Incorporate ALL Elements of Legibility

Legible handwriting includes six, interrelated characteristics:

- Letter formation
- Size and proportion
- Spacing
- Slant
- Alignment
- Line quality

Handwriting Rate & Automaticity

Think of the hierarchy and build incrementally.

- Letters
- Syllables
- Words
- Phrases
- Sentences
- Paragraphs

Have students chart their progress.
Effective Spelling Instruction

Include these guiding principles in instruction:

- Phoneme-grapheme correspondence.
- Letter order and sequence patterns, or orthographic conventions.
- The position of a phoneme or a grapheme in a word.
- Meaning (morphology) and part of speech.
- Language of origin.

In English, spell according to…

Moats, L. (2005)
Verbal & Written Expression

Based on the student’s assessment data...

- May need to work on building oral language.

- May be able to work simply on capturing thoughts in written form.
Building Verbal Expression

Strategies could include...

• Vocabulary Development
  • “Hink Pinks”
  • Naming Games or I Spy
  • Illustrating multiple meaning words
• Describing Hierarchy (next slide)
• Model and teach syntax
• Use everyday items to practice telling and retelling stories
  • Use a recording app to replay the story to assist them in writing it
Bridging from Verbal Expression to Written Expression

- Use the describing hierarchy to build vocabulary
  - Name the object
  - Name the categories the object belongs in
  - Name the purpose (function) of the object
  - Name its color, size, shape
  - Compare it to another object

Source: Neuhaus Education Center
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What about instructional accommodations?
Accommodations: Levelling the Playing Field
Possible Accommodations

• Spell Check
• Allow oral responses
• Word Prediction Software
• Speech to Text Software (STT)
• Allow student to record an audio version of what they want to write and then transcribe what they hear
• Allow extra time for revising & editing
• Graphic Organizers
• Extended Time
• Copies of notes (with or without blanks to fill in key words and with or without student being responsible for writing along)
• Provide written list of assignments or allow student to take a picture of it
Questions???
Resources


• Dyslexics can learn to read and write and teachers can teach them: 3 lessons from research and teaching. Presentation by Berninger and Wolf at the Washington State Dyslexia Summit June 10, 2006, Seattle Hilton.


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