Dysgraphia: What is it Really?
Part 1

Jan Cook, M.Ed.
Dyslexia Specialist

Objectives

- Explore definitions of dysgraphia
- Explore common myths associated with dysgraphia
- Become familiar with the cognitive processes associated with dysgraphia
Common Themes in Definitions

Dysgraphia-
- A neurological disorder involving writing
- Involves difficulties with the physical aspects of writing (e.g. awkward pencil grip or bad handwriting)
- Involves difficulties with spelling or putting thoughts on paper
- Interferes with speed of writing

Myths about Dysgraphia

Myth #1-
Messy handwriting is a sure sign of dysgraphia.
Myths about Dysgraphia

Myth #2 - Smart children do not have dysgraphia.

Myth #3 - Dysgraphia is a result of lazy or untrained students.
Myths about Dysgraphia

Myth #4-
If a student has dyslexia, they will also have dysgraphia (or vice versa).

Myths about Dysgraphia

Myth #5-
If given enough time, children outgrow dysgraphia.
Dysgraphia is not due to...

- damage to motor systems of the brain.
- other developmental difficulties that may incorporate difficulties with fine motor (i.e. extreme mental delays, autism, pervasive developmental disorder).
- other conditions such as fetal alcohol syndrome, cerebral palsy, significant prematurity, meningitis, etc.


The Big Picture-Cognitive Processes

- The graphomotor system 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.

- The orthographic coding and memory retrieval processes affect the **automaticity** of letter production and spelling. Orthographic code is the storage of written words and patterns in working memory eventually moving to permanent memory.

Legibility

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


Graphomotor

Common Graphomotor difficulties:
◦ Motor memory
◦ Motor implementation
◦ Finger Localization or feedback

Writing is often slow, hesitant, and labored. Levine, 2002; Pohlman, C. (2008).
Motor Memory

Characteristics:

- Inconsistent letter formations
- Frequent crossing out or erasures
- Reduced legibility
- Preference for printing


Motor Implementation

- Assigning specific muscles in fingers to specific responsibilities during letter formation
- Different muscles have different writing assignments – some stabilize the pencil; others move the pencil to form symbols
- When young, students may have a feeble pencil hold and may drop their writing utensil

Levine, 2002
Motor Implementation-continued

- Some compensate with a tight and pressured grip – grip may be fist like or may hold the pencil close to the point and perpendicular to the page
- Students may seem to be writing with their elbows rather than fingers
- Writing may be slow and labored
- Writing may be difficult to decipher
- May have history of speech articulation difficulties (speech production)

Levine, 2002

Kinesthetic Feedback

- Knowing where the writing utensil is during letter formation
- May also be referred to as finger agnosia
- Children compensate by keeping eyes very close to the page to visually monitor the pencil point

Levine, 2002
Kinesthetic Feedback - continued

- Some students start using their larger joints (wrist) - may demonstrate an awkward and uncomfortable pencil grip
- May use excessive pressure – causes hand to get tired or cramped
- May produce legible handwriting at a reduced rate

Levine, 2002

Orthographic Coding

- Representation of letter forms in short-term and long term memory
- Access to and retrieval of these representations in memory
- Planning for letter production
- Affects ability to copy text

Berninger, 2004
Orthographic Coding

Students with this difficulty:
◦ have difficulty picturing a letter before creating it
◦ cross out letters and words
◦ make letters different ways
◦ make frequent letter reversals
◦ leave as much space between letters as between words
◦ have difficulty picturing whole words, which can lead to spelling delays
◦ experience difficulty copying from the board

Levine, 2002

Assessment

<table>
<thead>
<tr>
<th>Testing</th>
<th>History Gathering</th>
<th>Interviewing</th>
<th>Observation</th>
<th>Student Work Pattern Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardized, Quantitative</td>
<td>Past</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qualitative</td>
<td>Current</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Pohlman, 2008, adapted from Fig. 5.1)
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 (distance 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 difference 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 from a textbook
- Spelling tests
- Journal writing
- Short classroom assignments (3-4 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

Assessment of the student’s handwriting and related processes.

Areas to assess:
- Legibility
- Automaticity (rate)
- Orthographic processing
- Spelling
- Keyboarding (optional)
Legibility includes six, interrelated characteristics:


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
Orthographic Processing

Related Observations

- Forgets how letters look
- Confuses letters with similar appearance (e.g., n for h)
- 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)
- Has trouble remembering basic sight words
- 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

Spelling

- Use a norm-referenced measure or an informal developmental measure of spelling
- Compare the student’s ability to orally spell words to the student’s written spelling

Why would it be important to look at spontaneous spelling instead of a classroom spelling test?
Questions?

Jan Cook, M.Ed.

jan.cook@esc4.net

References


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.


References


References


The International Dyslexia Association, Fact Sheet #982, Dysgraphia.

The Schools Attuned Program: Management Resources. All Kinds of Minds (2004)