“Every child would read if it were in his power to do so” (Betts, 1936, p.5).


Meet Charlie
A 3rd Grade Student with Dyslexia

- Strengths in:
  - Mathematics
  - Oral vocabulary
  - Academic knowledge

- Weaknesses in:
  - Word identification
  - Word perception speed
  - Spelling

Topics

- What is dyslexia?
- Development of decoding and encoding (spelling)
- Instructional strategies and accommodations

What is Dyslexia?

- It is a specific problem in the development of word reading and spelling skills.
- It affects the development of automaticity with sound-symbol connections.
- It has both a neurobiological and genetic basis.

It is the most common specific learning disability.

70 to 80% of the referrals to special education involve concerns about reading development.
Dyslexia and alternate terms

- Specific Reading Disability
- Specific Learning Disability in Basic Reading Skills
- Specific Reading Fluency/Rate Disability
- Specific reading disorder (ICD-10- F81.00)
- Specific learning disorder with an impairment in reading (DSM-5 315.00)

What is a Specific Reading Disability?

**Specificity**

“The addition of the adjective specific in describing LD was meant to imply that the poor academic performance experienced by students with LD emanated from a limited number of underlying deficits” (p. 245).


“...without a label we have no way of talking about a problem.”


The Term Dyslexia

“In the first half of this century the story of dyslexia has been one of decline and fall; in the second half it has culminated in a spectacular rise. From being a rather dubious term, dyslexia has blossomed into a glamorous topic; and rightly so, for with a prevalence of around 5% the condition is remarkably common” (Frith, 1999, p. 192).


The Simple View of Reading

\[ R = D \times C \]

Reading Comprehension (R) = the product of decoding (D) times listening comprehension (C)

Gough & Tunmer, 1986
Four Types of Readers

- Impaired decoding, but typical listening comprehension (specific reading disability/dyslexia)
- Impaired listening comprehension, but typical decoding (language impairment)
- Impaired decoding and listening comprehension
- Typical decoding and listening comprehension

“...specific language impairment and reading disability are best considered as distinct disorders that are often comorbid” (Ramus et al., 2013) (p. 25)


Reading Comprehension

“Individuals with problems in reading comprehension that are not attributable to poor word recognition have comprehension problems that are general to language comprehension rather than specific to reading.” (p. 3)


International Dyslexia Association (2003) defines dyslexia as:

[A] specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.


Dyslexia is present when the automatization of word identification (reading) and/or word spelling does not develop or does so very incompletely or with great difficulty. The term ‘automatization’ refers to the establishment of an automatic process. A process of this kind is characterized by a high level of speed and accuracy. It is carried out unconsciously, makes minimal demands on attention and is difficult to suppress, ignore or influence.

...dyslexia is characterized in practice by a severe retardation in reading and spelling which is persistent and resists the usual teaching methods and remedial efforts... it will be accompanied by very slow and/or inaccurate and easily disturbed word identification and/or word spelling.
“It was as if he were driving in a NASCAR race in first gear while everyone else was cruising along in fifth gear” (Lindstedt & Zaccariello, 2008) (pp 195-196).


The phonological deficit view that has dominated the field for years is inadequate for explaining all cases of reading disorder (Peterson & Pennington, 2012; Snowling & Hulme, 2012) and its importance has been overstated (Swanson, Trainin, Necoechea, & Hammill, 2003).


Consensus on the Definition

- Neurobiological disorder that affects the development of basic reading skills, spelling, and automaticity with sound-symbol connections.
- It is often accompanied by specific weaknesses in cognitive factors that predict poor reading and spelling.
- It is a lifelong condition but effective interventions reduce the impact.
- Many other abilities are often intact and can even be advanced.

“The diagnosis of dyslexia is as precise and scientifically informed as almost any diagnosis in medicine” (p. 165).

Increasing Teacher Knowledge of Evidence-Based Interventions for Students with Dyslexia

Nancy Mather, Ph.D.

Visual Dyslexia
- Confuses letters and words with similar appearance
- Slow rate of perception
- Reversals in reading and writing
- Difficulty retaining visual sequences

Auditory Dyslexia
- Difficulty hearing the differences among speech sounds
- Difficulty discriminating short vowel sounds
- Difficulty with blending and segmentation


Design of Study in which intervention occurred
1. Most "at risk" first graders from five elementary schools - PPVT above 70
2. Instruction provided in 45 min. sessions every day from October through May in groups of 3 or 5 by experienced teachers or well-trained paraprofessionals
3. Used a structured (scripted) reading program that contained instruction and practice in phonemic awareness, phonics, fluency, and comprehension
4. Used a number of methods to achieve fidelity of implementation: 3 days of initial training, weekly supervisory visits, and monthly inservices (3 hours)


Growth in Word Reading Ability

Growth in Correct Words Per Minute on First Grade Level Passages for four lowest performers

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<table>
<thead>
<tr>
<th>Oct</th>
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<td>65</td>
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</tr>
</tbody>
</table>
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“...The remedial work was unsuccessful in about 4 or 5 percent of the cases, in that this percentage of cases did not show improved scores on the retests” (p. 151).


Hereditary Factors

Strong converging evidence indicates that:

1. Dyslexia has a genetic basis but there is not one specific gene for reading.
2. Family history is a key risk indicator.
Starting point: forming the connections between the phonemes and the graphemes.

Phonemes: \(/m/ /a/ /n/\)

Graphemes: \(m\ a\ n\)

**Strategies for Word Identification**

1. By segmenting and blending sounds.
2. By pronouncing common spelling units (e.g., syllables).
3. By recognizing sight words from memory.
4. By creating analogies to known words.
5. By using context cues to predict words.

---

**Skilled Reading**

The key to efficient text reading is automaticity (the ability to read words by sight automatically). Allows readers to process words in text quickly w/o conscious attention to words. All other cuing systems require conscious attention.


---

**Phases of Sight Word Development**

**Pre-Alphabetic Phase**

Makes connection between salient visual cues and word meaning

Does not use letter-sound relations to aid in word identification

**Partial Alphabetic**

Makes connections between some of the letters and sounds

Relies more on first and final consonant sounds

Lacks full knowledge of alphabetic system, particularly vowels

_reads_ same word inconsistently and confuses words with similar letters (e.g., cap and camp)

---

**Phases of Sight Word Development**

**Pre-Alphabetic Phase**

**Partial Alphabetic Phase**

**Full Alphabetic Phase**

**Consolidated Alphabetic Phase**

### Full Alphabetic
- Has complete connections between the phonemes and graphemes
- Can decode words never read before by segmenting and blending letters
- Remembers how to read sight words

### Consolidated Alphabetic
- Recognizes larger letters units instantly (e.g., common spelling patterns, syllables)
- Has consolidated units in memory (e.g., -est, -tion, -ing, -le)
- Is sensitive and recalls spelling patterns observed in words
- Reads words rapidly and easily

---

1. What phase is Charlie in Ehri’s Sight Word Development?

2. On what area of reading does he primarily need to work?

---

### Development of Encoding Skill
- Print awareness
- Phonological awareness
- Knowing that sounds are represented by letters
- Increased orthographic awareness
  - syllables
  - visual patterns
- Automaticity

### Decoding and Encoding Require Similar Processes, but Encoding is Much More Difficult

### Strategy Theory of Spelling Development
- Children use information from phonology, orthography, and morphology as an aid to spelling from the beginning of attempted spellings.
Increasing Teacher Knowledge of Evidence-Based Interventions for Students with Dyslexia

Stages of Spelling Development

- **Prephonetic**: Has no knowledge of the alphabetic principal
- **Semi-phonetic**: Uses letters to represent easy to hear speech sounds
- **Phonetic**: Represents all speech sounds
- **Transitional**: Integrates some orthographic patterns
- **Conventional**: Uses sounds, patterns, and meanings

Stages of Development

Pre-phonetic or emergent: W17pt

Semi-phonetic: I wk t the madk.

Phonetic: I wokt to the maylbocks.

Transitional: I waked two the malebox.

Conventional: I walked to the mailbox.

Primary Abilities for Spelling Development

- Conceptual
- Phonological
- Orthographical
- Morphological
- Phonological Orthographical Morphological Semantics

Stages of Decoding/Encoding Development

Prealphabetic: Prephonetic

Partial alphabetic: Semi-phonetic

Full alphabetic: Phonetic

Consolidated: Transitional (orthography)

Fluency: Conventional

Different People require Different Approaches at Different Developmental Stages

Elements of Whole Language Methods

- Child centered and motivating
- High-interest and authentic text
- Interactive: Language-rich environment
- Emphasis on meaning and language
- Main belief: Reading develops naturally through exposure
Increasing Teacher Knowledge of Evidence-Based Interventions for Students with Dyslexia

Learning to Read

Implicit/Holistic

Explicit

2-5%

Contextually

Explicit

viewing reading as developing naturally will negatively affect “…perhaps 20 to 25 percent (of the children) who will not discover the point of the alphabet except as it is made apparent to them by appropriate instruction” (p. 54).

(Liberman & Liberman, 1990)

www.apmreports.org
Why aren’t kids being taught to read?

For Butler, the main problem at this point is ignorance. Too many teachers, school administrators and college professors don’t know the science. She’s betting that teaching them the science is the answer. “Part of my optimism about this is it’s not like we’re setting out to try to figure out how to teach reading so we can then teach everybody how to do it,” she said. “We know how to do it.”

Seidenberg is less optimistic. He makes a comparison to climate change research. “One thing that we’ve learned from climate change and the other issues over which we have polarization in this country is that facts aren’t the thing that change people’s beliefs,” he said. “In fact, confronted with data that contradict deeply held beliefs, instead of bringing people closer together, it can have the paradoxical effects of entrenching them further.”

“Decoding is at once the least and yet the most important aspect of reading…”

-Gerald Glass, 1973
### Poor readers have difficulties...

- learning how to blend (put together) and segment (take apart) the sounds in words.
- learning sound (phoneme) and letter (grapheme) correspondences.

### National Reading Panel

1. teach children how to manipulate the sounds in words (phonemic awareness)
2. teach them how these sounds can be written with letters and then blended together to form words (phonics)
3. have them read aloud with guidance and feedback (guided oral reading)
4. teach vocabulary and how to apply reading comprehension strategies

### Phonological Awareness

Knowing that spoken language is composed of sounds

The ability to manipulate and integrate language sounds

### The Difference

- Phonological awareness is the umbrella term used to describe all types of phonological awareness tasks (e.g., rhyming, counting syllables).
- Phonemic awareness: activities that involve the specific manipulation of phonemes (e.g., tell me the first sound in “dog”).

### Numerous Research Results have demonstrated:

<table>
<thead>
<tr>
<th>Phonemic awareness...</th>
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<tr>
<td>is highly related to reading achievement and can cause reading failure</td>
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<table>
<thead>
<tr>
<th>Phonemic awareness training...</th>
</tr>
</thead>
<tbody>
<tr>
<td>reduces reading failure</td>
</tr>
<tr>
<td>provides long lasting benefits</td>
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### National Reading Panel Conclusions about Phonemic Awareness

- Can be taught explicitly
- No more than 20 hours of instruction per year (5-18 hours)
- Focus on one skill at a time
- Most effective when combined with letters
- Most effective with instruction in small groups
**Phoneme**

- Basic building block of speech
- Single speech sound
- Distinguishes one word from another
- Signifies a change in meaning

**Letters, Phonemes, and Graphemes**

- How many letters in the alphabet? ____
- How many speech sounds? ____
- How many graphemes? ____

(a letter (f) or grouping of letters (ph) that represent a single speech sound)

**Phonemes and Graphemes**

The same grapheme can represent different phonemes (e.g., chair, character, chute).

The same phoneme may have a variety of graphemes (e.g., sure, sugar, ship, machine, motion, and special).

Knowledge of phoneme-grapheme relationships is needed for skilled reading and spelling.

**Phonological Awareness Development**

K-1st: rhyming, blending and segmenting compounds words and multisyllabic words

1st and 2nd grade: Segmenting and blending phonemes. Manipulating the initial, final, and then the middle sound.

**Sequence of Skill Development**

- Discriminating rhymes
- Producing rhymes
- Isolating initial and final sounds
- Blending sounds
- Segmenting sounds
- Manipulating sounds (e.g., deleting, substituting, transposing)

**Examples of Phonological Awareness Tasks**

- Rhyming: What words rhyme with dog?
- Blending: What word is this... /sh/ /oe/?
- Phoneme Counting: How many sounds are in the word “ship”?
- Phoneme Segmentation: How many sounds do you hear in the word “bus”?
- Phoneme Deletion: What is left if the /t/ sound were taken from “cart”?
How many phonemes do you hear in...?

pig __
rabbit __
rooster __
sheep __
box __

Rhyming

- Recognition: Do these two words rhyme?
- Oddity: Tell me which word doesn’t rhyme.
- Completion: Finish what I say with a word that rhymes.
- Production: What word rhymes with...?

Onsets and Rimes

Two parts of the English syllable
Onset: the consonants h-at
Rime: the vowel and what follows; the part that rhymes h-at

In English, all syllables have a rime, but not necessarily an onset -at

37 rimes from which 500 primary words can be taught using analytic phonics. Wylie & Durrell, 1972

-ack -ain -ake -ale -all -ame -an
-ank -ap -ash -at -ate -aw -ay
-eat -ell -est -ice -ick -ide -ight
-ill -in -ine -ing -ink -ip -ir
-ock -oke -op -or -ore -uck -ug
-ump -unk

Two most important phonological awareness abilities for early reading and spelling:

- Sound blending: provides the basis for learning phonics.
- Segmentation: provides the basis for sequencing sounds when spelling.
- Go back and forth between the two: compound words, syllables, then phonemes

Two Types of Consonant Sounds

- Stop: said with a puff of air /d/
- Continuous: sustained as long as you have breath /s/
Bounced and Stretched Sounds
Adapted from Success for All reading program

Bounced sounds are voiced softly and rapidly.

b c d g h j p t qu w x y

Stretched sounds are sustained for 1-2 seconds.

f l m n r s v z (a e i o u)

Training Sound Blending Ability
Ability to push speech sounds together

- Progress from compound words to syllables to onset-rimes to phonemes.
- Start the instruction with continuous sounds that can be prolonged (e.g., /s/, /f/, /m/).
- Present words with two sounds, three, and then four (e.g., /m/ /e/, /sh/ /oe/, /f/ /a/ /t/, /s/ /a/ /n/ /d/).
- Gradually increase the interval between sounds from 1/4 second to 1 second break.

Segmentation

1. Break compound words into words (e.g., cup-cake.)
2. Count the number of syllables in a word (e.g., car-pen-ter).
3. Break into onset-rime (e.g., c-at).
4. Count the number of phonemes (e.g., s-e-g-m-e-n-t).

Segmentation

Ability to separate sounds

- Manipulatives (e.g., tiles, poker chips)
- Bounce or throw a ball
- Tap out the number of words, syllables, phonemes
- Hold up fingers to count the number of phonemes

Clap, Tap, or Jump the Number of...

- Syllables in words
- Phonemes in words

Phoneme Manipulation Tasks

- Deletion: say cart without /t/
- Addition: say at with /c/ at the front
- Substitution:
  - Initial: Change the /s/ in sun to /f/
  - Final: Change the /t/ in cat to /b/
  - Medial: Change the /i/ in hit to /a/
- Reversal: say the sounds in “enough” backward
Instructional Guidelines

Consider the level of development and the difficulty level of the task:
- Rhyme identification vs. production
- Initial sound, final sound, and then medial sound
- Compound words, syllables, onset-rimes, phonemes

Early Reading

- Print Awareness
- Phonological Awareness
- Terminology
- Alphabetic Principle

The Alphabetic Principle

The systematic use of alphabetic letters to represent speech sounds-how speech sounds are represented in print

 phoneme grapheme

/f/ f

What are the five ways to spell the speech sound /f/?

1. __
2. __
3. __
4. __
5. __

Reciprocal Relationship Exists Between Phonological Awareness and Reading Development
**Adapted Elkonin Procedure (Pre-Alphabetic)**

1. Select a simple line drawing.
2. Place a rectangle for a word under the drawing divided into squares equal to number of phonemes.
3. Say the word slowly and push a marker forward for each sound.
4. Color-code markers for vowels and consonants.
5. Progress to letter tiles

| C | A | T |

**Talk-to-Yourself Chart**
(Adapted from Benchmark School, Gaskins)

1. The word is ____________.
2. When I stretch the word, I hear _____ sounds.
3. There are ____ letters because ____________.
4. The spelling pattern is ____________.
5. This is what I know about the vowel: ____________.
6. Another word I know with the same vowel sound is: ____________.
7. Other words that share this same spelling pattern are: ____________.

**Making Words**
- Give each student 6 to 8 letters with one or two colored coded vowels
- Have each student make 2 then 3 letters words using the letters.
- Continue a pattern, increasing word length one letter during each step.
- Example: it, sit, slit, split, splint, splinter, splinting
- Practice with morphemes: -ed, -ing, -er


**Modifying Making Words**
- Focus on CVC patterns
- Progress from changing the initial to the final to medial sounds
- Integrate with a reading/writing activity
- Pair at-risk student with a tutor

| C | T | A |

**What does he know?**

**What does he need to learn?**

**What else do you need to know to plan instruction?**
Increasing Teacher Knowledge of Evidence-Based Interventions for Students with Dyslexia

Phoneme-Grapheme Mapping
Kathi Grace, Cambium Sopris West
- Begin with regular words where the number of phonemes equals the number of graphemes
- Introduce blends
- Introduce digraphs (written in one box)
- Introduce silent letters (e.g., v-c-e, mb)
- Introduce vowel digraphs (e.g. oa, ee)

Phoneme-Grapheme Mapping
- What do you hear?
- What do you write?
- One chip = one sound

Phoneme-Grapheme Mapping
- Builds on phonemic awareness
- Phoneme-Grapheme Mapping builds the bridge between sounds and letters

National Reading Panel review concluded that Synthetic Phonics approaches are the most effective for students with reading disabilities
- Teach sounds in isolation
- Provide practice blending sounds into words
- Introduce graphemes, place emphasis on learning how to blend and break words into their basic parts

Importance of Phonics
“... that the logical training for these children would be that of extremely thorough repetitive drill on the fundamentals of phonic associations with letter forms, both visually presented and produced in writing, until the correct associations were built up…” (Orton, 1925, p. 614).
O-G Sequence

1. The child is shown a letter and repeats its name after the teacher.
2. The teacher demonstrates how to form the letter and the child traces over the model. The child then copies the letter, and then writes the letter from memory.
3. Each phonic unit is present on individual cards with consonant letters on white cards and vowel letters on salmon-colored cards. The sound is introduced with a key word. The student repeats the key word before providing the sound (e.g., a...apple... /a/).
4. The letter sounds are taught in groups as rapidly as they can be learned. The first letters are: a (short sound as in cat), b, f, h, j, k, m, p, t.
5. After the names and sounds are learned, blending is introduced. A consonant, vowel, and consonant are presented and the student provides the sounds rapidly until he or she can produce the whole word.
6. The teacher then pronounces a word slowly and separates the sounds. The teacher then asks the child to: repeat the word, name the letters, write the word while naming each letter, and then read back the word.
7. Once mastery is assured, additional sounds are introduced. The manual provides the following sequence: g (go), o, initial r and l, n, th (this), u, ch, e, s, sh, d, w, wh, y, v, z
8. Consonant blends are introduced and then the following sounds: qu, x, y, ph, s, and z.
9. The long sounds of all vowels are introduced and the vowel consonant –e spelling pattern (e.g., a-e, safe).
10. The student practices reading material that has a controlled vocabulary (decodable text) to practice this alphabetic approach to words.

Examples of Effective Synthetic Phonics Programs
- Barton
- Corrective Reading
- Herman Method
- Lindamood Phonemic Sequencing Program for Reading, Spelling, and Speech (LiPS)
- Orton-Gillingham
- Phonic Reading Lessons: Skills and Practice
- Project Read
- Slingerland
- Sonday System
- Spalding Method
- SPIRE
- Take Flight
- Wilson Reading System®, Fundations, Just Words
- Zoo Phonics

What is it?

Chip
Cow
Blast
Beep
Catch
Increasing Teacher Knowledge of Evidence-Based Interventions for Students with Dyslexia

Scope and Sequence of Phonic Reading Lessons
- Unit I: Short vowels, CVC words
- Unit II: CVCe and consonant digraphs
- Unit III: Consonant blends and digraphs
- Unit IV: R-controlled vowels, vowel digraphs
- Unit V: Common word endings and spelling rules
- Unit VI: Alternative pronunciations and spellings
- Unit VII: Prefixes
- Unit VIII: Suffixes
- Unit IX: Latin roots
- Unit X: Greek roots

Characteristics of Decodable Text
- Helps students learn to pronounce words accurately by applying phonics.
- Introduces new sounds systematically with careful review of previously learned sounds.
- Introduces exception or irregular words with considerable review.

Sample Websites for Decodable Text
- www.flyleafpublishing.com
- www.scholastic.com
- www.hmhco.com (Trophies series)
- www.readinga-z.com
- www.starfall.com
- www.soundreading.com
- http://www.accessiblebookcollection.org
What are the advantages of phonics-based readers?
What are the disadvantages?
What are the advantages of authentic text?
What are the disadvantages?

Steps in the Fernald Method
1. Student writes a story. When the student comes to a word, he or she does not know how to spell, the teacher writes it on a word card.
2. Student traces the word, while saying the word as many times as needed to be able to write the word from memory.

The Fernald Method
- Stage 1: Tracing the word
  - finger contact
  - saying as tracing
  - writing from memory
  - using in context
- Stage 2: Learning by looking, saying and writing
- Stage 3: Learning directly from print
- Stage 4: Generalizing and independent reading

“The child is much more interested in writing and reading fairly difficult material that is on the level of his understanding than simpler material which is below his mental age level” (p. 44).

-Grace Fernald (1943)

Tracing
- Attention
- Memory (Orthography)
- Sound-Symbol Associations
- Handwriting

Why Tracing is Effective
1. Requires student to pay attention and look at each letter
2. Reinforces the connections between the phonemes and graphemes
3. Student has to write word from memory, not copy
Write-Say Method (based on Fernald)

- Select word and write it on a card.
- Pronounce the word and have the student look at and say the word.
- Have the student pronounce the word while tracing it as many times as needed until he or she can write the word from memory.
- Have the student write the word correctly 3 times from memory and then file in a word bank.
- Review the word periodically to ensure the student can read and spell the word with ease.

Principles of Irregular Word Instruction

1. Introduce one exception (red flag, trickster) word every several lessons.
2. Have the student spell the word letter by letter and then say the word.
3. Gradually increase the rate to several new words each day.
4. File in a word box and provide systematic review of the words.

Color Coding

- **Green:** Phonically regular words: (e.g., cat, swim)
- **Yellow:** Irregular but frequent patterns (e.g., night)
- **Red:** Irregular (e.g., once)

Spelling Adjustments

- Reduce the number of words
- Select high-frequency words
- Select phonically regular words
- Provide systematic review
- Keep positive

Ineffective Methods for Teaching Spelling

- Using a study-test approach.
- Presenting words in sentences or paragraphs initially.
- Relying on commercial materials as the foundation of the spelling program.
- Having students write words several times to aid in retention.

Principles of Spelling Instruction

- Select words at the instructional level.
- Only count off for spelling on spelling tests.
- Don’t ask struggling students to write their spelling words 5 times each.
- Mark the number of words spelled correctly, not the number wrong.
- Don’t assign students words to spell that they can’t read or don’t use.
- Change the difficulty level of the words when a student is missing too many.
- Don’t ask students to edit their own work.
- Focus on ideas, and treat spelling as part of the editing process.


**Effective Methods for Spelling**

- Using a test-study-test procedure.
- Using high interest activities and motivational games.
- Emphasizing a core of high frequency words first.
- Teaching words that are part of a student’s listening/speaking vocabulary.
- Teaching strategies for word study.
- Testing a few words daily.

**Spelling Flow List**

- Daily testing of a few words
- Keep the word on the list until it is spelled correctly 3 days in a row and then file the word in a word box.
- Review weekly. If incorrect, add the word back to the flow list and keep it on the list until it is spelled correctly again 3 days in a row.
- Select words from student’s writing or a high frequency word list.

**Adapted Spelling Scale**

Use a rating scale to evaluate responses on spelling tests:

- 0 points: random letters
- 1 point: One correct letter
- 2 points: Two correct letters
- 3 points: Three correct letters
- 4 points: All phonemes in the word are represented
- 5 points: All phonemes in the word are represented with a possible English spelling (e.g., rane for rain).
- 6 points: Correct spelling

Adapted from: Kroese, Hynd, Knight, & Hiemenz (2000); Tangel & Blachman (1992)
Increasing Teacher Knowledge of Evidence-Based Interventions for Students with Dyslexia

Structural Analysis

Breaking apart words by prefixes and suffixes (affixes) and other meaningful units

Phases of Sight Word Development

Pre-Alphabetic Phase

Partial Alphabetic Phase

Full Alphabetic Phase

Consolidated Alphabetic Phase


1. What phase is Marie in Ehri’s Sight Word Development?

____________________

2. On what two areas of reading does she need to work?

____________________

____________________

Morphemes

Smallest meaning unit of language

Free: functions independently

Bound: must combine with other morphemes (e.g., prefixes, suffixes, and endings)

How Many Morphemes in…

• girl
• boys
• unlocked

The Four Most Frequent Prefixes

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Meaning</th>
</tr>
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<tbody>
<tr>
<td>dis-</td>
<td>opposite</td>
</tr>
<tr>
<td>in-, im-, il-, ir-</td>
<td>not</td>
</tr>
<tr>
<td>re-</td>
<td>again</td>
</tr>
<tr>
<td>un-</td>
<td>not</td>
</tr>
</tbody>
</table>

58% of prefixed words in English
Increasing Teacher Knowledge of Evidence-Based Interventions for Students with Dyslexia

Most Frequent Prefixes in Printed English
(26 prefixes account for 97% of prefixed words)

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>un-</td>
<td>de-</td>
</tr>
<tr>
<td>en-</td>
<td>anti-</td>
</tr>
<tr>
<td>mis-</td>
<td>in- (not)</td>
</tr>
<tr>
<td>fore-</td>
<td>in (in, into)</td>
</tr>
<tr>
<td>semi-</td>
<td>pre-</td>
</tr>
<tr>
<td>re-</td>
<td>trans-</td>
</tr>
<tr>
<td>non-</td>
<td>mid-</td>
</tr>
<tr>
<td>sub-</td>
<td>dis-</td>
</tr>
</tbody>
</table>


Four Most Common Suffixes

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>-ed</td>
<td>past tense verb</td>
</tr>
<tr>
<td>-ing</td>
<td>verb form</td>
</tr>
<tr>
<td>-ly</td>
<td>characteristic of</td>
</tr>
<tr>
<td>-s, -es</td>
<td>more than one</td>
</tr>
</tbody>
</table>

72% of suffixed words in English

Affixes
Introduce the prefix or suffix in isolation. Underline the affix in words. Practice reading the word part. Have students read the word twice.
1. Read the suffix (or prefix), say the entire word.
2. Read the entire word.

friction instruction deduction

Steps in Glass Analysis

1. The word is “carpenter.”
2. What letters make the /er/ sound? The /ar/ sound? The /car/ sound?
3. What sound or sounds do the letters “ar” make? “ter”? “en”?
4. Say carpenter without the /c/ sound. Say carpenter without the /ter/ sound.
5. The word is “carpenter.”

Glass Analysis Method
Easier to Learn, Box 329, Garden City, NY 11530

- Identify the whole word and the letters and sound of the target cluster
- Give the sound(s) and ask for the letter or letters
- Give the letter or letters and ask for the sound(s)
- Take away letters and ask for the remaining sound
- Say the whole word
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REWARDS Strategy (Sopris West)
Circle the prefixes
Circle the suffixes
Underline the vowel in the root word
Draw scoops under the parts and say:
What part? What part? What part?
What word?

Spelling Grid
- Write the first word in the column, pronounce the word and discuss the meaning.
- Count and write number of syllables in the second column.
- Write each syllable in the next columns.
- Write and pronounce the entire word.


Independent Reading
Differences in Amounts of Independent Reading

<table>
<thead>
<tr>
<th>Percentile</th>
<th>Minutes of book reading per day</th>
<th>Words read per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>98</td>
<td>65.0</td>
<td>4,358,000</td>
</tr>
<tr>
<td>90</td>
<td>21.1</td>
<td>1,823,000</td>
</tr>
<tr>
<td>80</td>
<td>14.2</td>
<td>1,146,000</td>
</tr>
<tr>
<td>70</td>
<td>9.6</td>
<td>622,000</td>
</tr>
<tr>
<td>60</td>
<td>6.5</td>
<td>432,000</td>
</tr>
<tr>
<td>50</td>
<td>4.6</td>
<td>282,000</td>
</tr>
<tr>
<td>40</td>
<td>3.2</td>
<td>200,000</td>
</tr>
<tr>
<td>30</td>
<td>1.3</td>
<td>106,000</td>
</tr>
<tr>
<td>20</td>
<td>0.7</td>
<td>21,000</td>
</tr>
<tr>
<td>10</td>
<td>0.1</td>
<td>8,000</td>
</tr>
<tr>
<td>2</td>
<td>0.0</td>
<td>0</td>
</tr>
</tbody>
</table>


What is Fluency?
- Put Reading First (Armbruster, Lehr, & Osborn, 2001):
  “Fluency is the ability to read a text accurately and quickly. When fluent readers read silently, they recognize words automatically. They group words quickly in ways that help them gain meaning from what they read. Fluent readers read aloud effortlessly and with expression. Their reading sounds natural, as if they are speaking (p. 22).”
“Automaticity refers to the ability to perform tasks without actively thinking through them” (p. 15).


### Interventions for Reading Fluency

- Rapid Word Recognition Chart
- Repeated Reading
- Books on CD
- Great Leaps

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<table>
<thead>
<tr>
<th>Rapid Word Recognition Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method for practicing quick word reading</td>
</tr>
<tr>
<td>1. Use a chart composed of five rows of 6 irregular (or high frequency) words.</td>
</tr>
<tr>
<td>2. Time how long it takes the student to read the chart.</td>
</tr>
<tr>
<td>3. Count and record number of words read successfully.</td>
</tr>
<tr>
<td>4. Review any missed words.</td>
</tr>
</tbody>
</table>


---

<table>
<thead>
<tr>
<th>Rapid Word Recognition Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretty said who there they what</td>
</tr>
<tr>
<td>said pretty there who what they</td>
</tr>
<tr>
<td>there who they said pretty what</td>
</tr>
<tr>
<td>who what said they there pretty</td>
</tr>
<tr>
<td>they there pretty what who said</td>
</tr>
</tbody>
</table>


---

Excel sheet where you can make Rapid Word Charts

https://community.neuhaus.org/educators/consumables

---

![Excel sheet where you can make Rapid Word Charts](https://community.neuhaus.org/educators/consumables)
Common Elements of Fluency Methods

- Read while listening to the same material
- Track print with finger or marker
- Use high-interest material
- Use material at the instructional level

Beginning Fluency Methods

- Echo listening
- Predictable books
- Assisted reading
- Echo reading

Echo Listening: You read; they say it back.
Predictable Books: The student reads any repeated syntactic patterns
Assisted Reading: You read and let them say any words you know they know.
Echo Reading: You read; they read the same thing back.

Repeated Reading

Designed for children who read slowly despite adequate word recognition (Samuels, 1979).
Select a passage from 50 to 100 words long from a book that is slightly above the student's reading level.
Have student read the same passage several times.
Time the reading and count the number of errors.
Record the reading time and the number of errors.
Use two different colored pencils for recording time and errors, or make time, a circle, and the mark for errors an "X" or square.


Repeated Reading Chart

Choosing Text for Repeated Reading

Choose a selection of from 50-100 words at the student’s instructional reading level.
If the student takes more than 2 minutes or makes more than 5 to 10 errors, the passage is too difficult.
Determine the number of Words Correct Per Minute (WCPM).
When the student is able to read 80-85 WCPM, increase the difficulty level of the passages.
Types of Interventions between Readings

- Provide no interventions.
- Review any errors made on the passage.
- Have student practice with a peer.
- Have student listen to the passage on a recording.
- Read the passage with the student.

Improving Reading Fluency

A listening passage preview in combination with repeated reading (reading the passage at least 4 times) was most effective for improving the reading fluency of students with reading disabilities.


Repeated reading remains the most effective intervention for improving fluency in students with learning disabilities.

- Provide a model of fluent reading prior to repeated reading practice.
- Set a performance criterion (how fast the student should read).
- Use of easier level text produced greater gains in accuracy, fluency, and comprehension for most students.
- Correction and feedback can also enhance fluency performance.


Recorded Books

- Have child follow along with the print.
- Ensure that the pace is appropriate.
- Ensure child can follow procedure for finding the place (e.g., chime, page number).
- Encourage repeated listenings.

Great Leaps Reading (C. Mercer & K. Campbell)

Daily timing (one-minute each) and charting of three areas: Phonics: sounds in isolation to cvc, cvvc, cvce patterns; Sight Phrases; and Stories.

Versions for levels:
- Grades K-5
- Grades 6-8
- Grades 9-12

1-877-475-3277 or www.greatleaps.com

Tips for Teaching Fluency

1. Multiple readings improves speed and accuracy (4-5 times).
2. Use instructional level text.
3. Use decodable text with struggling readers.
Increasing Teacher Knowledge of Evidence-Based Interventions for Students with Dyslexia

February 2, 2019
Nancy Mather, Ph.D.

How Fast is Average (50th percentile) Oral Reading?

<table>
<thead>
<tr>
<th>Grade</th>
<th>2006</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>End of first</td>
<td>53</td>
<td>60</td>
</tr>
<tr>
<td>End of second</td>
<td>89</td>
<td>100</td>
</tr>
<tr>
<td>End of third</td>
<td>107</td>
<td>112</td>
</tr>
<tr>
<td>End of fourth</td>
<td>123</td>
<td>133</td>
</tr>
<tr>
<td>End of fifth</td>
<td>139</td>
<td>146</td>
</tr>
<tr>
<td>End of sixth</td>
<td>150</td>
<td>146</td>
</tr>
<tr>
<td>End of seventh</td>
<td>150</td>
<td>146</td>
</tr>
<tr>
<td>End of eighth</td>
<td>151</td>
<td>151</td>
</tr>
</tbody>
</table>


New Norms

- http://www.brtprojects.org/publications/technical-reports/

“Accuracy is FIRST, FOREMOST, and FOREVER the FOUNDATION of FLUENCY.”

Source:

Reading

- Extended time
- Shorter Assignments
- Read for a specific amount of time, not a certain number of pages
- Partner reading
Increasing Teacher Knowledge of Evidence-Based Interventions for Students with Dyslexia

Spelling Tests

- Phonically regular words
- Words with a pattern
- Shorter word lists
- Daily testing instead of weekly testing
- Give partial credit on spelling tests

Adjustments: Simple Facts

For some students adjustments must be made in the:
- Difficulty level of the material
- Amount of material to be covered
- Amount of time (extra time does not bring extra knowledge)
- Method of acquisition (Technology can help performance)

MindPlay Virtual Reading Coach

Internet-based

- Phonemic Awareness
- Phonics
- Fluency
- Vocabulary
- Comprehension
- and Grammar & Meaning

www.mindplay.com

Mindplay Virtual Reading Coach

- Builds an individualized prescriptive plan for each student
- Provides as much feedback and repetition as needed
- Puts students in charge of their own learning
- Increases all aspects of reading (phonological awareness, phonics, fluency, grammar, vocabulary, and comprehension)

www.mindplay.com
Increasing Teacher Knowledge of Evidence-Based Interventions for Students with Dyslexia

MindPlay Virtual Reading Coach
Goal: All students reading at grade level
Student requirements
30 minutes a day, 5 days a week
• Change happens within 10 hours
• Gains start to happen at 25-30 hours
• Most students reach grade level within 50 hours of use.
• Students with dyslexia may take 100-120 hours.

MINDPLAY TEACHER COMPANION
• Increases teachers’ understanding of English language structure and research-based reading instruction.
• Demonstrates scientifically-based reading instruction using MVRC
• Provides 8 hours of professional development credit

MINDPLAY Online Comprehensive Reading Course for Educators (30-35 hours)
Increases understanding of how to provide explicit instruction in:
• Phonological awareness
• Phonics
• Grammar
• Fluency
• Vocabulary
• Reading Comprehension

Most teachers are not provided with adequate information and training regarding code-based reading instruction from their education

WHO SHOULD TAKE THIS COURSE?
• This course is designed for educational professionals who wish to increase their knowledge about how to teach reading and spelling.
• It is appropriate for general education teachers, special education teachers, reading teachers, school psychologists, and speech-language pathologists who deal with diverse age ranges and skill levels.
• It can be used in teacher preparation and professional development programs within colleges and school districts.

Three hour course for professionals and parents:
• Provides an overview of what dyslexia is
• How dyslexia is assessed
• The types of interventions and accommodations that are effective

with Barbara Wendling
www.mindplay.com
Increasing Teacher Knowledge of Evidence-Based Interventions for Students with Dyslexia

The main question participants ask is:

Why didn’t anyone ever teach me this?

“Now I focus more on the way students attack unknown words, for instance … before I would say ‘let’s look at the picture’ … but now I see that they are confusing voiced and unvoiced consonants and the difference between hard c and soft c when spelling. I am looking more at the way they spell and the types of errors that they are making. I am more able to problem solve … and really pinpoint how to help. I feel more empowered as a teacher.”

Milly Barnes, 2nd grade teacher

“...lower level language mastery is as essential for the literacy teacher as anatomy is for the physician” (Moats, 1994, p. 99).

“If teachers are better prepared, the impact of reading difficulties, including dyslexia, will be lessened, and many more students will receive the instruction and support they require to reach their potential.”

Press Release: International Dyslexia Association Recognizes Nine Universities for Meeting Teacher Training Standards in Reading Teachers who are Better Prepared Lessen the Impact of Reading Difficulties BALTIMORE, May 2, 2012

“To be successful, the most struggling child requires the most expert teacher” Lose, 2007

“In the final analysis, reading difficulties can be prevented to the degree that the teacher has a professional understanding of her work” (p. 245).

Increasing Teacher Knowledge of Evidence-Based Interventions for Students with Dyslexia

Explicit Reading Instruction
Direct  Structured  Systematic  Repetitious  Controlled  Intensive

“A variety of programs must be available for children who have a variety of needs” (p. 194).

Source:

Developing readers need to be provided with reading materials at their instructional level

The level at which the reader demonstrates word recognition of at least 95+%

“We firmly believe that it does students with LD little good to be included and socialized in general education classrooms for 12 years if the result is that these students leave high-school reading at a second- or third-grade level and with serious self esteem issues” (p. 66).


“My ignorance of my dyslexia only intensified my sense of isolation and hopelessness. Ignorance is perhaps the most painful aspect of a learning disability” (p. 64).


Knowing what is needed to help students is not the same thing as being able to provide it.

Increasing Teacher Knowledge of Evidence-Based Interventions for Students with Dyslexia

“A little over a decade ago, Foorman and Torgesen (2001) claimed that if current research findings on effective classroom reading instruction were implemented, meeting the additional needs of the at-risk child for effective, intensive, and explicit individual or small group instruction, the literacy needs of all children could be met. This is the case where advances in the science of reading disorders and intervention research, if brought to the front line of educational practice, could change the life circumstances of millions of at-risk children and adolescents” (p. 351).


“One of the most important conclusions from research is that for children with learning problems, learning is hard work. A corollary to this finding is that for their teachers, instruction is very hard work and requires an enormous amount of training and support.”


Solutions

• Be eclectic in methodologies.
• Select reading interventions based on a student’s developmental levels.
• Teach reading and spelling together.
• Ensure that teachers have adequate time to teach reading.

January 27, 2014, 04:00 pm Make dyslexia a national priority by Sally E. Shaywitz, M.D. and Bennett A. Shaywitz, M.D Rep. Bill Cassidy (R–La.) has introduced a House Resolution on Dyslexia (H.Res. 456, 113th Congress...“As physician-scientists, we have seen the devastating impact on children and families resulting from the failure by our schools to recognize and address dyslexia; as scientists we know the powerful scientific knowledge that both explains dyslexia and offers an evidence-based route to remediation. Often we wish there were more knowledge to address a problem. In the case of dyslexia, we have the knowledge to do much better for our children and our nation and so rather than a knowledge gap, there is an action gap which H.R. 456 – by bringing science to education - takes a major step to close.”

Solutions

• Provide early intervention with a structured, systematic phonics program, followed by methods to increase reading rate.
• Provide students with highly trained teachers and use technology to ensure that all children learn to read.
• Ensure that all school personnel feel a commitment to help struggling readers in all grades.
Students with Reading Disabilities Need Understanding Teachers…

- Sympathetic
- Interested
- Developmental
- Process Oriented
- Inspiring

“Failure in reading is likely to lead to a general sense of inferiority that will cripple the individual’s whole life. One of the greatest compensations in remedial reading work is to see the transformation in a child when you have shown him, in spite of his conviction, that he can read” (p. 3).