

Understanding Dyslexia

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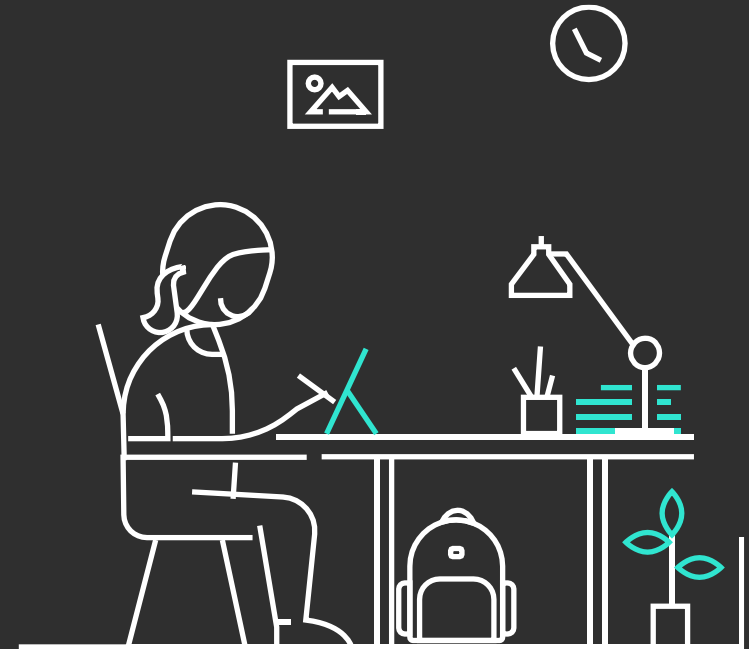
John- mid-grade 2

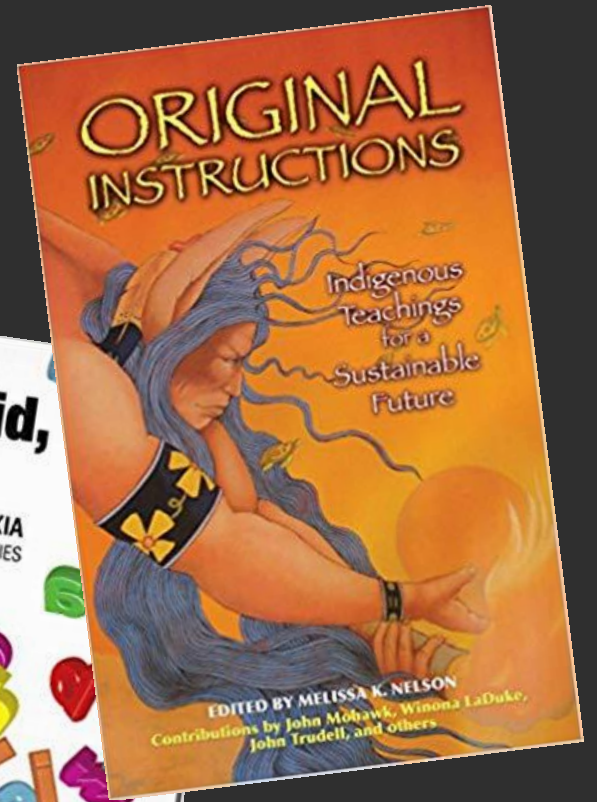
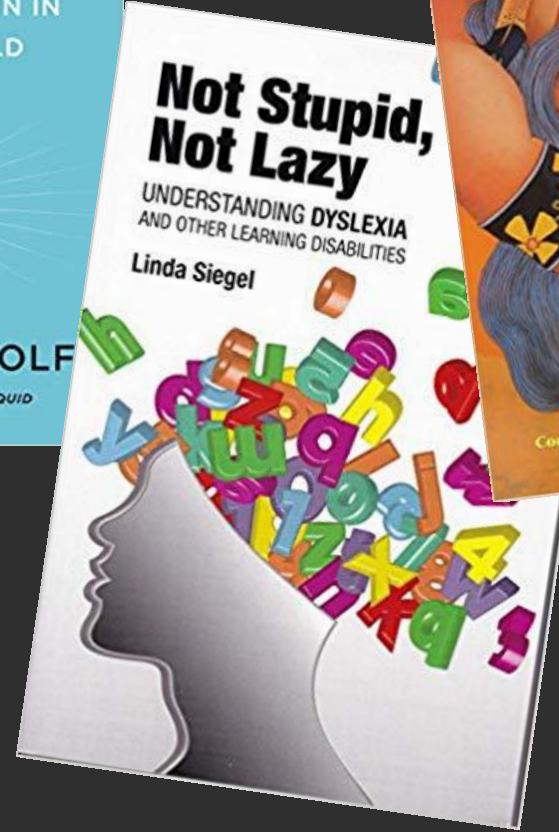
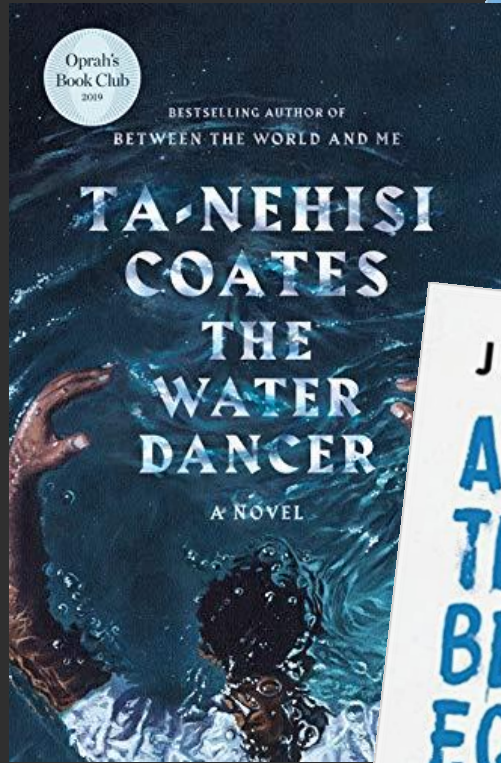
Reading Comprehension-Below Average



Katie - mid-grade 2

Reading Comprehension-Below Average





The Simple View of Reading

$$\text{Decoding} \times \text{Oral Language Comprehension} = \text{Reading Comprehension}$$

(Skill at transforming
printed words into
spoken words)

(Ability to understand
spoken language)

(Gough & Tunmer, 1986)





The Simple View of Reading

Decoding Comp. x Language Comp. = Reading

$$\underline{.7} \quad \times \quad .7 \quad = \quad .49 \text{ (.42 - 63)}$$

$$\underline{.7} \quad \times \quad \underline{.3} \quad = \quad \underline{.21}$$

$$\underline{.3} \quad \times \quad .7 \quad = \quad \underline{.21} \quad **$$

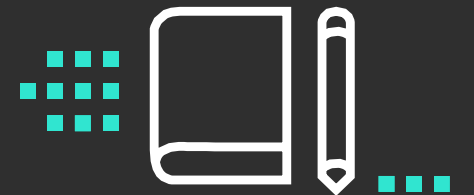
(Gough & Tunmer, 1986)

DYSLEXIA

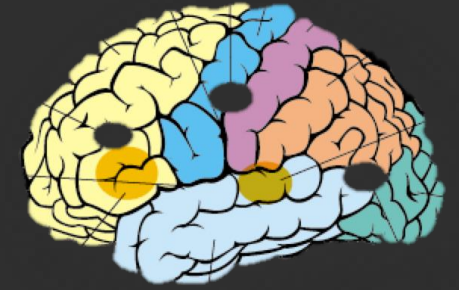
A neurologically based learning disorder that directly affects word-reading accuracy, word-reading rate and reading fluency, and spelling.

Impairment in learning the written code of our spoken language

- read words correctly
- read words quickly
- spell words



DYSLEXIA: A neurologically based learning disorder...



1. Significant heritable component
2. Neuroimaging studies have shown
 - i) functional differences in areas of the brain activated during reading for good readers vs. readers with dyslexia (& on reading-related tasks for pre-readers with vs. without familial risk for dyslexia)
 - ii) following effective reading interventions, there is increased activation of these regions in individuals with dyslexia

(Byrne, B., Olson, R. K., et al., (2006). Genetic and environmental influences on early literacy. *Journal of Research in Reading*.

<https://www.idaontario.com>; Barquero et al, 2014; Gabrieli, 2016; Kearns et al., 2019, Norton et al, 2015; Ozernov-Palchik et al., 2016)

John- mid-grade 2

Reading Comprehension – Below Av.

Word Reading – Below Average

Phonological Awareness & Sound-
letter Skills – Far Below Average

Listening Comprehension / Vocabulary
– Average to above average



Katie - mid-grade 2

Reading Comprehension – Below Av.

Word Reading – Below Average

Phonological Awareness & Sound-
letter Skills – Far Below Average

Listening Comprehension / Vocabulary
– Average to above average

Dyslexia by any other name...

Specific Learning Disorder – with an impairment in word reading accuracy, reading rate or fluency

(DSM-5: “Dyslexia is an alternative term for this disorder”; p. 67)

Learning Disability / Reading Disability in word reading / decoding / spelling
(Provincial Departments of Education; LDAC; US Dep’t of Education)

(**Learning or Reading Disability** in Phonological Processing /Phonological working memory... **affecting word reading / decoding**)

Prevalence of Dyslexia

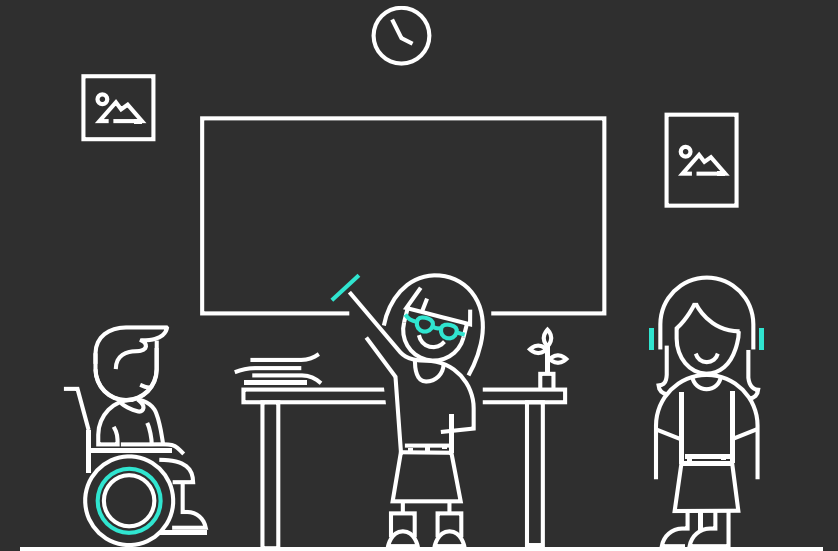


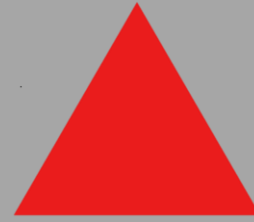
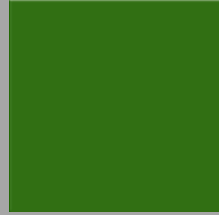
1. Learning Disabilities are the most common referral for formal identification
(Ontario; OME, 2017a and Nova Scotia; Students' First Report, 2018)
2. Dyslexia is the most prevalent type of Learning Disability – making up about 80 % of all LDs
(Lyon, 1996; Cortiella & Horowitz, 2014; Lerner, 1989)
3. According to Statistics Canada, of all the children with disabilities, more than half have a learning disability
(LDAC - https://www.ldac-__acta.ca/causes/for-professionals/)

Estimates range from 5-10% up to 20%

Pervasive Myths in Reading Education

- Reading develops naturally
- Immerse children in books
- Skilled readers rely on the meaning of the text & the structure of sentences to recognize words -- as much or more than they rely on the letters in the words





BLUE

RED

BLUE	RED	PINK	BLACK	YELLOW
GREEN	BLUE	RED	BROWN	PINK
PINK	BROWN	YELLOW	GREEN	RED
BLACK	PINK	GREEN	BROWN	BLUE

The goal of word reading instruction for ALL readers is to become accurate, quick and efficient

Teaching students to rely on picture cues, meaning cues, & sentence structure cues to recognize (guess at) words is not good or helpful instruction

What works best for ALL students -- and what extra is needed for students with dyslexia?

1) All learners benefit from explicit and systematic instruction in the components of word reading

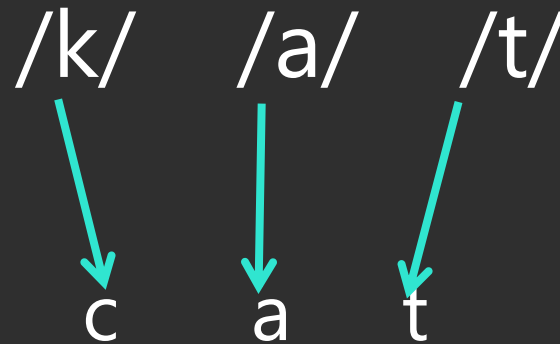
Referred to as Structured Literacy (Spear-Swerling, Structured Literacy & Typical Literacy Practices...; Moats, Structured Literacy™: Effective Instruction for Students with Dyslexia and Related Reading Difficulties)

- Phonological awareness
- Letter-sound associations & using these to decode words
- The structure of complex words (syllables types, morphemes)

Good phoneme awareness & phonics skills supports a student to fully analyze or “sound out” the letters in a word that they come upon and are not already known (which is most all words for beginning readers).

By fully decoding a word each time it is seen – our brain builds a representation of the letters in that word (orthographic representation), that then allows immediate, automatic recognition in the future.

Orthographic Mapping



(L. Ehri, D. Share)

Eliminating the Reading Gap For Most Young Students

(George Georgiou - U of A; Edmonton Journal, 2017)

11 Edmonton Schools: lowest 30% of readers, mid-grade 1; 290 Students

Intervention (10 weeks – 3 times /wk; 30 mins)

- i) blending & segmenting phonemes & letter-sound associations within a systematic, synthetic phonics model
- ii) practice using these letter-sound associations to decode words in children's texts

All but 7 children caught up to peers – 1% of population

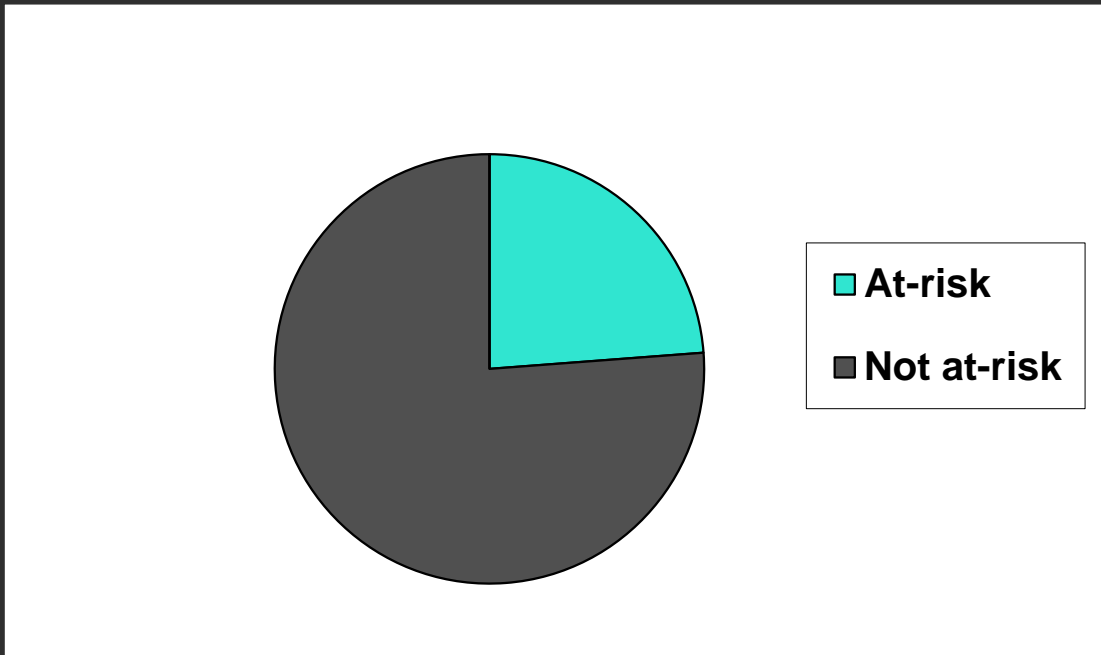
<https://www.folio.ca/program-dramatically-improves-reading-of-at-risk-students-at-an-early-age/>

<https://edmontonjournal.com/news/local-news/extra-help-by-researchers-eliminates-reading-gap-for-most-young-students>

Classroom Instruction & Early Intervention

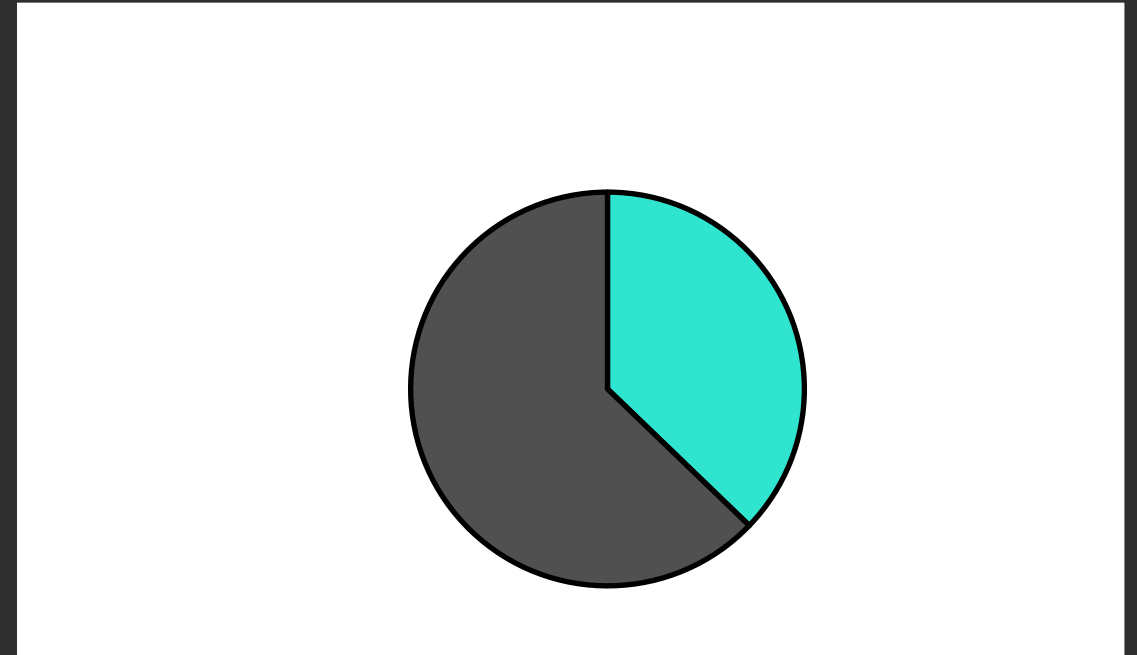
North Vancouver District School Board -- Kindergarten \approx 1000 students – 30 schools

L1 English



23.8 at-risk

ESL (\approx 20% of pop'n)

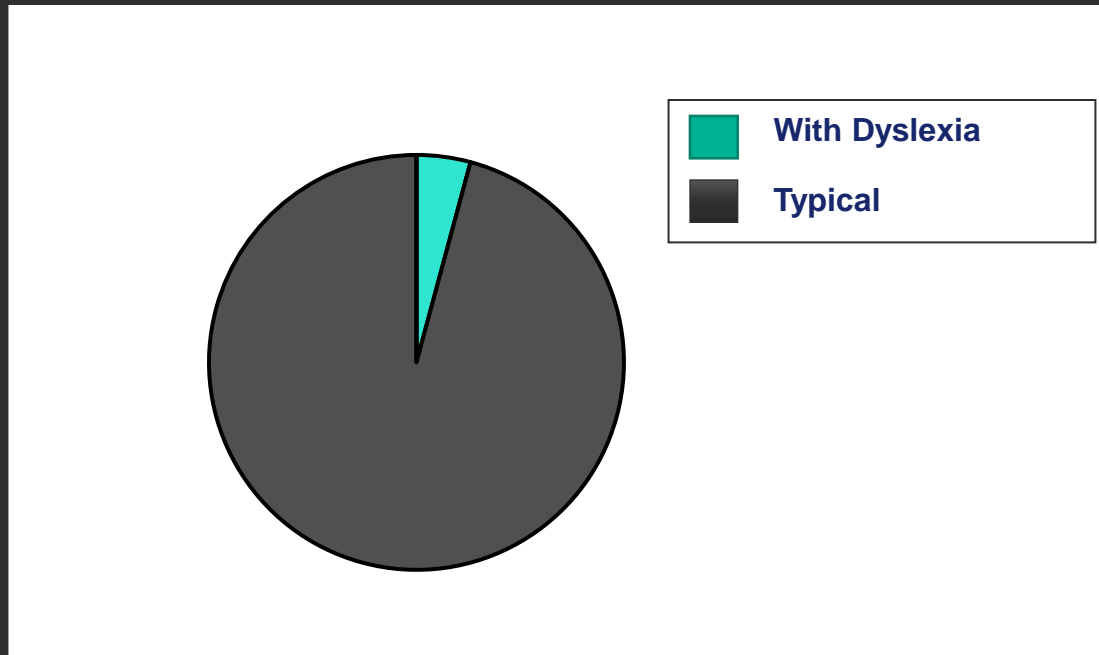


37.2 at-risk

Linda Siegel - e.g., Lesaux & Siegel (2003). Developmental Psychology.

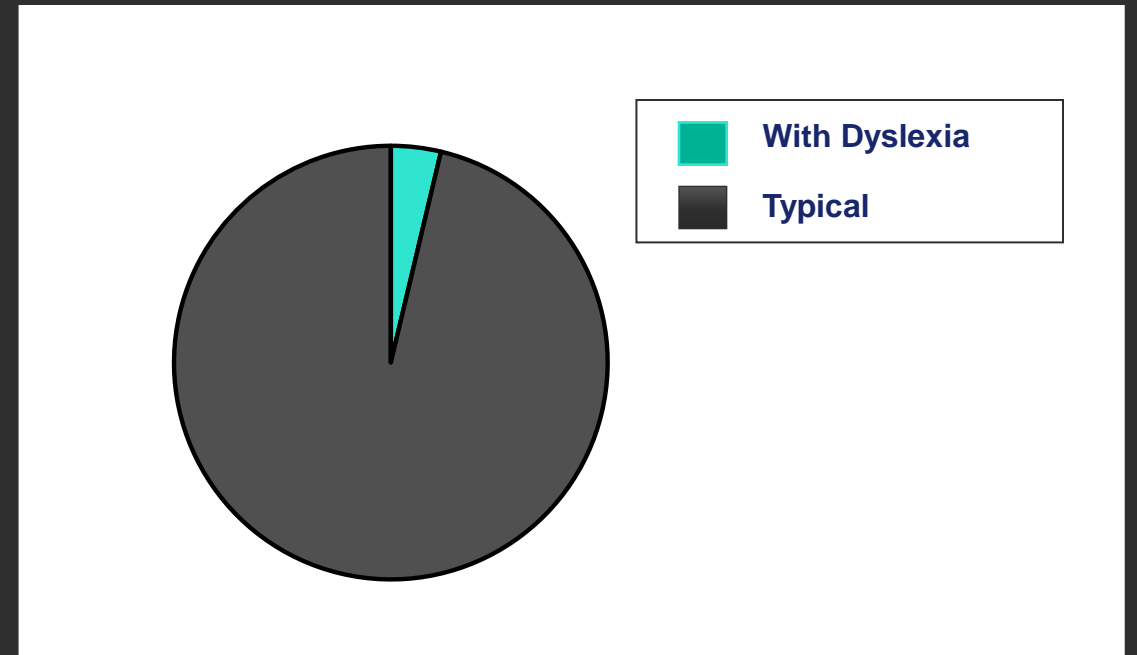
Followed in grades 4 & 7

Grade 2 - L1 English (K-24% at risk)



About 3% - with Dyslexia

Grade 2 - ELL (K- 37% at risk)



About 2% - with Dyslexia

Dyslexia: Why focus on prevention?

- 1) Reading difficulties can be prevented in all but a small percentage of children (estimates 3- 5 %) Al Otaiba, & Torgesen, (2007). Effects from intensive standardized K & first-grade interventions for the prevention of reading difficulties. *Handbook of response to intervention*.
- 2) About 30% of early elementary students will not succeed in cracking the print to speech code without structured literacy – remedial resources are overwhelmed.
- 3) Remediation- more time & intense; larger skill gap to make up; very hard to close the gap in reading fluency

Katie's Sub Skills	Before Intervention Jan. of grade 2	6 mos; 50 hrs	1 yr; 80 hrs Jan. of grade 3
Phonological Awareness – Percent Correct			
Blending	42%	75%	92%
Segmenting	13%	71%	88%
Letter- Sound Knowledge – Percent Correct			
Vowels	44%	94%	100%
Consonants	77%	100%	100%
Spell- CVC	0%	87%	100%

Standardized Tests	Grade Equivalents	Grade Equivalents	Grade Equivalents
Pseudowords	1,3	2,5	3,7
Word Reading	1,8	2,1	3,2
Fluency	<1.0	1,0	1,7
Comp	1,0	3,7	5,0
Spelling	1,5	2,2	3,1

A Structured Literacy Intervention: SpellRead™

EXPLICITLY TEACHES – phoneme awareness; letter-sound correspondences & using these to decode words; later phases teach more complex orthographic patterns, and there is practice reading words in text

Developed on PEI, by Kay MacPhee

1) Skill Accuracy

2) Skill Automaticity /overlearning - Full Program 120 hours – 3 hours/wk

Research Papers

Rashotte, C. A., MacPhee, K., & Torgesen, J. K. (2001). Learning Disability Quarterly.

Torgesen, ...& MacPhee, K. (2003). Preventing and remediating reading difficulties: Bringing science to scale.

Metsala, J. & David, M. (2017). The effects of age and sublexical automaticity on reading outcomes for students with reading disabilities. Journal of Research in Rdg.

Metsala, J. L., David, M. D., & Brown, S. (2017). An Examination of Reading Skills and Reading Outcomes for Youth Involved in a Crime Prevention Program. Reading & Writing Quarterly.

Grade 10 -12 students (SPELLREAD)

Grade Equivalent Scores

School	1.			2.			
	0	30 hrs	60 hrs	0	30 hrs	50 hrs	
Word Reading	5.1	7.2	9.2		3.5	4.5	5.9
Reading Fluency	4.9	7.2	9.0		3.7	5.3	6.9
Reading Comprehension	5.2	9.0	9.5		4.7	7.5	8.8
Spelling	4.2	5.9	6.7		3.6	3.6	5.2

John- mid-grade 2

Phonological Awareness – Below Av.

Word Reading - 6th percentile

Rdg Comprehension – Below Av.
12th percentile

Vocabulary / Listen. Comp – Above Av.



John – grade 6 - 11,11 yrs.

Word reading – 1st percentile
– Grade equivalent 2,0

Pseudoword reading – 1st percentile
– Grade equivalent 1,5

Reading Comp. – 1st percentile
– Grade equivalent 2,3



Time to dispel some common & harmful MYTHS

Individuals with dyslexia...

- are not as smart as everyone else
- are lazy and just need to work harder
- just need parents that read to them at home
- just develop at a different rate – they will catch up
- see letters backwards
- can be cured with special fonts; tinted lenses & overlays, special “brain” exercises, etc., etc., etc.



A Watershed Moment in Reading Education & for Students with Dyslexia



Ontario Right to Read Public Inquiry

Teachers demanding to learn more from university programs & from professional development

Parents' Voices

Structured Literacy approaches are successful in

- i) preventing most reading difficulties &**
- ii) Remediation for students with dyslexia**