

Steps
WEB

Literacy Development

Ros Lugg

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A key model developed by the USA National Reading Panel in 2000

Describes the progression of skills as reading develops.

- Sequential
- Cumulative

The 5 Big Ideas in Beginning Reading

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The 5 Big Ideas in Beginning Reading

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Key Questions



- Why do some learners struggle, but others don't?
- How can we stop learners falling through the gaps?
- What can we do to meet the needs of *all* our learners?

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The 5 Big Ideas in Beginning Reading

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Literacy Methodology

How have we traditionally taught children to read?



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The 5 Big Ideas in Beginning Reading

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The 5 Big Ideas in Beginning Reading

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Whole Language

Recognising words as whole units.

Language should not be broken down into letters and letter patterns.

Instead, language should be a complete system of making meaning.


Emphasis on comprehension and context. Users should look for the context and pictures for help, rather than decoding.



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Whole Language

Based on the idea that we just need to build a visual memory for words as we are exposed to them.



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Interesting research conclusions

60% Will succeed with literacy regardless of method

40% Need a more structured approach



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British Dyslexia Association

We are asking the Government to revise their guidance on teaching reading... This guidance promotes the use of Systematic Synthetic Phonics as the sole method for teaching reading.

Instead, we are asking the Government to support teachers to teach a structured, cumulative and multi-sensory approach and a range of strategies alongside phonics instruction.

We know that SSP is a highly developed way to teach reading, and a critically important part of the beginning reading programme, but it has its limitations.

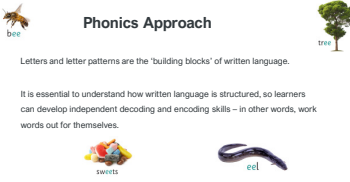
When SSP is used as the only method to teach reading, it does not work for up to 25% of children, particularly those with dyslexia.

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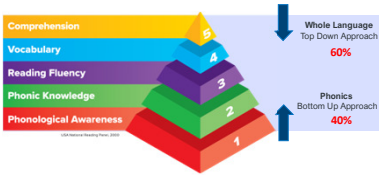
Phonics Approach

Letters and letter patterns are the 'building blocks' of written language.

It is essential to understand how written language is structured, so learners can develop independent decoding and encoding skills – in other words, work words out for themselves.



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So why do some learners struggle?

"She's got a reading problem."
"She's got a spelling problem."

Don't look at the symptom – identify the cause!




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The Code

There is a 'code' for how we represent sounds with symbols (letters or letter patterns).

decoding = reading
(working out the sounds from the symbols) h/o/u/s/e

encoding = spelling
(representing sounds with symbols) s _ _ _
of 1




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Summary Statement

National Reading Panel, USA

"It is important to emphasize that systematic phonics instruction should be integrated with other reading instruction to create a balanced reading program...."

Phonics should not become the dominant component in a reading program, neither in the amount of time devoted to it nor in the significance attached."




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Processing and perceptual skills – the Big Five

Motor Development 

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Handwriting Research


Children not only learn to read more quickly when they first learn to write by hand, but they also remain better able to generate ideas and retain information.

Processing and perceptual skills – the Big Five


Motor Development




Sequencing



Phonological Awareness



Visual Perception




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Rhyme

Rhyme Recognition – important for early literacy.
Particularly significant for developing **analogical transfer**.

Analogical transfer – the ability to:

- Recognise patterns in words.
- Apply that to work out unknown words.



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Processing and perceptual skills – the Big Five

Motor Development



Sequencing

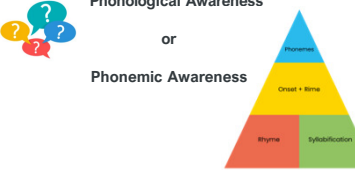


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Phonological Awareness

or

Phonemic Awareness



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Predictors of Reading Success

USA Study – 1960s

Research Question: What are the key predictors of reading success or failure at age 3-5 years?

Looked at a number of aspects, including:

- Intelligence
- Speech/language abilities
- Attention span
- Motor skills
- Phonological processing


Findings:
Phonological awareness is the key predictor of reading success for this age-group.

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Sequencing


Literally putting things in order:

- Letters in a word
- Words in a sentence
- Ideas in a story
- Stages in a plan



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Phonological Awareness



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Predictors of Reading Success

Bryant & Bradley (1983)

Tested 400 4-5 year-old pre-readers on a range of phonological skills.
Tested them on reading and spelling 4 years later (aged 8-9)

Research Question: Which aspects of phonological awareness are the most significant?

Findings:
Rhyme recognition is the key predictor of reading success for this age-group.

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Later studies

More recent research studies have identified phonemic awareness as being a crucial predictor.

However, this was at age 6 when children had already received phonological and literacy teaching.

Key point: Phonemic awareness is not a natural stage of phonological awareness. It is a result of correct literacy teaching.

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Syllabification

Auditory Syllabification – the ability to break spoken words into 'chunks'.

rember

Syllabification Rules – how to break written words into syllables

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Rhyme or Rime?

f - eet
m - eet
sh - eet
tw - eet
str - eet

onset: str | rime: ing

rhyme = sound pattern: bed, head, said

rime = spelling pattern: bed, led, red

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Important Quote

"The majority of preschoolers can segment words into syllables. Very few can readily segment them into phonemes.

The more sophisticated stage of phoneme segmentation is not reached until the child has received formal instruction in letter-sound knowledge."


Predicting reading and spelling difficulties (Snowling & Backhouse, 1996)

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Auditory Syllabification

= The ability to hear the beats (syllables) in a word.

Easy way to teach it:
Hold your hand under your chin and say the word.
The number of times your chin touches your hand is the number of syllables.



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Development of syllabification

onset: str | rime: ing

sentences → words
words → syllables
words → onset + rime
words or syllables → phonemes

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Phonological Awareness

Rhyme | Syllabification

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Phonological Awareness

b - and
st - and

Onset + Rime

Rhyme | Syllabification | Foundation Skills

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Onset + Rime

cat, hat, rat

Breaking words into two 'chunks' is significantly easier than breaking it into individual phonemes (sounds).

string


Anything between 2 and 6!



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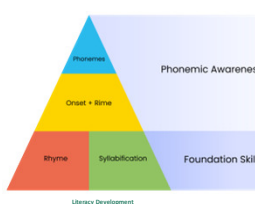
Individual phonemes: s - t - r - i - n - g

Onset + Rime: str - ing



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Phonological Awareness



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Processing and perceptual skills – the Big Five


- Motor Development
- Sequencing
- Phonological Awareness
- Visual Perception

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Onset + Rime

Breaking words into **onset + rime** is a natural stage of phonological awareness. Breaking words into **phonemes** only occurs as a result of literacy teaching.

The **onset + rime** stage is linked with later **orthographic mapping**.




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Individual phonemes

Not a natural stage in the development of phonological awareness.


Dyslexic learners in particular will struggle with this activity.



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Visual perception – aspects related to literacy

- Visual Discrimination
- Visual Memory
- Visual-Spatial Relationships
- Visual Sequential Memory
- Visual Closure
- Visual Figure-Ground

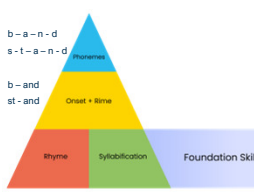


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Phonological Awareness


b - a - n - d
s - t - a - n - d

b - and
st - and



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So where are the gaps?




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Visual discrimination

The ability to notice and identify visual detail.

b / d confusion - is the word 'big' or 'dig'?




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Visual Memory

An average reader needs only 4-10 exposures to a word to fix it into long-term memory.

A dyslexic learner may need 500 – 1300 exposures!



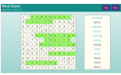
(Bateman, B. 1991)

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Visual Figure-Ground

The ability to identify visual detail from a "busy" background.


Many readers – particularly those with dyslexia, find it difficult to process visual detail with a busy background.



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Memory

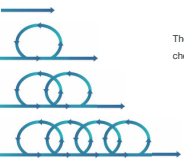
- Visual memory
- Visual sequential memory
- Auditory sequential memory
- Working memory
- Long-term memory and retrieval



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The Circular Progression

The importance of constantly going back, re-checking and, if necessary, re-teaching



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Processing and perceptual skills – the Big Five

Problems with these are associated with:

- Phonological Awareness** (Icon: Ear) - Poor decoding and spelling
- Visual Perception** (Icon: Eye) - Poor sight vocabulary


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Personal Observations!

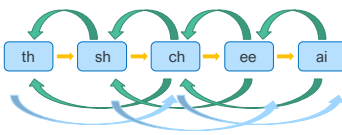
Struggling learners often don't automatically understand memory strategies.

Therefore:

- We need to specifically teach memory strategies.
- We need to incorporate memory activities into our modern curriculum.



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Processing and perceptual skills – the Big Five


- Motor Development (Icon: Hand)
- Sequencing (Icon: Arrow)
- Phonological Awareness (Icon: Ear)
- Visual Perception (Icon: Eye)
- Memory (working) (Icon: Brain)**

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Memory Strategies

- Repetition
- Chunking
- Associating words with letters

Inner voice!



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Processing and perceptual skills – the Big Five

- Motor Development
- Sequencing
- Phonological Awareness
- Visual Perception
- Memory (working)

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Logographic Phase

Typically 3-5 years of age

Also likely to be confused with words of a similar shape.

David Daniel

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Phonemic Awareness

The awareness of individual sounds in words.

“Can you hear the sounds in cat?” c - a - t

“What is the first sound in rabbit?” r

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Key phases of literacy development

EMU, L. 1985

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Key phases of literacy development

EMU, L. 1985

Logographic Phase

Alphabetic Phase

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Phonemic Awareness

The ability to ‘manipulate’ individual sounds in words.

“Take the first sound away from cat and what do you get?” -at

“Take away the ‘t’ and add ‘b’ instead. What do you get?” bat

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Logographic Phase

Typically 3-5 years of age

A young learner may be able to read a *tiny* number of very high frequency words or words with a particular significance - their own name, for example.

Only using visual recognition. This learner doesn’t yet have the phonemic skills and phonic knowledge to decode words.

Won’t be able to read unknown words.

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Alphabetic Phase

Typically 6+ years of age

The learner is acquiring key skills and knowledge:

- Phonemic Awareness
- Phonic Knowledge

Using those skills to learn to **decode** (read) and **encode** (spell).

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Phonic Knowledge

Knowing what letter or letters go with each sound.

“What sounds can you hear in this word?”

“Let’s see if we can write those sounds”

f igh t



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Phonic Knowledge

Much more complex than alphabet knowledge!

How many letters do we have? **26**


How many sounds do we have? **44**

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Alphabetic Phase

Main reading strategy: conscious decoding



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Orthographic Phase

How does this happen?

Competent 'decoders' start to acquire a memory for common patterns, which no longer need to be consciously decoded.

Once a new word has been decoded for the first time, the word or letter pattern is associated with (mapped to) similar patterns in long-term memory.

(Kipatrick, D., 2015)

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Alphabetic Phase

So what can we expect a learner in this phase to be able to do?


Read unknown words – providing they're reasonably regular!

Write unknown words.

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Key phases of literacy development

EMU, L 2005



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Orthographic Phase

This process is known as **Orthographic Mapping**.

Crucial for reading fluency and, hence, vocabulary acquisition and comprehension.


(Kipatrick, D., 2015)

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Alphabetic Phase

Errors are likely to be phonetically correct.

coff cough



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Orthographic Phase

So what can we expect a learner in this phase to be able to do?

Be aware of the more complex phonic patterns and be able to use them for reading and spelling.


Recognise words automatically without having to consciously decode them.

(Ehn, L., 1998)

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Key phases of literacy development

EMU, L 2005



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Orthographic Phase


Orthographic Stage

Key points:

Orthographic Mapping is essential for reading fluency.

If you're still reading by a mainly decoding strategy, you can't effectively follow the sense of the passage.

Decoding is not fun!!!!



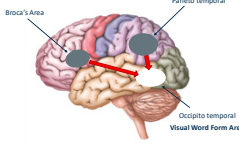
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Left hemisphere brain activation

Left inferior frontal gyrus (Broca's area) - articulation and phonological processing

Parieto-temporal - grapheme-phoneme conversion

Occipito-temporal - Visual and orthographic encoding (whole word recognition) Visual Word Form Area



Broca's Area

Parieto-temporal

Occipito-temporal

Visual Word Form Area

Decoding Dyslexia (2005)
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Conclusion

Dyslexic Learners have:

An impaired occipito-temporal (Visual Word Form Area)

They therefore over-rely on the wrong areas:

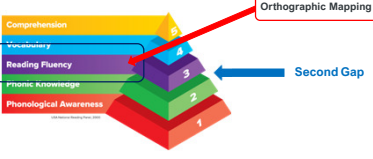
Broca's area and parieto-temporal in left hemisphere
Right hemisphere areas



Decoding Dyslexia (2005)
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So where is the second gap?



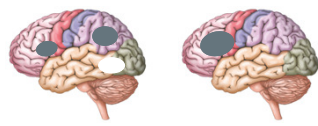
Orthographic Mapping

Second Gap



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Neural Signature for Dyslexia




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Consequences

- Decoding areas (over)develop as instruction progresses.
- Wrong reading strategies being employed for fluency.
- Wrong areas of the brain being activated and developed.

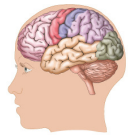
Reading fluency never develops!



Decoding Dyslexia (2005)
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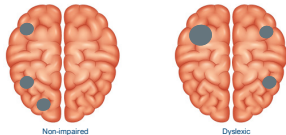
Neurological Aspects



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Compensatory Systems



Non-impaired

Dyslexic


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Correct process

- Learner analyses and reads the word the first few times - using the decoding areas of the brain.
- Neural model of the word is formed - stored in the Visual Word Form Area.
- The word can now be recognised automatically - without decoding!

Fluency achieved!




Decoding Dyslexia (2005)
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Understandable Question

"How do I know when my student starts to use the Visual Word Form Area for Orthographic Mapping?"



Research studies suggest that the Visual Word Form Area operates at around 150ms or faster. It is now possible to measure this speed.

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Automatic Analysis

Profile

Personal Details
Date of Birth: 20 Apr 2012

Learning Information
Course Position: Level 7 - Revision 18
Assess: en-NZ
Made: Final
Weekly Goal: 20
Spaced Repetition: 20 (with learning)
Word Flash Delay: 200ms
Total High Score: 3

Revision 18
read
kubans
week
weekend
weekend
cheerful
cheerfulness
happy
happiest
stamp
disappoint

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Developing Visual Recognition Speed

Spreading

Tuesday man north east west Sunday noon
again Monday week old Thursday others set
good Friday train seat rain mail Wednesday
Saturday nail year washed room weekend again

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Visual Recognition Speeds by Age

Age	Low 0-10%	Low Average 10-25%	Average 25-50%	High Average 50-75%	High 75-90%
6:00 - 6:59 yrs	700 - 850	800 - 900	900 - 1000	1000 - 1100	1100 - 1200
6:00 - 6:59 yrs	800 - 900	900 - 1000	1000 - 1100	1100 - 1200	1200 - 1300
7:00 - 7:59 yrs	900 - 1000	1000 - 1100	1100 - 1200	1200 - 1300	1300 - 1400
8:00 - 8:59 yrs	1000 - 1100	1100 - 1200	1200 - 1300	1300 - 1400	1400 - 1500
9:00 - 9:59 yrs	1100 - 1200	1200 - 1300	1300 - 1400	1400 - 1500	1500 - 1600
10:00 +	1200 - 1300	1300 - 1400	1400 - 1500	1500 - 1600	1600 - 1700

Exploring the relation between visual recognition speed, teacher literacy assessment and age. Analysis of the StepsWeb Visual Recognition Speed Test for ages 6-10. 2017
David S. Pinner B. Ed. Upp R. 2017

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Developing Visual Recognition Speed

Not complicated - Plenty of exposure to words!

Creating and reinforcing the neural images of those words.

Practising retrieving and recognising those neural images using the Visual Word Form Area.

Reading
Re-reading
Writing
Word games

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Visual Recognition Test Results

Date Taken	Result	Summary
16 Nov 2022	50ms	Age Appropriate
17 Jun 2020	150ms	Low Average
24 May 2019	750ms	Low

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Developing Visual Recognition Speed

Word Flash

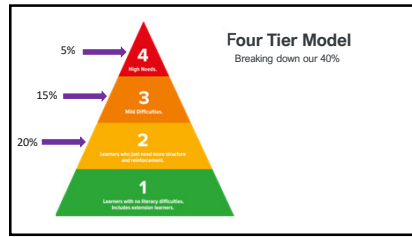
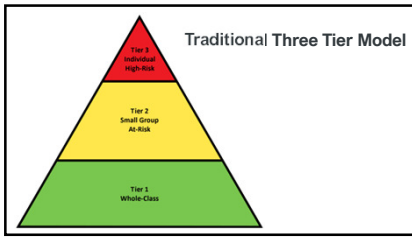
read
week
weekend
cheerful
cheerfulness
happy
happiest
stamp
disappoint

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Four Tier Model

1. Learners with no literacy difficulties, including language learners.
2. Learners who just need more instruction and encouragement.
3. Mild Difficulties.
4. High Needs.

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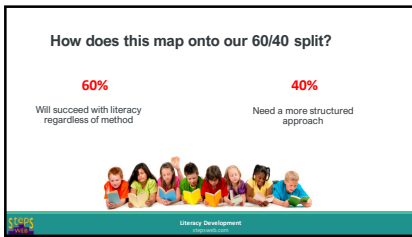
But also:

A structure which enables every learner to work at his or her own speed and level.

Individualized reinforcement to cater for struggling/dyslexic learners – up to 1300 exposures, if necessary!

Transfer between online/computer work and written work.

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"90% of children with reading difficulties will achieve grade level in reading if they receive help in the 1st grade."

"75% of children whose help is delayed to age 9 or later continue to struggle throughout their school career."

(Catts, Scanton, Spay, Small, Pratt, Chen & Denckla, 1998)

Huge drain on our resources!

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