

# Preventing & Overcoming Reading Failure Dr Kerry Hempenstall, RMIT

What's this session about?

The potential of evidence-based practice to greatly reduce student failure

## **Why do we need to focus upon students' literacy progress?**

Too many students are failing, even smart kids!

Victorian Budget allows for more than 22% of Year 1 students to receive Reading Recovery.

On average 40-50% of students do RR in Vic

In a study of 3000 Australian students, 30% of 9 year olds unsure about letter sounds (Harrison, 2002).

30% of Year 9 students lack basic literacy skills (ACER, 2000).

60% of socially disadvantaged high school students have poor literacy skills (Orr, 1994).

Federal Education Minister Brendan Nelson

“Whatever the reading methods that are being used to teach our children in Australian schools, it is failing far too many children” (sic)

Recent initiatives have failed to improve the literacy achievement outcomes of students in Victorian Government schools at any Year level – particularly for underachieving students

(Auditor-General's Report, 2003)

Low literacy leads to early school leaving (Business Council, 2003)

The Nelson Report indicates:-

All literacy education to be based on rigorous evidence-based research

All teachers to be trained to teach systematic phonics

Education curricula to require the teaching of systematic phonics

All children to be taught systematic phonics

Objective testing of specific skills in children's initial reading

Teachers have to demonstrate adequate personal literacy skills to become certified

## **What are the consequences of literacy problems?**

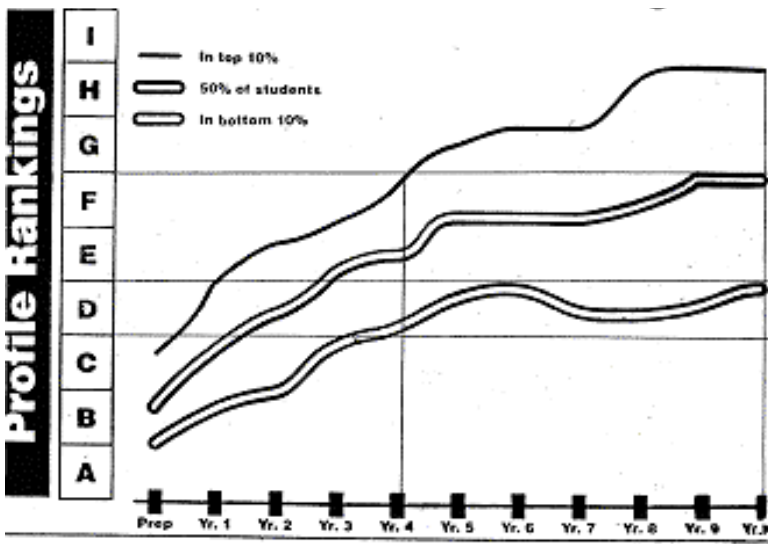
More suffer life-harm from illiteracy than from parental abuse, accidents, and all other childhood diseases and disorders *combined*.

Initial failure predicts future failure

90% of poor readers in 1<sup>st</sup> grade are still poor readers in 4<sup>th</sup> grade (Juel, 1988)

By adolescence, fewer than 25% of Victorian students who struggled in Year 2 had recovered (Prior, 2001)

Actually, the gap widens over time



By Year 10, students at the 10<sup>th</sup> percentile in reading had progressed no further than Year 3 students at the 50<sup>th</sup> percentile.

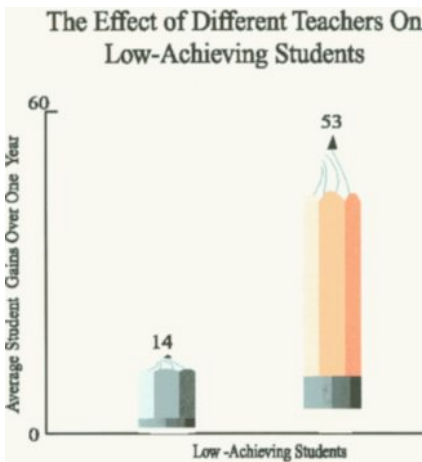
**Overcoming the pendulum effects plaguing reading approaches**

National Reading Panel (2000) examined research from more than 100,000 studies over the past 33 years from many countries

NICHD studies involved the reading development of 35,000 children and adults (22,000 good readers)

The Panel discovered that effective teaching is the most crucial factor – not intelligence, motivation, health, or parent involvement.

Instruction is the major influence on struggling students



At-risk students with effective teachers for 3 years in a row achieved 50% more learning than those with poor teachers (not just in reading).

These teacher effects are most evident among struggling students (slow, ID, dyslexia).

**The Panel noted 5 vital themes in effective reading programs:**

Students should be explicitly and systematically taught:

Phonemic awareness: The ability to hear and identify individual sounds in spoken words.

Phonics: The relationship between the letters of written language and the sounds of spoken language.



Fluency: The capacity to read text accurately and quickly.

Vocabulary: All the words students must know to communicate effectively.

Comprehension: The ability to understand what has been read.

### **A similar move in GB**

UK National Literacy Strategy

All primary schools to adopt structured teaching of phonics, and to abandon the present whole language system

Schools must systematically teach all the letter sounds, and

Teach how to blend sounds together

Teach how to break words apart

The WL practice of emphasis on familiar and predictable texts leads to an over-reliance on guessing from context

Most schools claim to teach phonics as part of a "mixture of methods", but such incidental phonics is insufficient

The same teacher education problem is evident here in Australia:

See Rohl & Greaves survey

AJLD, Issue 1, 2005

Federal government initiated survey

Australia-wide

680 new graduates

307 schools' senior staff surveyed

Beginning primary teachers who felt unprepared to teach reading 36%

Beginning secondary teachers who felt unprepared to teach reading 51%

Beginning teachers rated by senior staff as unprepared to teach reading 49%

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Beginning primary teachers who felt unprepared to teach phonics 57%

Beginning secondary teachers who felt unprepared to teach phonics 75%

Beginning teachers rated by senior staff as unprepared to teach phonics 65%

Beginning teachers readiness to teach literacy to students with diverse needs?

### **Percentage of positive responses**

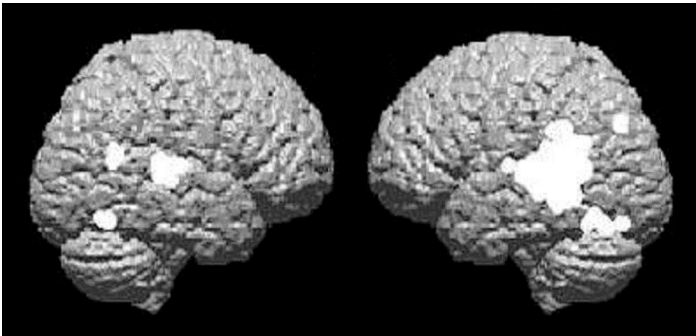
	Primary	Secondary	Senior staff
ESL	33%	26%	15%
Indigenous	38%	41%	12%
Low SES	45%	43%	22%
Disabilities	43%	45%	11%

## Learning difficulties

So, what are these NRP 5 areas all about, and what might attention to them produce?

Persistent reading problems can be reduced to 2 - 5% of at-risk students with early, appropriate and at times, intensive phonics instruction. (Brown & Felton, 1990; Felton, 1993).

### What's happening cognitively when a good reader looks at text?



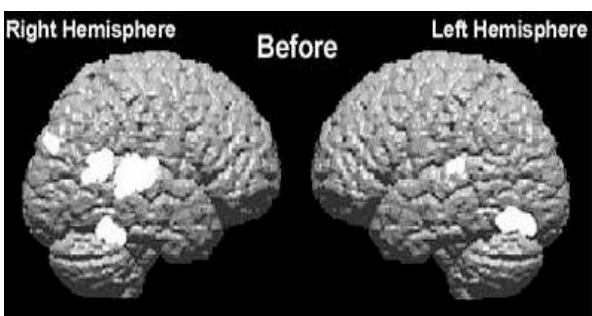
Right hemisphere      Left

Good readers use three areas in the left side of the brain - to decode letters into sounds, blend the sounds together to make words, and integrate them fluently.

What's happening when a poor reader confronts text?

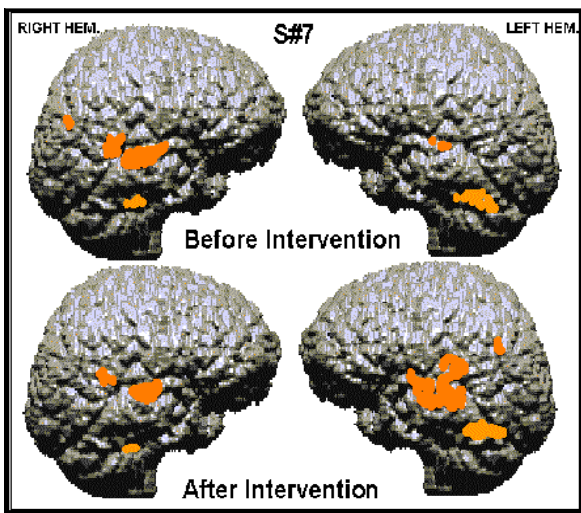
The poor reader compensates with the visual centres of the right hemisphere - looking at words as pictures.

Little activity in areas of the left hemisphere - where capable readers' activity is dominant



After 60 hours structured intensive phonological teaching

Less right-hemi involvement, and more left-hemi, phonologically-based activity as reading improves.



This also corresponds to the pattern displayed by good readers.

For this early systematic phonics emphasis to be effective - phonemic awareness must already be present or quickly developed

### **Phonemic awareness: The language foundation for reading**

The single most powerful advance in the science and pedagogy of reading this century (Adams, 1991)

The awareness that the spoken word can be broken down into its smallest constituent sounds (phonemes).

How spoken words such as house, mouse, louse are different

Hear the differences between

goal and gold,  
 boost and boast,  
 unanimous and anonymous,  
 poetry and poultry?

Phonemic awareness enables the beginning reader to appreciate the logic of our alphabetic writing system.

HOW?

All societies for thousands of years have managed oral languages

– we are probably biologically  
 hard-wired by now

But few have developed written communication

From pictographic cave drawings

To the most productive type:  
 the alphabet

Phoenician alphabetic writing dates from 1000 B.C

The originator(s) of the alphabet analysed own speech sounds and how they were articulated.

Then devised visual patterns (letters) for the sound differences that could be heard in spoken words.

Then produced a symbolic system that represents a limited number of distinct speech sounds by single characters -  
 called the alphabetic principle

One of mankind's greatest achievements.

The appreciation of this code is the task of every new reader.

As a beginning, the child must be sensitised to the underlying speech sounds that form spoken words.

The child must briefly ignore meaning to focus upon structure

That sensitivity is phonemic or phonological awareness It is not auditory discrimination

Hearing the differences between similar sounding spoken words involves auditory discrimination - but knowing how those words differ requires some phonemic awareness.

### **Phonemic awareness: Comes naturally?**

Nearly one third of first-graders fail to fully realize the phonemic structure of words (Adams, 1990).

The proportion is much higher in disadvantaged children (Raz & Bryant, 1990; Robertson, 1993).

Not all teachers have sufficient grasp of spoken and written language structure to teach it well (Lindamood, 1993, Moats, 1994)

It's a tricky business for some

Because of co-articulation: the folding of sounds together in the spoken word.

The letter p in pin (aspirated and released) produces a different sound to the letter p in spin (neither aspirated nor released)

Must learn the abstract concept of the phoneme

### **How might it begin development prior to school?**

Nursery rhymes,

Sesame St,

Playschool,

I Spy,

Pig Latin (junk becomes unkjay),

Spoonerisms - letters or syllables get swapped, sometimes in slips of the tongue (or tips of the slung)

Tongue twisters (Bill and Betty baked brown bread for Barbara's baby),

Palindromes (Do geese see God?)

Magnetic fridge letters

Learning music

Equal opportunity?

Child A has 20 times as much opportunity for PA to develop prior to school The most important of the PA skills are:

Ability to blend sounds to make words

Teacher: Say mmmmaannn

Child: mmmmaannn,

Teacher: Say it fast

Child: man

Ability to segment words into constituent sounds

Teacher: Say the sounds in map

Child: mmmmaaap

## **It's not so easy for adults!**

How many sounds can you hear in pitch?

Is there an /l/ sound in talk, in palm, in salmon?

Think of the word 'pink'.

Now think of pink without the /k/

How many sounds can you hear in sex (the word, not the activity)?

What sounds can you hear in radio?

What is the 3<sup>rd</sup> sound in squabble?

Your knowledge of spelling gets in the way!

To teach it you need to regress, and most teachers need training.

### **Australian sample of 340 teachers (pre-service and in-service)**

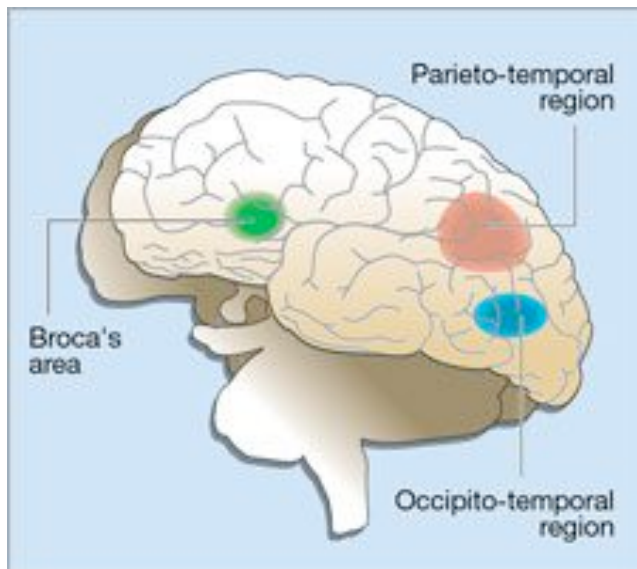
only 54% knew what a syllable was

only 24% could correctly count the number of phonemes in a word (Fielding-Barnsley, in press).

What exposure to these do they receive in their teacher training?

### **What's the phonological centre of the brain all about?**

PA enables the left brain's phonological centre to develop



If alertness to phonemes has begun, then -  
Then letters of the alphabet are learned

the sounds that those letters represent can be blended to build words,

the left brain's parieto-temporal region can be used in decoding

then, progressively, as students see words in print, they start to build a neural model of that word – creating synaptic connections.

As they learn to read, they clarify their internal representation, or neural model in the occipito-temporal region

After they've read the word correctly a number of times, their neural model is an exact replica of the printed word.

It reflects the way the word is pronounced, the way it's spelled, and what it means. All these features become bonded together.

That word is represented in the occipito-temporal region, and its recognition becomes instant & automatic - less than 150 milliseconds (less than a heartbeat)

You can't go straight to the occipito-temporal region without building up the parieto-temporal region

On average, from 4-14 accurate sounding-outs will create the firm links necessary

For some children, it may take many times that number – not all children have a strong phonological talent for linking the two regions

A genetic component – easy or difficult links

An environmental component – effective or ineffective instruction or no instruction, early experiences.

The latter becomes more important when the former is not strong

### **Shaywitz study (2004):**

Poor readers (Yr 2 - 3) provided for 8 months of 50 minutes of daily, individual tutoring that was explicit, systematic and focused on helping children understand the alphabetic principle

a review of sound– symbol associations (e.g., giving the name, sound, and key word for each letter, as in “a says /a/ as in apple”);

practice in phoneme analysis and blending by manipulating letter cards or scrabble tiles to make new words (e.g., changing sat to sap to slip);

timed reading of previously learned words to develop fluency;

oral reading of stories; and

dictation of words with phonetically regular spelling-sound patterns (e.g., chap, spin).

In 5), children were encouraged to stretch out the word (say it slowly) before spelling it, to emphasize the phonologic and orthographic connections.

### **Outcomes**

Greatly increased fluency, accuracy and comprehension at post-test and at 1 year later

The occipitotemporal region became active AND continued to develop 1-year after the intervention had ended

“These data have important implications for public policy regarding teaching children to read: the provision of an evidence-based reading intervention at an early age improves reading fluency and facilitates development of those neural systems that underlie skilled reading”

Shaywitz et al. (2004)

If this process does not occur –

then children will be forced to employ less fast and accurate systems such as

prediction from context and

guessing from pictures



guessing from the first letter

Up to 40% of children will figure out the alphabetic principle for themselves quite readily - regardless of instruction

About 30% will get there - but slowly,

about 20-30% will not make it without intensive, appropriate direct teaching

### **Early screening of PA?**

Later remedies are long, slow, often unsuccessful, and

Student resistance can hinder success

Early screening with two tests:

a test of knowledge of letter names or sounds; and a measure of phonemic awareness.

This can point out students at risk.

They may have inherited resistances or simply little background experience

They can then be allocated help at once.

### **Various PA assessment tasks**

#### 1. Sound to word matching

Does fish start with /f/?

Does dog end with /g/?

#### 2. Word to word matching

Does foot start with the same sound as feather?

Does dog end the same as pig?

#### 3. Recognition of rhyme

Does wish rhyme with dish?

#### 4. a) Isolation of beginning sound

What is the first sound you hear when I say box?

#### b) Isolation of a final sound

What is the last sound you hear when I say dig?

#### c) Isolation of medial sound

What is the middle sound you hear when I say bit?

#### 5. Phonemic segmentation

There are 3 sounds in ship. What are they?

#### 6. Counting phonemes

How many sounds do you hear in the word cup?

#### 7. Blending

What word is this r/a/ce?

#### 8. Deletion of a phoneme

Say sat, now take away the s. Say what is left?

9. Specifying the deleted phoneme

Say meat, now say eat. Which sound did I take away?

10. Phoneme substitution

Say chair, take away ch, put in f instead. What new word have you made?

**Beyond knowledge is fluency:**

Phonemic awareness fluency

Blend sounds to form words 10–12 words/min

Segment words into sounds moving coloured blocks to mark sounds 40-50 sounds/min

Make new words by substituting one phoneme for another 15–20 words/min

**Free test:**

Dynamic Indicators of Basic Early Literacy Skills (DIBELS)

Initial Sound Fluency - Begin Preschool to late Prep

Letter Naming Fluency - Begin Preschool to mid Prep

Phoneme Segmentation Fluency - Mid prep to end of 1<sup>st</sup> Year

Nonsense Word Fluency - Mid prep to end of 1<sup>st</sup> Year

Oral Reading Fluency - Mid 1<sup>st</sup> Year to end of 6<sup>th</sup>

Preschool or early-Prep screen:

Letter Naming Fluency - a sheet with upper and lower-case letters. Name as many letters as possible in 1 min.

g N E Y R I V d H Z N d x S C n j H s S  
E n G h c i h B b O Y F p D L i q c D Q  
R v F J Z M P o p u l G A f V B P k m I  
LNF < 2                      At risk

$2 \leq \text{LNF} < 8$                       Some risk

$\text{LNF} \geq 8$                       Low risk

Preschool or early-Prep screen:

**Letter Naming Fluency** - a sheet with upper and lower-case letters. Name as many letters as possible in 1 min.

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E n G h c i h B b O Y F p D L i q c D Q  
R v F J Z M P o p u l G A f V B P k m I

LNF < 2                      At risk

$2 \leq \text{LNF} < 8$                       Some risk

$\text{LNF} \geq 8$                       Low risk

**Initial Sound Fluency**

Student shown for 1 minute a series of pictures.

This is: tomato, cub, plate, doughnut

(point to the pictures).

Which picture begins with /d/?

ISF < 4                      At risk

$4 \leq \text{ISF} < 8$                       Some risk

ISF  $\geq 8$                       Low risk

Later Prep and early Year 1:

**Phonemic Segmentation Fluency** - Short words are said aloud for the student. The student must segment the words into phonemes for 1 minute.

Duck                      /d/ /u/ /k/

Gone                      /g/ /o/ /n/

Hat                      /h/ /a/ /t/

Hear                      /h/ /ea/ /r/

Punch /p/ /u/ /n/ /ch/

PSF < 7                      At risk

$7 \leq \text{PSF} < 18$                       Some risk

PSF  $\geq 18$                       Low risk

The critical early role of phonics  
(NRP, 2000)

Phonics ability leads to whole word recognition – but precedes it

It is not the whole story, but a necessary early part of it

About 40% of students need us to teach it to them, rather than be left to induce it

For some of these, our teaching needs to be very systematic and provide lots of practice

**Assessing decoding:**

Word Attack subtest of Woodcock Reading Mastery Tests-Revised

dee                      bim                      oss                      weat

vunhip                      straced                      cigbet                      zirdn't

knoink                      manciful                      monglustamer

**Explicit (or Synthetic) phonics:**

All of the letter sounds are taught initially and the emphasis is on how words are built up

For most students, it can be taught in a few months.

It starts before children are introduced either to whole words in print, or to literature for reading

Books initially rely on decodable text - words use the sound-spelling correspondences taught to that point

**Implicit (or Analytic) phonics:**

Taught after an initial sight vocabulary has been established, alongside reading-scheme or big books

Phonic cues only employed within story context, the whole word is emphasized, but children may have their attention drawn to certain letters and their sounds

Shown to be ineffective for struggling readers –  
insufficient intensity,  
insufficiently systematic,  
insufficient practice.

### **The proper role of context in word recognition**

Poor readers over-rely on context because letter-sound knowledge is weak

Context allows us to decode accurately only one word in ten overall

The content words in a passage tend to be less common, not in the sight vocabulary, and must be decoded accurately

Context can resolve ambiguity and sometimes supplies meaning for unfamiliar words.  
Findings from scientific research into the 3-cueing approach:

The most efficient way to make an “accurate first guess” of the identity of a new word is:

First, do phonemic analysis and try an approximate pronunciation

Then, close in on the exact right word by selecting a word with the right sounds in it, that also makes sense in the passage (Torgesen, 2003)

This sequence reverses the usual WL strategy of context first, phonic analysis last option

### **Isn't reading really about comprehension? Why the heavy emphasis on decoding words?**

In 90% of cases, the source of reading comprehension problems is poor word recognition skills

Isn't the English language too irregular for phonics to be of much help?

At least 80% of English spellings are regular or predictable – consonants more consistent than vowels.

Consonants (not vowels) provide most of the identifiable characteristics of words

### **The National Reading Panel refers to Fluency**

The ability to read connected text rapidly, smoothly, effortlessly, and automatically with little conscious attention to the mechanics of reading, such as decoding

Reading words quickly and accurately increases reading comprehension (Tan & Nicholson, 1997).

Fast and accurate word reading derives from reading practice.

NRP (2000) notes that it can be enhanced with regular timed re-reading games and guided oral reading

NRP notes no evidence that USSR aids fluency  
Like skilled musicians and athletes, fluent readers have developed automaticity

Stephen works at putting one foot in front of the other  
They have over-learned word reading skills to the point where decoding requires little or no mental effort.

As a result, they are able to put all their mental energies into reading for meaning.

It becomes so automatic that you struggle not to do it!

The faster you can produce it – the stronger the association

Thus, the better you know it if you learn it to the automaticity stage

### **Fluency assessment**

The ability to read aloud accurately, rapidly, expressively and with understanding.

Very high (> .85) correlations between oral reading rate and reading comprehension

### **DIBELS Nonsense Word Fluency**

Student reads aloud a collection of short nonsense words as quickly as possible for one minute.

yiz wan zoc ful mik

zum nuf kun ruv fod

vep ij op juj sug

zuz ov vit wam buk

lef luk tev lof kom

NWF < 5 At risk

$5 \leq \text{NWF} < 13$  Some risk

$\text{NWF} \geq 13$  Low risk

### **Later Year 1 and beyond:**

Oral Reading Fluency - The number of words in grade-level text read correctly in 1 min

Benchmark goals are

40 in spring of first grade,

90 in spring of second grade, and

110 in spring of third grade.

Intensive instructional support if score

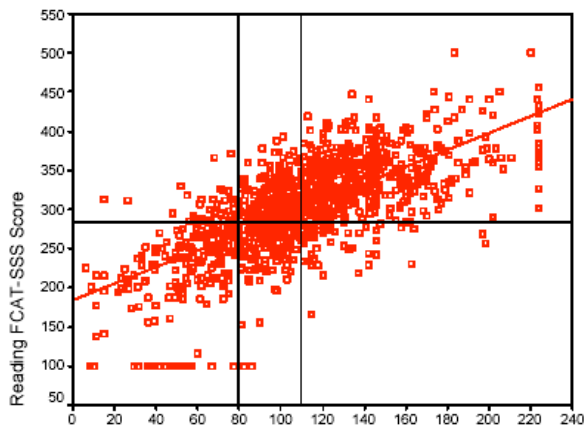
below 10 in spring of first grade,

below 50 in spring of second grade,

below 70 in spring of third grade.

Students in 3<sup>rd</sup> grade at or above 110 wcpm are at low risk of reading below grade level (9%) on the state reading comprehension test (FCAT)

Students scoring below 80 wcpm are at high risk



Fluency (wcpm)

Fluency goals

Early 1st = 35 words correct per minute

Late 1st = 50 wcpm

Early 2nd = 70 wcpm

Late 2nd = 100 wcpm

Early 3rd = 120 wcpm

Late 3rd = 140 wcpm

(Howell & Nolet, 2000).

### **Fluency instruction**

paired reading

repeated reading

echo reading

choral reading

alternate word reading

reading with talking books

computer assisted

### **What about the National Reading Panel's interest in vocabulary?**

New words taught directly in a year - 300 to 500.

New words learned in a year - 3,000 to 4,000.

From Yr 3, amount of free reading the major determinant of vocabulary growth

The best readers read 100 times that of the worst

Large differences in vocabulary occur by grade 2.

Lots of reading can help compensate for modest levels of general cognitive abilities

New words are learned mainly through reading.

Children's books contain 50% more "rare" words than do adult television, or the conversation of college graduates.

Reading stories to children will only increase the vocabulary of above average readers (though there are other benefits).

If you don't read, you fall further behind (Matthew Effects)

What about the early years?

Preschool experiences cannot completely compensate for the educational deprivation that can occur during the first 3 years.

### Early vocabulary development is particularly critical.

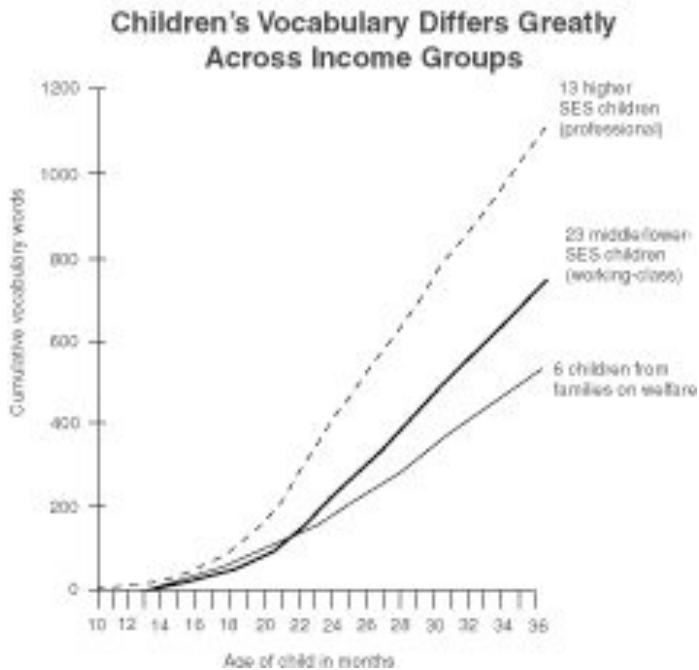
Hart & Risley (2003) noted:

Parents with professional jobs spoke about 2,000 words an hour to toddlers.

For working-class parents it was 1,200 words an hour, and

For those on welfare only 600 words an hour.

By age 3, children on welfare will have heard 30 million fewer words than children of professional families



Specific reading instruction for preschoolers - such as letter-sounds and word recognition - can help close the learning gap between disadvantaged children and their more affluent peers (Farkas & Beron, 2001)

What about older struggling readers?

Even some of those seemingly doing OK may be of concern

4<sup>th</sup> Year slump: Why are so many struggling students not noticed until about Year 4?

maturation excuse has worn thin

explosion of new words in textbooks

memory collapses

What to do with these older struggling readers?

Their main problem continues to involve not being able to get the words off the page

Not age - but stage - that determines focus of instruction

Older poor readers still need to pass through the phonics stage

Decoding and fluency remain valuable emphases

Comprehension needs also evident

## And comprehension?

What does the National Reading Panel have to say?

Directly teach meta-cognitive skills

Metacognition: One's knowledge concerning one's own cognitive processes

Some strategies

Skimming,  
Imagining,  
Drawing,  
Elaborating,  
Paraphrasing,  
Mnemonics,  
Accessing prior knowledge,  
Reviewing,  
Orienting to critical features.  
(Swanson & Hoskyn, 1998).

Imaging example:

"The girls scurried down the street."

Possible questions include:

What does the street look like?

How do you think the girl is going down the street?

How big is the girl?

What is she wearing?

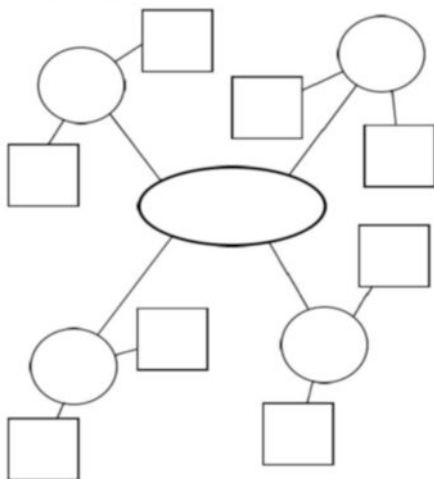
What colours are in her clothes?

What you think the girl is thinking or feeling as she is running?

Is it daytime or night? What in your picture in your head led you to that conclusion?

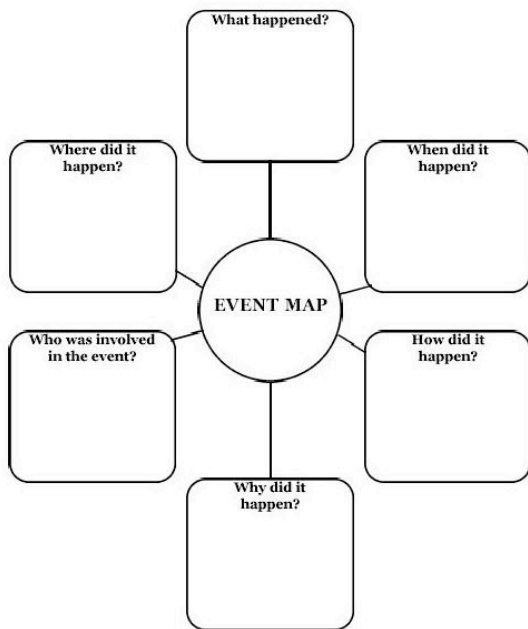
See Tips For Understanding What You Read

Story Map





## Event Map



The Big Five from the National Reading Panel

### How do DI programs rate in relation to the big five?

Acknowledged to have the exemplary research base required under the recent USA Reading First Act, 2001 US Education Department meta-analysis, (2002), DI assigned the highest classification.

Similar endorsements provided in:  
Building From The Best, Learning From What Works (American Federation of Teachers, 1999),  
An Educators' Guide to School-wide Reform (American Institutes for Research, 1999),  
Current Practice Alerts (Council for Exceptional Children, 1999)

Bringing Evidence Driven Progress to Education (2002)  
Best Bets: Education Curricula That Work (2003)  
Oregon Reading First Center: Review of Comprehensive Reading Programs ( 2004),  
Reading Programs that Work: A Review of Programs for Pre-Kindergarten to 4<sup>th</sup> Grade (1999)  
Better by design: A consumers' guide to schoolwide reform (1997)  
California State Board of Education (1999)  
Florida Center for Reading Research (2004)

What's wrong with the CSF-11 (VELS) in beginning reading?  
does not focus on important features of good literacy instruction  
provides advice contrary to good practice  
isn't explicit enough - neglecting course planning, curriculum organisation, classroom practices, and the time allocated to key learning areas  
does not offer adequate detail to teachers under-trained in literacy.

In relation to the strong international consensus, the VELS document is lagging:

The term phonemic awareness is absent  
Phonics is mentioned once, and only in relation to teaching writing.  
The terms explicit and systematic do not appear.  
The term fluency is absent from the document  
No mention of curriculum being research-based  
It appears to rely upon learning to read being a simple and natural process (like speech)

### Some quotes from parent home reading information sheet:

“It is inappropriate for your child to be directed to ‘sound-out’ words, using individual letter sounds, as many words cannot be identified in this manner.”

“If a mistake makes sense it doesn’t necessarily need to be corrected”

“When a child gets stuck - ask him to have a guess, or look at the picture, add a word that makes sense. Does it ‘look right’”?

### What about dyslexia?

Definition vary:

one that includes all unsuccessful readers, perhaps 30% of students –

to one that asserts a specific deficit – either phonological, visual or auditory (about 5%).

### Other hypotheses

Magnocellular theory (Stein, 2001) - Magno-cells in all sensory pathways are deficient

Auditory processing speed (Tallal)

Temporal processing deficit in the auditory system

Cerebellum deficit

Motor functions - eye, leg, arm movements.

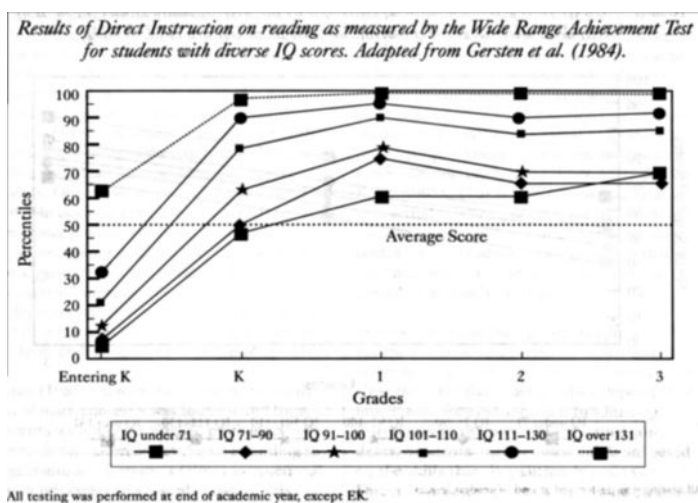
Evidence for each is contradictory & only a fraction of dyslexics are so impaired.

Overwhelming evidence that for the vast majority of children with dyslexia, a specific deficit of the phonological system is the main culprit (Ramus, 2003)

### Can people with an intellectual disability learn to read?

People can acquire transmitted skills like reading at any age, and can benefit from instruction at any age

The bottom line is that the role of mental age is not one of limiting what a child can learn but of limiting the ways in which they can be effectively taught (Adams, 1990)



### Literacy issues yet to be properly addressed.

Converting these research findings into Australian educational practice

Struggling females are currently under-identified.

Earlier identification to minimise reading failure

Intervention needs to occur earlier to increase vocabulary growth in children from disadvantaged families

Encouragement of reading in competition with other activities  
Insufficient training of teachers