

A model for understanding literacy learning disabilities

What do we do when we read? Read the text with the purpose of re-telling it. As you read, reflect on what you do.

There are two types of being; the eternal and the transient. The eternal need to return is not exemplified within the collective drama of history, nor can it be nurture through organization. Produce as it will, the eternal is not oriented towards produce. The transient, by its very nature, will end; they want to die, not live eternally.

The struggles and education of man in social history had meaning for Marx such that the goal of a body politic free from class conflict so that man might develop as man.

How do you read the words

prosopopoeia

prosy

protend

promptuary

List some key things you needed to do to read the texts.

Use the following text to work out the meaning of each term.

The message had the quality of prosy. As much as we tried, we could not dilute its mind-dulling, tiresome and mediocre quality. We have no difficulty deciding its source, the brain behind the prosopopoeia. But why the need for a verbose emissary? Why the non-appearance?

As the emanation continued, we saw both the diatribe and the day protend. Oh but to locate the promptuary for such rhetorical drivell.

Reading efficiency is determined by how well readers integrate text information with the knowledge they have about reading. Contemporary models of reading acquisition have focused on how mature

readers read and describe reading acquisition in terms of this. These have generally noted that reading involves a complex process of creating, interpreting and analysing meaning from text and then integrating three sources of information; readers recognise and use

- semantic cues in the text
- syntactic cues in the text
- graphophonic cues in the text

Luke and Freebody (1990) identify four roles that readers implement as text users

Code breaker	uses knowledge of the relationship between the spoken sounds in language and the graphic code and symbols used to represent those sounds
Meaning maker:	uses knowledge of the meaning patterns operating in written and spoken texts
Text user:	uses knowledge of the functions of various kinds of literacy
Text analyst:	uses knowledge of the ways texts represent different points of view

The model of reading we use to understand, diagnose and remediate reading difficulties extends this approach. It covers the following aspects:

What makes up reading knowledge?	<ul style="list-style-type: none"> • knowledge of written text, • metacognitive knowledge and oral language knowledge.
There are five types of written text knowledge that match the kinds of meaning units in written prose	<ul style="list-style-type: none"> • word, • sentence, • conceptual, • topic and dispositional features.
Each type of written text knowledge consists of three aspects	<ul style="list-style-type: none"> • a knowledge of the appropriate text units (for example, letter clusters, sentence templates); • relevant reading strategies for aligning text units and reader knowledge; and an awareness of the value of the units and strategies at that level.

This leads to the ‘information processing approach to reading’ We read by working on information in a text at a number of levels.

Levels of text	knowledge of structural text features, the 'what', conventions of writing What reader knows about written...	reading strategies, 'how to' What reader knows about written...	value of each level; reader's beliefs What reader believes and values about ...
word	words	Work out unfamiliar words	Working out words
sentence	sentences	Make sense of sentences	Comprehending sentences
conceptual	concepts and links between them	Link the set of concepts in a text	Reading ‘between the lines’.
topic	How concepts are links into topics	Use the topic of a text to decide the concepts in it and vice versa	Using the topic of the text
dispositional	The purposes for writing and reading	Recognise the intended purposes of the text	Knowing the purpose for the text being written
Self-management and control strategies : What readers know about how to manage and direct their reading activity			
Existing knowledge			
Oral language knowledge: what oral language does the reader need to support the reading activity?		Experiential knowledge: what experiences does the reader need to support reading?	
Sensory input to the knowledge base		Motor aspects of expressive language	

Auditory input	Visual input	Touch, feeling input	Motion input
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We can examine each level of text processing in more detail

Working at the word level

Level of text	knowledge of structural text features, the 'what', conventions of writing	reading strategies, 'how to'	value of each level; reader's beliefs
word level	word bank containing 3 forms of word: how it is written, said, means <ul style="list-style-type: none"> • letter clusters, rime families • types of written words • word structures 	<ul style="list-style-type: none"> • match text word directly with stored letter cluster knowledge • convert letter clusters to sounds, blend • segment words into functional units and recode 	<ul style="list-style-type: none"> • why reading/working out words is useful
Give three examples of each type of knowledge			

Working at the sentence level. In many ways this is the interpretation of sentences. The outcome is literal comprehension.

Level of text	knowledge of structural text features, the 'what', conventions of writing	reading strategies, 'how to'	value of each level; reader's beliefs
sentence level	<ul style="list-style-type: none"> • grammar to link words • sentence propositions (how meanings are linked) • punctuation, written sentence structure 	<ul style="list-style-type: none"> • visualise, paraphrase sentence • re-read • ask questions about the ideas, • listen to ourselves as we read, • pause and consolidate 	<ul style="list-style-type: none"> • how visualising a sentence helps reading • you can talk about the strategies you use as you read
Give three examples of each type of knowledge			

Working at the conceptual level. In many ways this is the analysis of sentences. The outcome is inferential and evaluative comprehension.

Level of text	knowledge of structural text features, the 'what', conventions of writing	reading strategies, 'how to'	value of each level; reader's beliefs
conceptual level	<ul style="list-style-type: none"> • 'idea bank'; set of ideas linked in • networks similar to text links • episodes - contextual links • linking prose in paragraphs • paragraph propositions 	<ul style="list-style-type: none"> • backtrack / read ahead /within / across sentences to link concepts • predict, anticipate, infer ideas, feeling • What other words might be in text? • recode imagery to words 	<ul style="list-style-type: none"> • how visualising a sentence helps reading • you can talk about the strategies you use as you read
Give three examples of each type of knowledge			

Working at the topic level. This involves synthesising and analysing ideas in the text. The outcome is inferential and evaluative comprehension.

Level of text	knowledge of structural text features, the 'what', conventions of writing	reading strategies, 'how to'	value of each level; reader's beliefs
topic level	<ul style="list-style-type: none"> • structures used to link ideas to a topic 	<ul style="list-style-type: none"> • use title, scan or skim text, select key words to guess its general theme 	<ul style="list-style-type: none"> • why it is useful to note the topic of text
Give three examples of each type of knowledge			

Working at the dispositional level. This involves deciding and using the purpose for which the text was written and. The outcome is the values and attitudes it conveys.

Level of text	knowledge of structural text features, the 'what', conventions of writing	reading strategies, 'how to'	value of each level; reader's beliefs
dispositional level	• values, attitudes intended by a text	• how to detect the attitudes in a text	• why it is useful to note the topic of text
Give three examples of each type of knowledge			

Managing and directing the reading. Readers use a range of strategies to manage and direct their reading activity.

Self-management and control strategies
<ul style="list-style-type: none"> • frame up reasons or purposes for reading a text, plan how they will read • monitor our reading, initiate corrective action, decide when to re-read, self-correct, how they use what they know at each level, monitor how their reading is progressing, take remedial actions if necessary and, having read, • review and self-question to see whether reading goals achieved, review or consolidate what they have read • organise the information gained from reading to fit our purposes for reading
Give three examples of these types of strategies

Using one's existing knowledge to scaffold and support reading.

Existing knowledge	
<p style="text-align: center;">Oral language knowledge</p> <ul style="list-style-type: none"> • <i>at word level</i>, what words mean, how they are said, awareness of sounds in words • <i>at sentence level</i>, how ideas are linked into sentences, grammar. • <i>at conceptual level</i>, how ideas are linked into themes • <i>at topic or theme level</i>, how a theme is communicated in a narrative, description • <i>at the pragmatic or dispositional level</i>, how the social context affects how ideas are communicated, the attitudes and values of the writer towards the ideas in the text. 	<p style="text-align: center;">Experiential knowledge:</p> <ul style="list-style-type: none"> • experiences, visual imagery knowledge • action, motor knowledge • knowledge of symbols
Give three examples of each type of knowledge	

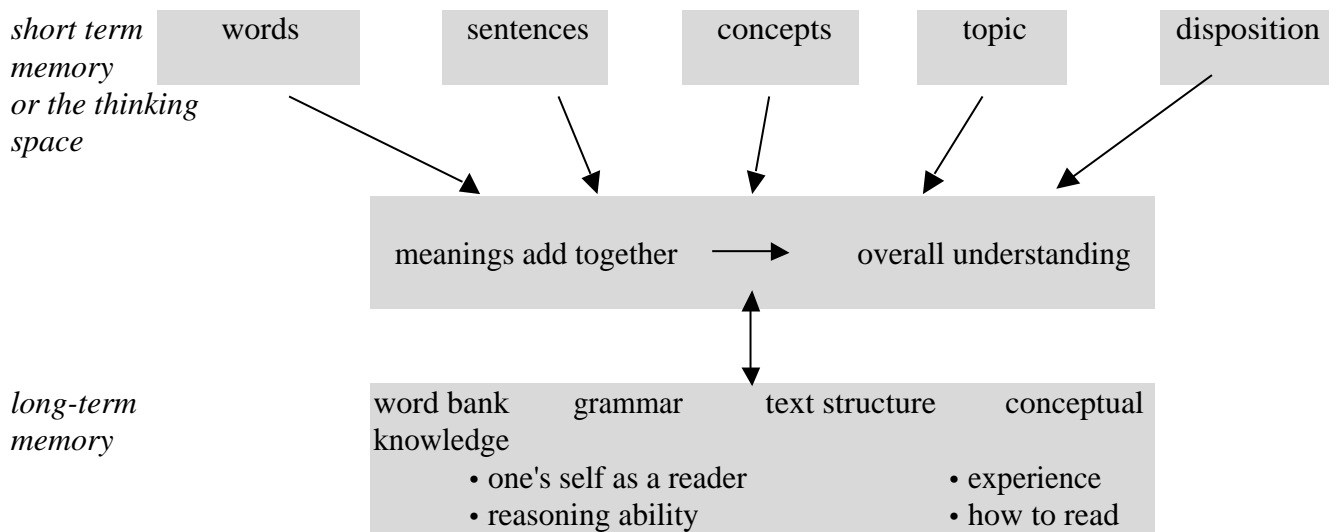
Readers' sensory capacities also influence how well they learn to read.

Sensory input to the knowledge base		Motor aspects of expressive language	
Auditory input	Visual input	Touch, feeling input	Motion input
Give an example of each			

These areas of text processing can be integrated into a model of reading. It is referred to as the 'multiple levels of text processing' (MLOTP) model. We read by processing text at a number of levels.

Levels of text	knowledge of structural text features, the 'what', conventions of writing	reading strategies, 'how to'	value of each level; reader's beliefs
word level	word bank containing 3 forms of word: how it is written, said, means, <ul style="list-style-type: none"> • letter clusters, rime families • types of written words, • word structures 	<ul style="list-style-type: none"> • match text word directly with stored letter cluster knowledge • convert letter clusters to sounds, blend • segment words into functional units and recode 	<ul style="list-style-type: none"> • why reading/ working out words is useful
sentence level	<ul style="list-style-type: none"> • grammar to link words • sentence propositions (how meanings are linked) • punctuation, written sentence structure 	<ul style="list-style-type: none"> • visualise, paraphrase sentence • re-read • ask questions about the ideas, • listen to ourselves as we read, • pause and consolidate 	<ul style="list-style-type: none"> • how visualising a sentence helps reading • you can talk about the strategies you use as you read
conceptual level	'idea bank'; set of ideas linked in <ul style="list-style-type: none"> • networks similar to text links • episodes - contextual links • linking prose in paragraphs • paragraph propositions 	<ul style="list-style-type: none"> • backtrack / read ahead /within / across sentences to link concepts • predict, anticipate, infer ideas, feeling • What other words might be in text? • recode imagery to words 	<ul style="list-style-type: none"> • why it is useful / interesting to predict
topic level	<ul style="list-style-type: none"> • structures used to link ideas to a topic 	<ul style="list-style-type: none"> • use title, scan or skim text, select key words to guess its general theme 	<ul style="list-style-type: none"> • why it is useful to note the topic of text
dispositional level	<ul style="list-style-type: none"> • values, attitudes intended by a text 	<ul style="list-style-type: none"> • how to detect the attitudes in a text 	<ul style="list-style-type: none"> • why you need to know attitude of writer
Self-management and control strategies			
<ul style="list-style-type: none"> • frame up reasons or purposes for reading a text, plan how they will read • monitor our reading, initiate corrective action, decide when to re-read, self-correct, how they use what they know at each level, monitor how their reading is progressing, take remedial actions if necessary and, having read, • review and self-question to see whether reading goals achieved, review or consolidate what they have read • organise the information gained from reading to fit our purposes for reading 			
Existing knowledge			
<p style="text-align: center;"><i>Oral language knowledge</i></p> <ul style="list-style-type: none"> • <i>at word level</i>, what words mean, how they are said, awareness of sounds in words • <i>at sentence level</i>, how ideas are linked into sentences, grammar. • <i>at conceptual level</i>, how ideas are linked into themes • <i>at topic or theme level</i>, how a theme is communicated in a narrative, description • <i>at the pragmatic or dispositional level</i>, how the social context affects how ideas are communicated, the attitudes and values of the writer towards the ideas in the text. 			<p style="text-align: center;"><i>Experiential knowledge;</i></p> <ul style="list-style-type: none"> • experiences, visual imagery knowledge • action, motor knowledge • knowledge of symbols
Sensory input to the knowledge base		Motor aspects of expressive language	
Auditory input	Visual input	Touch, feeling input	Motion input

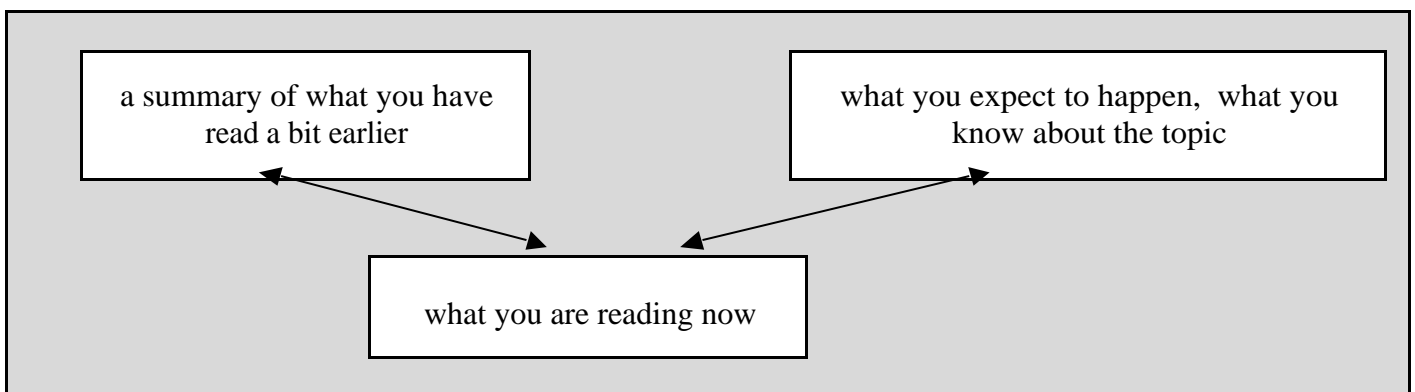
Whenever we read we use all of the levels of processing at once, or simultaneously. The knowledge we gain from each source is integrated in our short term memory or thinking space.



We 'take in' the written information in two ways:

- visually (what we see) and
- phonologically (what we tell ourselves we see).

At any time while you are reading, you are retaining various bits of knowledge in your working memory.



Because we are using several sources of knowledge at once, we can recognise when the meanings suggested by different sources clash. This tells us that everything 'doesn't add up' and that we may need to re-read what we have just read.

As you read you

- recognise letter strings, retrieve and manipulate meanings,
- combine knowledge from a range of sources,
- extract and discard knowledge,
- recognise and handle 'clashes' in knowledge from different 'levels of text' and 'change gear'.

Some key concepts

Key Concept	Meaning, significance	Example
long term memory	this is your knowledge store. Some of your knowledge is verbal or linguistic, some is imagery and some is action. This is where you have <ul style="list-style-type: none"> • your word bank, what you know about letter patterns and what words mean • your bank of experiences 	
short term memory	this is where you retain what you are thinking about at the time. It lasts briefly. When you read you retain the words you have read, what they mean, the sentence form and what you have read a short time earlier.	
working memory		
the word bank		
orthographic knowledge		
reading by analogy		
self-management		
self-efficacy		
metacognition		
experiential knowledge		
concept		
conceptual network		
semantic		
syntax		
grapheme		
phoneme		
diagraph		
pragmatic		
recode		

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Tape the reading output of a student who has reading difficulties (5 - 10 minutes). Have the student retell the story in their own words and record their retelling. Use the model to develop an initial description of the child's reading. You can use the questions written in each cell in the grid to scaffold your reflection.

Levels of text	Detectors or structural text knowledge	Reading strategies	Value of work at each level; reader's beliefs
word level	Did they recognise/say efficiently β types of letter clusters? β types of written words?	Did they • read most words automatically? • use letter cluster sound recoding strategies efficiently? • use what they know about some words to read others?	Did they show a preparedness to work out words?
sentence level	Did they comprehend efficiently β sentences of different grammatical complexity? β sentence propositions of different complexity?	Did they use a range of sentence strategies such as β visualising sentences read? β paraphrasing sentence as they read?	Did they value working at the sentence levels?
conceptual level	Did they β recall the ideas linked with particular ideas? β elaborate ideas they read?	Did they use a range of conceptual strategies such as β predicting, anticipating β inferring ideas or feelings	Did they know why it is useful to predict?
topic level	Did they β recognise the main ideas in a text? β suggest ideas linked with a topic?	Did they use a range of topic strategies such as β skimming, scanning β summarising and consolidating?	Did they know how the topic of text can help you read?
dispositional level	Did they β recognise the values, attitudes or beliefs communicated by a text?	Did they know how to detect the attitudes in a text?	Did they know why it is useful to detect a writer's attitudes or values?
Self-management and control strategies Did they show evidence of β planning how they would read? β Monitoring their reading, taking corrective action, re-reading and self-correcting, changing how they read? β Reviewing and consolidating what they have read?			
Existing Knowledge			
Oral language knowledge Do they show evidence of β at word level, saying words inaccurately, recalling the names of items, smaller expressive vocabularies, difficulty learning word meanings? β at sentence level, grammatical difficulty in oral comprehension? β at conceptual level, being able to predict, anticipate, suggest related words? β at topic or theme level, knowing how ideas are linked into themes?			Experiential knowledge; Do they show evidence of having knowledge in visual imagery or action forms?
Sensory input to the knowledge base and motor aspects of expressive language			
Auditory input; evidence of auditory perceptual process for perceiving speech patterns?	Evidence of visual input problems?	Motion input?	Articulatory processes; producing speech patterns?

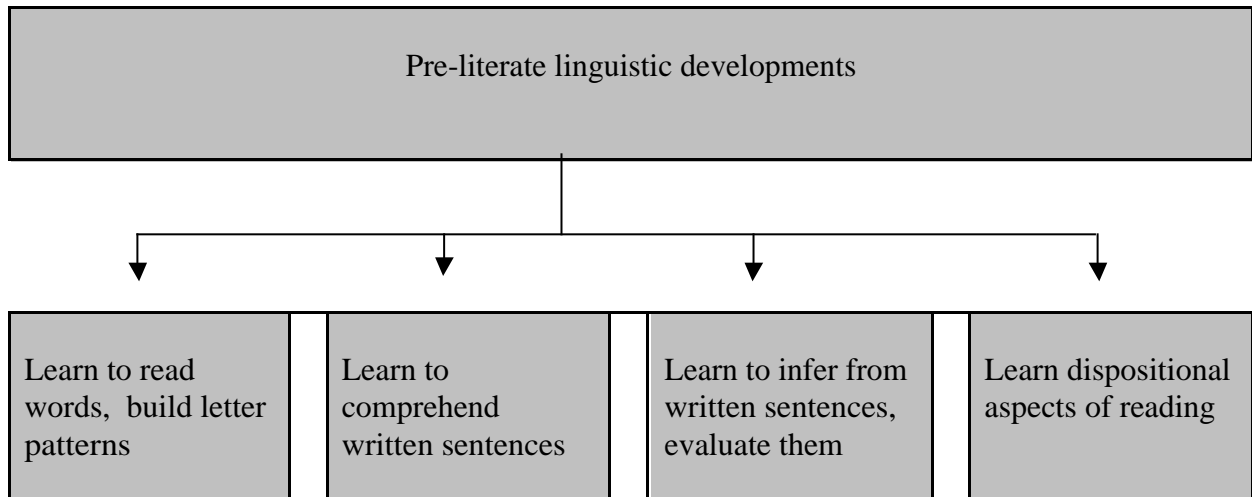
Use this chart to describe reading

Levels of text	Knowledge of structural text features, the 'what', conventions of writing	Reading strategies, 'how to'	Value of each level; reader's beliefs
word level			
sentence level			
conceptual level			
topic level			
dispositional level			
Self-management and control strategies			
Existing knowledge			
<p style="text-align: center;"><i>Oral language knowledge</i></p> <ul style="list-style-type: none"> • at word level, • at sentence level • at conceptual level, • at topic or theme level, • at the pragmatic or dispositional level 			<i>Experiential knowledge;</i>
Sensory input to the knowledge base		Motor aspects of expressive language	
Auditory input	Visual input	Touch, feeling input	Motion input

How children learn to read: Development trends

The pathway to learning to read begins early. Let us first look at some key concepts that describe aspects of this early development.

what we know about the sound properties of our language.	<div style="border: 1px solid black; padding: 2px; display: inline-block;"><i>phonological knowledge</i></div>	what we know about individual speech sounds or phonemes.	<div style="border: 1px solid black; padding: 2px; display: inline-block;"><i>phonemic knowledge</i></div>
our awareness of individual sounds	<div style="border: 1px solid black; padding: 2px; display: inline-block;"><i>phonemic awareness</i></div>	what we know about saying single sounds with other sounds	<div style="border: 1px solid black; padding: 2px; display: inline-block;"><i>phonetic knowledge</i></div>
letter-sound patterns; linking sounds with letters	<div style="border: 1px solid black; padding: 2px; display: inline-block;"><i>phonic knowledge</i></div>	patterns of letters used in written English to write words	<div style="border: 1px solid black; padding: 2px; display: inline-block;"><i>orthographic knowledge</i></div>



Pre-literate developments Prior to learning to read, children

- build and store meanings, how words and groups of words are said and used.
- express intentions in 'mini-sentences' that are contextually anchored
- aware of concept of word; begin to build bank of words

how word is said; phonological	what word means; semantic
"cat"	drinks milk, purrs, chases mice,
- develop phonological knowledge, use sound patterns in words, play with rhyme, predict words, segment spoken words into onset and rime, eg., segment "flip" into "fl" + "ip".
- begin to play with writing, learn to write individual letters, particularly upper case.
- learn how to order and sequence words in sentences, that is, grammar.

Learning to read words

<p><i>Linking spoken and written words</i></p>	<p>Alternative word reading strategies young readers use:</p> <ul style="list-style-type: none"> • select and memorise distinctive visual features of words and their context • convert each letter in a word to a sound and then blend. • use first (few) letters of a word with contextual information. <p>The distinctive visual features is least effective. Sound recoding is slower and demands more attention. Direct teaching of letter-sound matches does not help.</p>
<p><i>Recognising letter-groups and words</i></p>	<p>Readers learn to recode a letter cluster as a sound pattern. They need to:</p> <ul style="list-style-type: none"> • know the sounds that match the letter cluster (phonological knowledge) • recall the sound of each letter fast enough so that they can blend them and link with the letter pattern. Doing this rapidly is called rapid automatized naming' (RAN). Naming-speed affects orthographic skill. <p>Orthographic knowledge develops gradually; some words are read automatically and others recoded</p>
<p><i>Reading words directly</i></p>	<p>Readers develop an orthographic learning capacity: two processes</p> <ul style="list-style-type: none"> • phonemic recoding; progressively recode and blend letters and sounds; use phonemic knowledge automatically • make analogies between words; note letter group similarities between two words and move the sounds from one word to other. <p>Child can read <i>train</i> and uses this to read <i>plain</i> and <i>gain</i></p>

Word level processes explain reading disability

Area of difficulty	Reading underachievers
<p>storing how words are said</p>	<ul style="list-style-type: none"> • say words less accurately; they juxtapose or substitute sounds, eg, "crinimal" for 'criminal', can't take repair action for incorrect pronunciation. • remembering names of items, particularly rapid automatized naming.
<p>concept of words</p>	<p>have difficulty building a word-meaning bank</p>
<p>vocabulary development</p>	<ul style="list-style-type: none"> • have smaller expressive vocabularies, • difficulty learning word meanings, use context to identify words but not as efficiently and • form a less developed network of word meanings
<p>learning the sound units that make up spoken words</p>	<ul style="list-style-type: none"> • poor recognition/recall of frequently occurring sounds and sound patterns, • don't see what spoken words "fat", "man" and "pad" share, • have difficulty combining sequences of sounds • don't develop efficient decoding strategies, continue to recognise small sound units at a time

They learn letter-sound links but have difficulty segmenting words into sounds or into onset -rime and blending a sequence of sounds into a word.

Types of word reading difficulties and the likely causes It is not learning letter-sound links that usually causes problems but the ability to manipulate the identified sounds. Students with reading difficulties often learn fewer multi letter clusters and process more words at the single letter level. Exposure to print and a preparedness to engage in reading are critical for orthographic learning.

Type of word reading difficulty	Possible cause of difficulty
read words using letter by letter recoding, difficulty recognising letter clusters in words	RAN difficulty
read words by using distinctive visual features	phonological segmenting and blending difficulties
read words by using the first few letters of a word, perhaps again with context to read it.	RAN and short term phonological memory difficulty
difficulty using orthographic similarity between words (or to 'use analogies') to read the unfamiliar ones.	difficulty using phonological segmenting and blending automatically
difficulty modifying the sound pattern by altering stress patterns, to match known spoken words.	difficulty holding ideas in short term working memory, phonological difficulties
difficulty reading words rapidly, particularly multi syllabic words and low frequency words, or to remember how to say written words rapidly	difficulty recalling rapidly how to say the written word. Word reading takes more attention and leaves less for comprehension.

Slower naming speed + phonological awareness deficit - 'double-deficit hypothesis of reading disability'.

The relationship is reciprocal : reading ↔ phonemic awareness

Teaching letter-sound links + sound awareness is more useful for reading than teaching either only.

How children develop phonological knowledge Use the developmental sequence below to

- Locate any student in the sequence
- See what to teach next

begin phonological development by learning to speak	<ul style="list-style-type: none"> • imitate and learn how to pronounce words • remember how words are pronounced • remember the names of objects , events and sequences of names in order.
recognise sound patterns in words	rhyming, alliterating in songs and nursery rhymes.
recognise single sounds in words	<ul style="list-style-type: none"> • segment words into onset and rime, eg, "flip" into "fl"+"ip" • strip first sound away from words, eg, strip 's' from 'stop' • segment a syllable or words into sounds, eg, "cat" into "c-a-t" • blend string of sounds into 1-syllable word, eg, "c-l-o-t" to "clot" • select word with a sound, eg, "Tell me a word that starts with b." • isolate a sound in a word, eg., "What is the last sound in cat?"
blend sounds	combine sound segments into a whole word
learn syllabic structure of multi-syllabic words	
manipulate sounds in more complex ways	<ul style="list-style-type: none"> • classify sounds, eg, vowels in into long versus short categories, • match sounds in 2 or more words eg., "Do pat and pin start with the sa sound?", • delete sounds from word, eg, "What would be left if you take /m/ out of

	camp?" <ul style="list-style-type: none"> • recognise a specified sound, eg, "What sound do you hear in camp but in cat? " • swap for consonant or vowel, eg, "Say ' mate' but instead of m say l".
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Some readers have phonological knowledge, but don't use it as efficiently.

Key Concepts

Explain in your own words the meaning, the significance of each of the following concepts to understand literacy developments **and** give an example of each. Add to the previous key concepts sheet.

Key Concept	Meaning, significance	Example
phonemic knowledge		
pre-literate developments		
orthographic skill		
distinctive visual features		
phonemic recoding		
concept of a word		
rapid automatised naming		
phonological knowledge		
letter clusters		

Learning sentence comprehension processes cause reading difficulties Reading underachievers may have restricted:

grammar	<ul style="list-style-type: none"> • have difficulty understanding complex grammar in speech and writing • are less grammatically aware than matched, younger able readers. • show grammatical difficulties when speaking,
verbal short-term working memory	<ul style="list-style-type: none"> • have difficulty retaining verbal information for a brief duration. They: <ul style="list-style-type: none"> • find it easier to recall nonverbal than verbal information. • take longer to name information. • retrieve verbal information from long-term memory more slowly. • use rehearsal, elaboration, chunking less efficiently. <p>Reading improves auditory (but not visual) short-term memory.</p>
strategies such as visualising and paraphrasing	<p>They are less likely to:</p> <ul style="list-style-type: none"> • use text structure knowledge to generate expectations prior to reading and to organise text information while reading, • generate questions to assist them to comprehend and remember the text read, • elaborate and infer while reading or to summarise as readily.

Learning concept level and topic level processes Comprehension is influenced by:

- knowledge of the content, conceptual knowledge, ability to reason, for example, to infer
- the richness of the reader's knowledge of a topic, how elaborated it is
- cognitive style; knowledge in imagery format is more difficult to align with text
- knowledge of text properties, conventions of written text
- level of motivation, etc.

Reading underachievers may differ in amount of prior knowledge, how they organize and use it; less likely to:

- use prior content or text structure before reading
- organise text data in working memory and
- infer and elaborate the information and to anticipate ideas and words.

They comprehend when they are cued to use advance organisers that stimulate existing knowledge.

Learning to manage the reading activity

Reading underachievers are less likely to direct and regulate the use of reading strategies, to:

- decide when and why to use each, plan how they will read
- evaluate its effectiveness in terms of some goal or purpose,
- take further strategic action if necessary, and
- know about various purposes for reading and use the strategies accordingly.

Cause of difficulty : These strategies require students to learn self talk, that is, build self scripts. Teaching cognitive and metacognitive strategies improves reading comprehension.

Beliefs about ability as readers

Many reading underachievers feel helpless following repeated failure. They

- attribute reasons for success and failure differently; failure to themselves and success to factors beyond their control.
- have lower expectations for success and lower persistence for reading; lower self efficacy.

These beliefs affect motivation and achievement in reading.. They need to learn to alter their attributions through self-instruction.

Who is reading disabled?

reading difficulty: this is a general reference to reading under achievement that is sufficiently low to cause concern. It is due either to factors intrinsic to the reader or factors outside the reader

reading disability: this is a more specific reference to reading under achievement due to factors intrinsic to the reader such as:

- slower language or intellectual development,
- severe emotional problems that have limited ability to learn,
- visual or auditory impairments

this is more specific reference to reading under achievement due to factors outside the reader such as limited reading experiences or an impoverished environment.

non-specific reading disability: using the language of text due to slower language or intellectual development; reading comprehension but not reading words is impaired.
Reading comprehension but not decoding or word reading is impaired. Readers read words, use letter clusters -sound recoding and spelling rules but may not know what words mean.

specific reading disability: difficulty only in reading written words accurately and using grammar while reading. Text comprehension is often not impaired.
Readers know what words mean and how to say them but don't have letter cluster - sound recoding rules or spelling patterns.

low ability reading: the difficulty is due to global language or cognitive deficits or to problems in sensory-perceptual processing in either visual or auditory modality processing.
Both word reading accuracy and comprehension are impaired. Readers don't use letter clusters -sound recoding or spelling rules and have a restricted vocabulary.

deep dyslexia: extreme difficulty using letter cluster-sound recoding strategies. These readers don't use letter information at all to read words and substitute words with others from the same semantic category. Example: "rose" is read for "daffodil".

phonological dyslexia: less severe difficulty using letter cluster-sound recoding strategies. Readers use partial letter data unsystematically. Example: "weigh" is read for weight and "camp" for cape.

surface dyslexia: difficulty remember the letter properties of words; readers have a limited sight vocabulary and use letter-sound analysis strategies to read all words, including exceptional words.

Characteristic difficulties at each level

text levels	knowledge of text features, the 'what'	reading strategies, the 'how'
word level	<ul style="list-style-type: none"> • restricted letter cluster knowledge- very small letter patters, can analyse into small parts, attempt 2-syllable but not 3-syllable words • difficulty saying the first few letters, but when told, can say the word or don't finish word- say the first part • reverse words, eg., 'of' for 'for' • read blends incorrectly • difficulty reading words in words • letter sound confusions • mispronounce words • difficulty recognising rhyming words • don't recognise many key words automatically, restricted set of known automatic words • Read few words automatically, need to invest attention • Show excessive use of distinctive visual strategies and letter by letter reading • Take longer to say written words • Difficulty recalling individual meanings of words, inflexible word meanings 	<p>Use low level word analysis decoding strategies:</p> <ul style="list-style-type: none"> • segment words into letters and recode to sounds, sound out letter by letter. • say correctly one part of word but not others • say each part of word correctly but have difficulty blending sound segments. • difficulty applying stress patterns to polysyllabic words • difficulty using word knowledge to read unfamiliar words • hesitate before saying words; slower retrieval • mis-use analogy; say “look” for took • segment stop into “s – top” indicative of sound overload • visual coding errors, for example, b for d.
sentence level	<ul style="list-style-type: none"> • poor use of punctuation while reading aloud; show 'run on reading', inaccurate intonation when reading aloud, don't use punctuation to segment sentence into digestible bits • say words, make omissions and insertions that don't fit with grammar • say words that don't fit with meaning of sentence, substitute words that clash in meaning but don't recognise clash • don't self correct • don't know when to re-read • can't paraphrase, can't tell what the action was in a sentence • poor intonation, poor fluency (read too fast or too slow), stop inappropriately, phrasing of sentence lacks natural language fluency, word by word reading • literal comprehension difficulties 	<p>When reading a sentence, difficulty</p> <ul style="list-style-type: none"> • paraphrasing the sentence • saying, retelling the sequence of ideas in a sentence • answering literal questions about the sentence • retaining all of the ideas in a sentence • recognising idiom, slang, cultural literacy • deciding when to re-read when grammar or meaning is disrupted in sentence • reading longer sentences • recalling sentence information and elaborating • don't re-read at sentence level <p>no use of intonation and expression</p>
concept level	<ul style="list-style-type: none"> • say words, make omissions and insertions that don't fit with context, say words that don't fit with context, topic of the text • difficulty linking ideas within text and with what they know, difficulty applying existing knowledge bank, can't carry ideas across sentences • difficulty predicting • response is semantically correct but cannot answer questions • not able to use context to give meanings of novel terms • inferential comprehension difficulties, difficulty reading between the lines • lack knowledge of different genres, text structures and how to use them. 	<p>When reading two or more sentences of prose, difficulty</p> <ul style="list-style-type: none"> • predicting ideas • saying, retelling the sequence of ideas in a sentence • answering inferential questions about the text • summarising the ideas in a paragraph or • recognising idiom, slang, cultural literacy • deciding when to re-read when grammar or meaning is disrupted in sentence • suggesting possible concepts that might be in a text to be read • matching prediction with what was in text

topic level	<ul style="list-style-type: none"> • poor use of topic sentences • difficulty de-identifying the topic of a text • difficulty using grammar such as pronouns, tense across sentences • can't use headings, titles • poor prioritising, for example, recognising main versus subordinate ideas, poor use of topic sentences • poor topic attack skills • difficulty transferring knowledge, eg., filling in a concept map 	<p>Difficulty</p> <ul style="list-style-type: none"> • selecting topic sentences • selecting key words • deciding the topic of a text when beginning to read • prioritising the information in a text into key and subordinate ideas • revising and changing guesses about the possible topic • activating prior knowledge to scaffold the reading
dispositional level	<ul style="list-style-type: none"> • poor identification of disposition of author, what author believes 	<p>Difficulty</p> <ul style="list-style-type: none"> • deciding the author's intended purposes • reading critically
<p>Difficulty</p> <ul style="list-style-type: none"> • saying what strategies to use, don't use them spontaneously, framing up reasons or purposes for reading a text, planning how to read. • using attention efficiently. • monitoring reading to ensure comprehension, re-reading miscues inconsistent with theme • initiating corrective action, attempt to correct miscues by re-reading • organising the information gained from reading, not aware of what constitutes a reading outcome ("We've read that poem", but can't say what it says, etc) • participating spontaneously in the reading activity <p>Their self talk suggests lack of interest, engagement, lack of control, focus, lack of relevance</p>		
<p>What areas of oral language knowledge do you need to teach to help reader scaffold the reading: to</p> <ul style="list-style-type: none"> • understand better what words mean, how they are said ? • work better at the sentence level, to structure words and intentions into sentences ? • link related ideas, to predict and infer orally ? • organise ideas into topics or themes ? • comprehend the social context of how ideas are communicated, attitudes and values of writer to the ideas in the text. <p>Do you need to teach</p> <ul style="list-style-type: none"> • strategies for monitoring meaning in oral language transactions, listening comprehension ? • phonological and phonemic awareness ? • strategies for retrieving concepts from long-term memory ? • verbal reasoning strategies ? 		
<p>Do you need to teach readers to recode their nonverbal knowledge of a topic to oral language knowledge, to 'get ready for reading' their imagery or action knowledge so that it can be more easily matched with the verbal format of written text.</p>		

The types / sources of reading difficulty can be explained in terms of our model:

Levels of text	Knowing writing conventions, the 'what',	Reading strategies, 'how to'	
word level	word bank has less accurate sound and/or spelling forms <ul style="list-style-type: none"> difficulty manipulating sounds in words difficulty learning, storing letter clusters, take longer to recall names and sounds of letters, clusters, words; slower naming speed (RAN) don't develop a letter cluster learning capacity, use what they know about some words to read others 	They: <ul style="list-style-type: none"> use distinctive visual features to read words convert each letter to a sound and blend sounds rather than letter group-sound matching don't to make analogies between words don't recognise letter clusters or digraphs in words; segment letter strings into letters or into inappropriate clusters 	
sentence level	<ul style="list-style-type: none"> restricted, immature grammar limited sentence propositions (how meanings are linked), punctuation, written sentence structure restricted verbal short-term working memory, slower to recall verbal information, less likely to rehearse, chunk. 	They don't: <ul style="list-style-type: none"> visualise and paraphrase, re-read, question ideas use text structure to expect ideas before reading or organise text information while reading ask questions to assist them to comprehend and remember text. 	
conceptual and topic levels	<ul style="list-style-type: none"> differ in how they organize and use what they know: ideas in episodes/context links rather than in networks similar to text links, paragraph propositions etc. 	They don't: <ul style="list-style-type: none"> use prior content or text structure when reading organise text data in working memory or elaborate, infer or summarise while reading 	
<p>Self-management and control strategies Students with reading disabilities are 'non strategic or passive' readers; they are less likely to direct and regulate the use of reading strategies, to:</p> <ul style="list-style-type: none"> decide when and why to use each, evaluate its effectiveness in terms of some goal or purpose monitor our reading, initiate corrective action, decide when to re-read, self-correct, how they use what they know at each level, monitor how their reading is progressing, take further strategic action if necessary. review and self-question to see whether reading goals achieved, review or consolidate what they have read organise the information gained from reading to fit our purposes for reading. 			
<p>Existing knowledge</p>			
<p>Oral language knowledge Disabled readers may have difficulty</p> <ul style="list-style-type: none"> at word level, learning how words are said ("crinimal" for 'criminal'), less aware of sounds in words, remembering names of items, particularly RAN, poorer concept of word → building a word bank, smaller expressive vocabularies, difficulty learning word meanings and a less developed network of word meanings (they use context but not as efficiently to induce the meanings of unfamiliar words). at sentence level, reading underachievers have difficulty understanding complex grammatical forms in oral comprehension at conceptual level, how ideas are linked into themes at topic or theme level, how a theme is communicated in a narrative, description at the pragmatic or dispositional level, how the social context affects how ideas are communicated, the attitudes and values of the writer towards the ideas in the text. 		<p>Experiential knowledge;</p> <ul style="list-style-type: none"> experiences, visual imagery knowledge action, motor knowledge knowledge of symbols 	
<p>Sensory input to the knowledge base and motor aspects of expressive language</p>			
Auditory input; auditory perceptual processes for perceiving speech patterns	Visual input	Motion input	Articulatory processes; producing speech patterns

These relationships are not clear-cut:

- some may have a 'reciprocal causal' relationship with reading.
- many of these processes are developmentally limited.

Subtypes of reading underachievement :

<p>a general language deficit group;</p> <ul style="list-style-type: none"> • verbal < nonverbal reasoning, • speech delay, expressive, receptive difficulties • good visual matching ability, • short- and long-term verbal memory, sequencing problems in spoken and receptive speech. 	<ul style="list-style-type: none"> • dysphonetic readers, (poor phonic decoding strategies, letter-sound integration and auditory memory, poor oral reading • global, gestalt readers, can't decode unfamiliar words, semantic substitutions • spelling limited to familiar words within the child's sight vocabulary.
<p>a word association deficit group;</p> <ul style="list-style-type: none"> • minor language difficulties + poor visual sequencing, poor and auditory-visual matching, naming difficulties, • poor visual perceptual ability and visual memory 	<ul style="list-style-type: none"> • dyseidetic readers, use phonic decoding, limited sight vocab, • poor oral reading and fluency limits comprehension • phonological deficits, • difficulty linking spoken and written letters, words, • spelling is phonetically accurate.
<p>an attention/sequencing deficit group,</p> <ul style="list-style-type: none"> • poor visual and auditory-visual matching, sensory integration problems, • sequencing and attention deficits, • deficit organizing auditory-verbal material sequentially and maintaining sequenced information the intended order 	<ul style="list-style-type: none"> • problems perceiving grapheme-phoneme sequences, poor phonic decoding strategies, letter-sound integration and auditory memory, unable to decipher unfamiliar words. • greater difficulty in word reading accuracy than in comprehension • phonological and recoding difficulties in reading and spelling.
<p>sensory-motor integration deficit</p> <ul style="list-style-type: none"> • sensory and motor deficits, impaired speech and visuo-motor coordination, deficits in subtle linguistic and motor planning, doing visual - motor tasks • difficulty with tasks requiring auditory-verbal learning, particularly for complex or unstructured information; otherwise intact language, graphomotor coordination and speech blending. 	<ul style="list-style-type: none"> • difficulty linking written letters with their sound matches due to inadequate perception, storage and/or retrieval of visual stimuli. • omit or substitute written letters and syllables in reading and confuse or perseverate particular spoken sounds.
<p>a mixed deficit group; language and visual, mixed perceptual and language difficulties more severe and generalized than those experienced by the sequencing deficit subgroup</p>	<ul style="list-style-type: none"> • difficulty with visual information processing particularly at early stages of a task, including immediate and short-term memory and recognition for verbal and visual information. • difficulty with both word reading accuracy and comprehension.
<p>a non-verbal or visual deficit group; difficulties with visually-based spatial tasks such as visuo-motor (coding) or visuo-constructional processing difficulties or higher-order cognitive skills such as planning, organising information, allocating on-task attention and monitoring task performance.</p>	<ul style="list-style-type: none"> • left-right directional confusions, letter writing confusion, spatial dysgraphia (poor hand-writing, use of space), • arithmetic learning difficulties, do better on reading than on maths • spelling and reading errors that suggest difficulty learning letter cluster patterns and an over-use of letter-sound recoding.

Types (1), (2) and (6) emerge first for dyslexic beginning readers. The group that had the greatest reading difficulties and made least progress over a three year period was the naming deficit group.

Types (1), (3) and (4) have been linked with particular cerebral dysfunction

- (1) with left temporal lobe difficulties,
- (3) with left temporo-parieto-occipital problems and
- (4) with left frontal difficulties.

What do they mean for your assessment ? Note whether readers

- have difficulty retaining spoken information for a short time in memory
- maintaining on-task attention
- process information generally more slowly, take longer to begin, to through task.
- have difficulty recalling the names of items and recalling lists of names and numbers,
- have overall listening comprehension or expressive language difficulties
- learning to make visual matches
- sequencing items visually, storing information in visual memory
- difficulty linking visual information with motor patterns,
- difficulty planning and organizing their way through visual -manual tasks.

