*Revised Edition*

# Understanding Learning Difficulties

## A practical guide

Auspeld
Learning for all

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# Contents

# Introduction

In each and every classroom throughout Australia there are students with both learning difficulties, and learning disabilities, struggling to achieve at an acceptable level. As a consequence, it is essential that all teachers – no matter which age-group or which subject area they teach – acquire the necessary knowledge and skills to successfully teach and support these students.

It is estimated that the number of students in Australia with learning disabilities is between three and five percent of the total student population. The majority of these students will never be diagnosed with a learning disability; a factor that will potentially disadvantage them, both during their school years and beyond.

While the diagnosis of a learning disability requires specialist knowledge, teachers at all levels of education can play a vital role in both identifying students at risk, and assisting all students to achieve improved academic outcomes through the introduction of effective and evidence-based strategies.

This booklet, in conjunction with the content on the attached USB, is designed to provide primary and secondary school teachers throughout Australia with a greater awareness and understanding of the significant impact learning disabilities can have on students, and to outline the most effective remediation and accommodation strategies available to them as classroom teachers. This edition has been revised to be consistent with new research findings and current practice, but includes much of the highly-valued information from the first edition.

**Teachers at all levels of education can play a vital role in identifying students at risk...**

# The difference between a learning difficulty and a learning disability

The terms used to describe the unexpected and persistent learning problems experienced by some students, in specific academic domains, vary both nationally and internationally.

In the United States students are identified with 'learning disabilities' or 'learning disorders', whereas in the United Kingdom there is a preference for the term 'learning difficulty'. Some Australian States and Territories encourage the use of the term 'learning difficulties' for all students struggling to develop skills in literacy and/or numeracy, while others separate this quite large body of students into a number of categories.

For the purposes of this Guide, 'learning disabilities' will be viewed as a sub-set of the larger group of students generally referred to as experiencing learning difficulties. This is in line with the Australian National Health and Medical Research Council, the Australian Disability Discrimination Act (1992) and the Australian Disability Standards for Education (2005). For diagnostic purposes, the term 'specific learning disorder' is generally adopted.

Students with **learning difficulties** underachieve academically for a wide range of reasons, including factors such as: sensory impairment (weaknesses in vision or hearing); severe behavioural, psychological or emotional issues; English as a second language or dialect (ESL or ESD); high absenteeism; ineffective instruction; or, inadequate curricula. These students have the potential to achieve at age-appropriate levels once provided with programs that incorporate appropriate support and evidence-based instruction.

Students with **learning disabilities** have difficulties in specific areas of academic achievement as a result of an underlying neurodevelopmental disorder, the origin of which includes an interaction of genetic, epigenetic and environmental factors. One of the defining features of a specific learning disability is that the difficulty continues to exist, despite appropriate instruction and intervention.

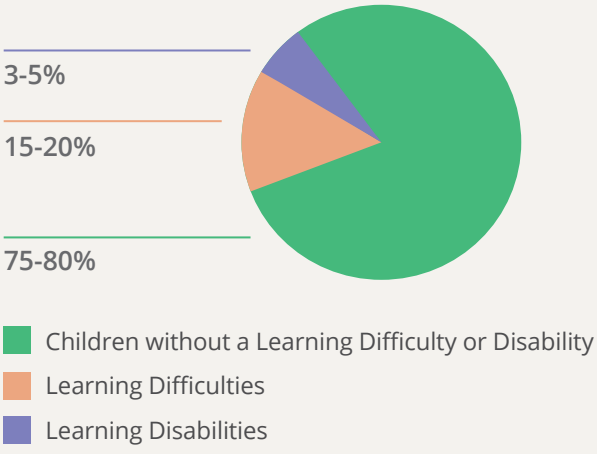
**Students with a learning disability:**

- have difficulties in a key academic skill which are inherent to the child and are lifelong
- do not perceive or process information as efficiently or accurately as students without a learning disability
- often have a family member with learning difficulties
- do not respond to intervention in the expected way.

**Percentage of Australian Students with a Learning Difficulty or Disability**

Left unidentified and without appropriate intervention, a learning disability puts students at significant disadvantage, with little likelihood of achieving at levels close to their academic potential.

Early identification is the key to success in the classroom, followed by intervention – including both remediation and accommodation – that is supported by research evidence.



# What do we know about types of learning disabilities?

A specific learning disability (specific learning disorder) is characterised by persistent difficulties learning a key academic skill. This academic underachievement is unexpected, and is not the result of a more general learning difficulty, such as an intellectual disability.

**There are a number of specific learning disabilities that have the potential to impact on a student's school performance:**

| |
|---|
| A specific learning disorder with impairment in reading, often referred to as **dyslexia**. |
| A specific learning disorder with impairment in written expression. |
| A specific learning disorder with impairment in mathematics, often referred to as **dyscalculia**. |

## Do students with specific learning disabilities learn differently?

Students with specific learning disabilities do not require an inherently different teaching approach in order to learn. Essentially, all students benefit from exposure to high-quality, evidence-based programs and teaching strategies, including explicit instruction, retrieval practice and dual coding. This is especially the case for individuals with specific learning disabilities.

**Explicit instruction** ensures that students are provided with clear goals, step-by-step teaching, targeted feedback and guided practice. **Dual coding** involves the effective combination of language (either spoken or written) and visual images (including graphic organisers, slides, icons, diagrams, drawings, displays etc.) to facilitate learning. **Retrieval practice** is achieved through the use of tasks that bring information to mind from long term memory (e.g. quizzes, flashcards, reviews, etc.).

The main learning difference observed between individuals with a specific learning disability and those without is the length of time it takes them to learn particular academic subskills. Individuals with specific learning disabilities often require more time and more repetition in order to master these skills. However, once they have mastered the skill, or developed an understanding of the new concept, they are likely to perform as well as, or possibly even better than, their peers. It is also the case that although individuals with learning disabilities have difficulty in specific areas, they will often excel in others.

## Specific learning disorder with impairment in reading (dyslexia)

A specific learning disorder with impairment in reading (dyslexia) is the most common form of learning disability, accounting for 80% of all children identified. Problems with reading, and related difficulties in comprehension, spelling and writing are common for these children. Many people who have a specific learning disorder with impairment in reading (dyslexia) also experience difficulties with working memory, attention and organisational skills.

**Dyslexia can be defined as:**

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

When looking at identifying a specific learning disorder with impairment in reading (dyslexia), deficits in one or both of the following key academic areas are usually present:

- Inaccurate or slow and effortful word reading (e.g., reads single words aloud incorrectly or slowly and hesitantly, frequently guesses words, has difficulty sounding out words)
- Difficulty understanding the meaning of what is read (e.g., may read text accurately but not understand the sequence, relationships, inferences, or deeper meanings of what is read)

**This definition is the preferred definition of DSF and AUSPELD, as well as the International Dyslexia Association (IDA) and the National Institute of Child Health and Human Development (NICHD).*

## What you might see in the classroom

| Pre/Lower Primary School | Mid/Upper Primary School | Secondary School |
|---|---|---|
| • Difficulties with oral rhyming, syllabification, blending and segmenting of sounds in words<br>• Delayed speech and language development<br>• Limited spoken vocabulary<br>• Poor understanding of letter-sound links<br>• Difficulty in learning letter names<br>• Slow and inaccurate word recognition<br>• Inability to read nonsense words<br>• Difficulty understanding reading material<br>• Difficulties with tasks requiring reasonable working memory capacity - such as following instructions or remembering sequential information | • Reduced ability to isolate and manipulate individual sounds in words<br>• Difficulties holding verbal information (e.g. instructions) in working memory<br>• Slow to complete literacy-related tasks<br>• Reading is slow and laboured<br>• Visually similar words are often confused when reading<br>• Trouble decoding unfamiliar words<br>• Poor reading comprehension<br>• A lack of interest in or avoidance of reading tasks<br>• Ongoing difficulties in working memory | • Poor reading fluency<br>• Reduced reading comprehension (may need to re-read material many times to comprehend)<br>• Disorganisation and difficulties with planning<br>• Limited working memory<br>• Word finding difficulties<br>• A lack of interest in or avoidance of reading tasks<br>• Working memory difficulties may become more pronounced as the demands of schooling increase |

## Look for students who have problems processing speech sounds in words.

"I struggled to read aloud. I would stumble over my words and make a lot of mistakes. This was an area of great embarrassment for me and I hated being asked to read in front of my classmates. I also found it difficult to read complicated text silently; I would find it useful to say it out loud, to myself, as I read – something which in certain circumstances could also be quite embarrassing."

**Mike**
Aged 29 years

## Specific learning disorder with impairment in written expression

A specific learning disorder with impairment in written expression often remains undiagnosed. It is a persistent difficulty with written expression and/or spelling that may occur in isolation, but more often, occurs in conjunction with a specific learning disorder in reading (dyslexia).

**A specific learning disorder in written expression can be defined as:**

...a specific learning disability that is neurobiological in origin. It is characterised by difficulties with accurate and/or fluent written expression and by poor spelling skills. These ongoing delays in activities involving writing are often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. (This definition has been adapted from DSM-5 criteria.)

In the past, a specific learning disability with impairment in written expression was identified as either a language-based dysgraphia or a motor-based dysgraphia. The term specific learning disorder with impairment in written expression is now the preferred descriptor for language-based difficulties, whereas the term dysgraphia is reserved for motor-based difficulties. In some cases, students present with mechanical handwriting difficulties that may be consistent with motor dysgraphia, or that may be part of a larger pattern of difficulties that meet criteria for developmental coordination disorder (DCD). For further information on the defining features and functional impact of developmental coordination disorder and motor dysgraphia, please see page 14.

When looking at identifying a specific learning disorder with impairment in written expression, deficits in one or both of the following key academic areas are usually present:

- Difficulties with spelling (e.g., may add, omit or substitute vowels or consonants)
- Difficulties with written expression (e.g., makes multiple grammatical or punctuation errors within sentences; employs poor paragraph organisation; written expression of ideas lacks clarity)

When spelling and the composition of sentences and texts are explicitly taught, students have a greater chance of achieving an acceptable standard of writing. A firm understanding of English orthography allows students to reduce cognitive load and 'free up' their working memory to concentrate on higher order writing skills, such as the planning of content and structure.

While explicit instruction can benefit students who have a specific learning disorder with impairment in written expression, weaknesses in writing fluency are likely to endure. Students who have a specific learning disorder with impairment in written expression often have to work much harder and longer to produce written work to the same standard as an individual with typically developing writing skills.

## What you might see in the classroom

| Pre/Lower Primary School | Mid/Upper Primary School | Secondary School |
|---|---|---|
| • Reading appears adequate but difficulties with writing are apparent<br>• Avoids writing tasks<br>• Poor spelling<br>• Difficulties learning basic sentence structure and grammar | • Writing is slow and laborious<br>• Difficulties are more apparent as demands on writing ability increase through middle and upper primary school<br>• Process of writing is effortful and tiring<br>• Poor knowledge of writing conventions, such as punctuation, as well as lack of automaticity in spelling<br>• Difficulty choosing correct spelling alternatives<br>• Sentence and paragraph structure is poor<br>• Inconsistency between verbal ability and written skills | • Difficulties writing at the same speed as their peers<br>• Great difficulties noted in transferring thoughts into written words<br>• Apparent gap between oral and written language skills<br>• Knowledge and application of essay structure is underdeveloped<br>• Lack of detail in written expression<br>• Written output is limited with far less work being produced in allocated writing time<br>• Writing and spelling skills do not appear automatic<br>• Poor spelling, including lack of knowledge of patterns in words and lack of morphological knowledge (affixes and base words) |

"Sometimes I can have the most amazing ideas for a story – or have the answer to a question in my head - but when it comes to writing it down – the idea or answer somehow turns into complete chaos!"

**Thomas**
Aged 11 years

## Specific learning disorder with impairment in mathematics (dyscalculia)

A specific learning disorder with impairment in mathematics (dyscalculia) is an innate difficulty in learning and comprehending mathematics. Children who have a specific learning disorder with impairment in mathematics (dyscalculia) have trouble understanding numbers, learning how to manipulate numbers, learning mathematical facts, and a number of other related difficulties.

**Dyscalculia can be defined as:**

... a condition that affects the ability to acquire arithmetical skills. Learners with dyscalculia may have difficulty understanding simple number concepts, lack an intuitive grasp of numbers, and have problems learning number facts and procedures. Even if they produce a correct answer or use a correct method, they do so mechanically and without confidence.

The severity of mathematical impairment differs depending on the individual. Although it can be argued that many of the defining features of a specific learning disorder with impairment in mathematics (dyscalculia) can also be seen in children who do poorly in mathematics, it is the degree of these difficulties and the resistance to remedial intervention that set children with dyscalculia apart from others with learning difficulties.

When looking at identifying a specific learning disorder with impairment in mathematics (dyscalculia), deficits in one or both of the following key academic areas are usually present:

- Difficulties mastering number sense, number facts or calculation (e.g., has poor understanding of numbers, their magnitude, and relationships; counts on fingers to add single-digit numbers instead of recalling the math fact as peers do; gets lost in the midst of arithmetic computation and may switch procedures)
- Difficulties with mathematical reasoning (e.g., has severe difficulty applying mathematical concepts, facts, or procedures to solve quantitative problems).

## What you might see in the classroom

| Pre/Lower Primary School | Mid/Upper Primary School | Secondary School |
|---|---|---|
| • Difficulties organising objects and sets of items in a logical way<br>• Difficulties recognising printed numbers<br>• Poor counting skills and knowledge of counting strategies<br>• Difficulties using counting strategies (counting in 2's, 5's etc)<br>• Difficulties with mastering number knowledge (recognising how many items make a set without counting)<br>• Delays in using effective counting strategies for addition (counting all instead of counting on)<br>• Difficulties decomposing numbers<br>• Difficulties remembering arithmetic facts | • Counting skills mastered but persistent use of ineffective strategies for calculation<br>• Difficulty telling the time and recalling times tables<br>• Delays in the retrieval of overlearned maths facts<br>• Difficulties with inattention to numerical operator (e.g. +, –, x, ÷)<br>• Delays in applying concepts of borrowing and carrying (place value)<br>• Difficulties with measurement and understanding spatial relationships<br>• Difficulties with multi-step calculation procedures<br>• Increased anxiety and negative attitude towards maths | • Difficulties learning maths concepts beyond basic number facts<br>• Difficulties with mental maths<br>• Difficulties finding more than one way to solve a maths problem<br>• Delays in learning and recognising maths vocabulary<br>• Difficulties in reading and interpreting graphs, charts and maps<br>• Poor perception of the passage of time and difficulties sticking to a schedule<br>• Poor budgeting skills<br>• Delays in spatial directions |

# Other developmental disorders that can impact on learning

In addition to specific learning disorders, there are also a number of other developmental disorders which can have a negative impact on how a child develops academic skills. Two of these disorders are:

- Developmental language disorder (DLD)
- Developmental coordination disorder (DCD)

## Developmental language disorder

Developmental language disorder (previously known as specific language impairment) is diagnosed when a student has persistent language problems that continue into school age. Difficulties with the comprehension and use of words and sentences to convey information and ideas are common for these students. Problems can occur in different modalities of language: spoken, written and/or signed. At school entry, approximately two children in every class of thirty students are considered to experience a language disorder significant enough to impinge on their academic progress. However, language difficulties often go undetected and may not be evident unless the student's receptive (understanding of) and expressive (use of) language is assessed formally. These students typically require additional help beyond targeted classroom support and should be referred to a speech pathologist for more detailed evaluation and intervention tailored to their specific needs.

**Developmental language disorder can be defined as:**

*... difficulties with language development that endure into middle childhood and beyond, with a significant impact on everyday social interactions, emotional well-being, behavioural regulation and educational progress. It is characterised by difficulties understanding and using words and sentences to express meanings, which are unlikely to resolve without specialist support.*

It is recognised that developmental language disorder emerges in the course of development, rather than being acquired or associated with a known biomedical cause. However, a language disorder may occur as part of a more complex pattern of impairments that requires a specific intervention pathway (e.g. language disorder associated with autism spectrum disorder, intellectual disability, or cerebral palsy).

## What you might see in the classroom

| Early Years | Primary School | Secondary School |
|---|---|---|
| • Poor use of gestures<br>• Cannot follow simple directions<br>• Difficulties naming objects or pictures<br>• Speaks using only two or three-word phrases<br>• Has trouble putting words together into sentences<br>• Reduced use of action words e.g. “doggy run”, “push car”<br>• Difficulties learning songs and rhymes<br>• Limited engagement in imaginative play<br>• Speech that can be hard to understand<br>• Difficulties knowing how to take turns when talking with others<br>• Difficulties learning the alphabet | • Difficulties remembering and following spoken instructions<br>• Difficulties understanding what is heard or read<br>• Trouble retrieving specific words, e.g. uses ‘thing’ or ‘stuff’<br>• Difficulties in telling or retelling a coherent story<br>• Incorrect grammar when speaking or writing<br>• May look around and copy others’ actions or written work<br>• Difficulties with blending and segmenting of sounds in words<br>• Poor turn-taking in conversation<br>• Misinterprets jokes or the point of what was meant<br>• Difficulties following playground rules | • Limited knowledge of word meanings<br>• Relies on simple words to express themselves<br>• Word finding difficulties<br>• Provides too much or too little information in speaking or writing<br>• Trouble forming grammatically correct sentences<br>• Difficulty understanding spoken or written information<br>• Lack of detail in written expression<br>• Avoids or may have difficulties starting class work or homework<br>• Difficulties paying attention<br>• Difficulties knowing how and when to use language in social situations |

## Developmental coordination disorder

Developmental coordination disorder (DCD) is a motor-based disorder that affects approximately 5% of primary-school aged children. It is also known as dyspraxia. Children with DCD have difficulties learning and performing motor skills and their coordination is below expectation for their age. These difficulties may be displayed as slowness or inaccuracy in the performance of fine and/or gross motor skills, which compromises performance in activities of daily living and often interferes with academic achievement. DCD may be suspected if a child is unusually clumsy and/or is showing difficulties in learning and/or performing gross or fine motor skills. Children with DCD often experience difficulties with speed and/or legibility of handwriting that may affect their ability to express themselves in writing. DCD may therefore co-exist with a specific learning disorder with impairment in written expression, but it is differentiated from it by the emphasis on the motor component of the written output, rather than the content.

DCD tends to affect multiple areas of motor functioning (e.g. difficulty tying shoelaces, learning to ride a bike, and handwriting). However, there are some students who only have difficulties with the mechanics of writing – that is, their handwriting skills are impaired, but they do not show similar levels of difficulty with other motor skills. These individuals may have what is commonly referred to as motor-based dysgraphia. Although there are no universal criteria for diagnosing this specific skill deficit, there is wide-spread acceptance of the term within the professional community. Occupational therapists are able to identify and support these individuals who present with persistent handwriting difficulties, but do not meet criteria for DCD.

## Developmental coordination disorder across the school years

| Pre/Lower primary school | Mid/Upper primary school | Secondary School |
|---|---|---|
| • Difficulty colouring or drawing in a coordinated way<br>• Difficulty holding a pencil<br>• Letters are poorly formed<br>• Handwriting shows poor spacing and sizing of letters and words<br>• Letter forms are frequently confused<br>• Difficulty completing puzzles or building with blocks<br>• Difficulty buttoning clothes, doing up zippers, and tying shoelaces<br>• Difficulty using rulers and scissors accurately and efficiently<br>• Delays in throwing and catching, hitting and/or kicking a ball<br>• Difficulty negotiating playground equipment<br>• Poor organisational skills<br>• Difficulties planning and prioritising tasks<br>• Reduced general activity levels<br>• Reduced participation in sport<br>• Difficulty learning to ride a bike (without training wheels)<br>• Difficulty learning to use cutlery | • Handwriting is immature and slow<br>• Slow and inaccurate in building models<br>• Difficulty playing ball games (especially in teams)<br>• Difficulty organising belongings when motor sequencing and coordination are required<br>• Trouble managing a full school day due to poor strength and endurance<br>• Poor organisational skills<br>• Difficulties planning and prioritising tasks<br>• Reduced general activity levels<br>• Reduced participation in sport | • Legibility and/or speed of handwriting is poor<br>• Slow and inaccurate typing<br>• Difficulty taking notes accurately and efficiently<br>• Poor organisational skills<br>• Difficulties planning and prioritising tasks<br>• Reduced general activity levels<br>• Reduced participation in sport |

# Processing weaknesses are common in students with learning disabilities

Students with learning disabilities generally have difficulties processing information accurately and automatically, and many students have a weakness in working memory. Students who have a specific learning disorder with impairment in reading and/or written expression tend to have difficulties processing speech (phonological processing) and they may also struggle to process and recall the letter patterns used in written language (orthographic processing).

## What is working memory?

Working memory is the ability to hold information in mind and manipulate it as necessary for a brief period. It is a person's mental workspace. A student's working memory capacity depends on their age and innate abilities. Lower primary students are only able to hold, manipulate and recall a small number of items or 'chunks' of information (e.g. two or three items) whereas secondary students can deal with more (e.g. four or five items). Working memory capacity increases with age until approximately 16 years, although no matter what the age, there will be some students with larger working memory capacities than others. Working memory is highly correlated with both literacy and numeracy achievement levels and is resistant to change. Students with poor working memory at the beginning of their schooling are likely to have poor working memory as teenagers and adults. There are, however, a number of teaching and learning strategies that successfully support students with poor working memory in the classroom (see 'Accommodations' page 39).

**Examples of classroom tasks that place a heavy load on working memory:**

- Remembering multi-step instructions
- Performing mental maths sums
- Reading comprehension
- Constructing written expression
- Spelling a long or complex word
- Recalling details from a spoken passage or story

## What is phonological processing?

Phonological processing comprises three areas of functioning:

1. Phonological Awareness
2. Phonological Memory
3. Rapid Automatised Naming

Students who have a weakness in one or more of these areas are likely to experience literacy-learning difficulties.

### Phonological and Phonemic Awareness

Many students with learning disabilities have difficulty attending to the sounds and oral language patterns within words. This ability is called phonological awareness. In the early years of schooling, students may show difficulties in:

- detecting and creating rhyming words
- breaking words into syllables
- identifying the phonemes (individual sounds) at the beginning and end of words
- isolating, deleting and substituting phonemes within words.

Frequently, older students who have an SLD with impairment in reading also demonstrate difficulties in some of these more complex phonological processes (especially in accurate and efficient phoneme identification and manipulation).

**The ability to blend and segment phonemes in words is critical to the development of good reading and spelling skills. Students need to learn that the sounds they are making when they speak relate directly to the letters they use when reading and writing. Essentially, we blend to read and we segment to spell.**

- **Phoneme blending** requires listening to a sequence of separately spoken sounds and combining them to form a recognisable word; for example, the sounds /sh/ /o/ /p/ form the word shop.
- **Phoneme segmentation** requires breaking a word into its sounds by tapping out or counting the sounds; for example, "How many phonemes in block?" (four: /b/ /l/ /o/ /ck/).

### Phonological Memory

The ability to hold on to speech-based information in short-term memory is called phonological memory. We rely heavily on our phonological memory when reading and spelling.

This skill is assessed by asking students to remember strings of numbers or to repeat nonsense words of increasing length and complexity. Students with poor phonological memory are unable to hold as much phonological information in mind as their age-matched peers. When recalling nonsense words, they tend to forget parts of the word and/or confuse the sounds and sequence of sounds in the word.

Students who have an SLD in reading and/or written expression often have weaknesses in phonological memory.

### Rapid Automatised Naming

A skill that is commonly assessed in the identification of an SLD in reading and/or written expression is referred to as Rapid Automatised Naming (RAN). It requires an individual to quickly identify and name a series of common stimuli (e.g. letters, numbers, colours, objects). People with learning disabilities often take longer to name items when compared to their peers.

RAN provides information about an individual's ability to retrieve words quickly and easily from long term memory. Students with a poor RAN score (and, therefore, difficulties with rapid word retrieval) tend to have weaknesses in reading and writing fluency. These difficulties often become apparent later in a student's education.

## What is orthographic processing?

Becoming a fluent reader requires both the capacity to utilise sound-based decoding strategies and the ability to accurately recognise familiar letter patterns either as whole words (e.g. 'was') or within words (e.g. night). The ability to rely less heavily on sound-based decoding strategies is very much dependent on the development of orthographic processing.

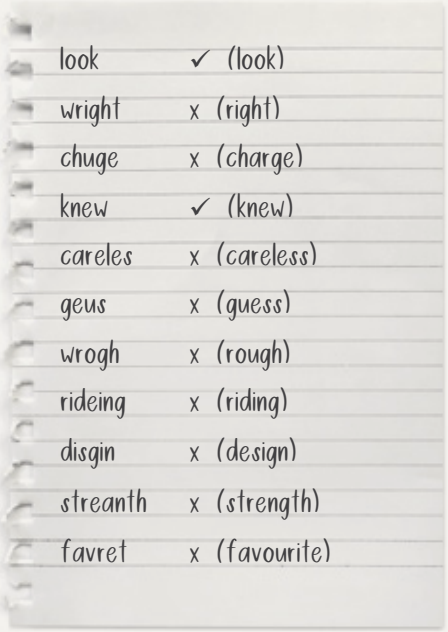
Orthography refers to the conventional writing system of any given language and includes rules around letter order and combinations as well as capitalisation, hyphenation and punctuation. Orthographic processing is the ability to understand and recognise these writing conventions as well as recognising when words contain correct and incorrect spellings. Skilled readers are able to instantaneously access many thousands of mental representations of printed word forms or 'legal' English spelling patterns. These are often referred to as 'Mental Graphemic Representations' (MGRs). A critical prerequisite for this capacity is strong phonic knowledge.

Students with weak orthographic processing rely very heavily on sounding out common words that should be in memory, leading to a choppy and laborious style of decoding. These students are also more likely to have difficulty applying knowledge of base words in order to decode a variation of a word and confuse simple words like 'on' and 'to' when reading.

Delays in orthographic processing are also linked to ongoing difficulties in letter recognition and letter reversals. If the shape and orientation of a letter is not fully consolidated and stored in visual memory, then students are more likely to make reversal errors and be unable to recognise when they have made a mistake.

As skilled readers need to recognise words and/or components of words automatically, there is a heavy reliance on orthographic processing in the development of reading fluency. Delays in this area are likely to inhibit a student's applied reading skills and ultimately affect his/her reading comprehension skills.

In addition, poor orthographic processing will almost certainly result in both a high rate of spelling errors and poor written expression. Students find it difficult to remember the correct spelling pattern for a particular word and don't seem to benefit from the editing tool, "Does it look right?". Rather they demonstrate the tendency to over-rely on phonological information, writing words like 'rough' as 'ruff' and 'night' as 'nite'.




**Delays in orthographic processing are also linked to ongoing difficulties in letter recognition and letter reversals.**

# Students with learning disabilities may have low self-esteem

Students with learning disabilities are often viewed as having low self-esteem as a direct consequence of the poor academic results they achieve at school.

In his book, 'Visible Learning', John Hattie outlines the evidence linking self-concept with achievement and suggests that the relationship is a reciprocal one. That is, having a positive academic self-concept (which includes aspects of pride, worth and confidence) has a positive impact on achievement but, in equal measure, achieving strong academic results can result in elevated academic self-concept. The correlation between measures of self-efficacy and achievement is strong, and a sense of academic confidence, in particular, results in better learning opportunities and improved outcomes.

An individual's self-concept is, however, multifaceted and someone who, for example, struggles to read out loud in class, may perform exceptionally well on the netball court. As a result, their self-concepts in relation to these two areas will almost certainly differ. General self-concept can be viewed as a combination of **academic self-concept** (including **ability** self-concept, **achievement** self-concept, and **classroom** self-concept), **social self-concept** (including **peer** self-concept and **family** self-concept), and **self-regard** or **presentation self-concept** (including **confidence** self-concept and **physical** self-concept). Unsurprisingly evidence suggests that students with learning disabilities are particularly vulnerable to developing a poor sense of academic self-concept.

In contrast to self-concept, when we talk about self-esteem, we are really talking about the extent to which we feel positively or negatively about our self-concept or self-view. It is essentially 'how I feel about who I am'. Hattie suggests that students with high self-esteem are more adaptable, they function more easily in social environments, and they have a greater sense of control over the situations they find themselves in. Students with low self-esteem, on the other hand: tend to be less effective in engaging with others – often leading to difficulties accepting others; they feel powerless – often believing that they are at the mercy of other people and the environment; they have more difficulty coping with the world around them; and, they do not feel as though they are 'in control'. Obviously developing a positive self-esteem is highly desirable.

There are many interventions that claim to improve self-esteem but the most successful of these are recognised as cognitively-based rather than emotionally-based. Interventions that encourage students to restructure their self-views through increased self-awareness, through the setting and achieving of goals, and through task-oriented activities that incorporate frequent opportunities for feedback are the most likely to result in long-term positive change.

It is apparent that some people with learning disabilities cope better with their difficulties than others. Researchers at the Frostig Centre in California, USA, have identified a number of factors that contribute to the success and wellbeing of individuals with learning disabilities.

**Self-awareness**

Successful people with learning disabilities recognise and understand their strengths and difficulties. While they are open and specific about their learning difficulties, they are also able to compartmentalise their learning disability as being just one aspect of themselves.

**Proactivity**

Engaging with the world around them is an important way for people with learning disabilities to make connections and feel positive about themselves. Successful people with learning disabilities believe that they are able to make decisions and choices which affect the outcomes of their lives.

**Perseverance**

Many people with learning disabilities demonstrate an ability to pursue their chosen path despite their difficulties. They don't 'give up'. Flexibility is also important, as successful individuals with learning disabilities are able to modify their approach to a problem or situation if necessary.

**Goal setting**

Successful individuals with learning disabilities set realistic and attainable goals and understand the step-by-step process necessary to reach goals. Their goals are specific yet flexible so that they can adapt to changes in circumstances and situations.

**Presence and use of effective support systems**

While both successful and unsuccessful people with learning disabilities may receive support and assistance from others, it is the nature of the support provided and how it is received that is most important. Successful individuals with learning disabilities actively seek and utilise the feedback, support and encouragement provided by teachers, family members, therapists and mentors, but also know when to reduce their dependence on others.

**Effective coping and emotion regulation strategies**

Having a learning disability can be stressful. While all people with learning disabilities are likely to experience stress relating to their difficulties, successful individuals with learning disabilities have developed effective ways of reducing and coping with stress and frustration. They are aware of situations that may trigger stress, recognise when stress is developing, and access coping strategies which are helpful and effective.

***"Success and Dyslexia"***, written by Nola Firth and Erica Frydenberg (ACER Press), is an excellent Australian program which enables schools to support students with learning disabilities and increases the capacity of students with learning disabilities to manage their feelings and deal with problems in a constructive manner. This program provides an evidence-based approach to developing coping skills, goal setting, positive thinking, problem solving and assertiveness.

# Identifying and diagnosing specific learning disorders

The diagnosis of a specific learning disorder is a complex process that requires a deep understanding of the individual's learning challenges, the quality of intervention they have received, and the profile of strengths and weaknesses that are common to specific learning disorders.

A specific learning disorder is widely understood to be a processing disorder – neurobiological in origin. In the case of an SLD with impairment in reading, there is a high degree of research evidence linking poor phonological processing with inadequate reading development. In an SLD with impairment in written expression, the primary processing impairment is also phonological in nature but frequently includes the speed of language retrieval from long-term memory (RAN). In an SLD with impairment in mathematics, the ability to process the concept of number is generally implicated, as is working memory capacity. SLDs with impairment in written expression and/or mathematics tend to be diagnosed later than those with impairment in reading, especially once the academic demands of school increase.

## Who can diagnose a specific learning disorder?

Although teachers are well positioned to observe firsthand the struggles and challenges that a student has in any given academic area, it is important that the actual diagnostic process be undertaken by a specialist in the area. This involves a Psychologist (preferably with educational and/or developmental training) in the identification of specific learning disorders.

When considering other developmental disorders that can impact on learning, Occupational Therapists can investigate and support students with handwriting and coordination difficulties; whereas Speech Pathologists are best suited to assess and support individuals with speech and language-related weaknesses.

It is important that the diagnosis is made by a practitioner who is qualified to administer the range of standardised assessment tools required to make a clinical diagnosis. Depending on the assessment required, these tests may include standardised measures of: intellectual ability and cognitive skills; expressive and receptive language ability; underlying processing strengths and weaknesses; and academic achievement across a range of domains, assessed under a range of conditions (e.g. timed versus untimed). In order to administer these tests, expertise in test administration and registration with a regulatory body, such as the Australian Health Practitioners Registration Authority, is required. The diagnosis of a specific learning disorder cannot be made by someone who assesses vision, hearing, movement or any other skill in isolation.

## How is a specific learning disorder diagnosed?

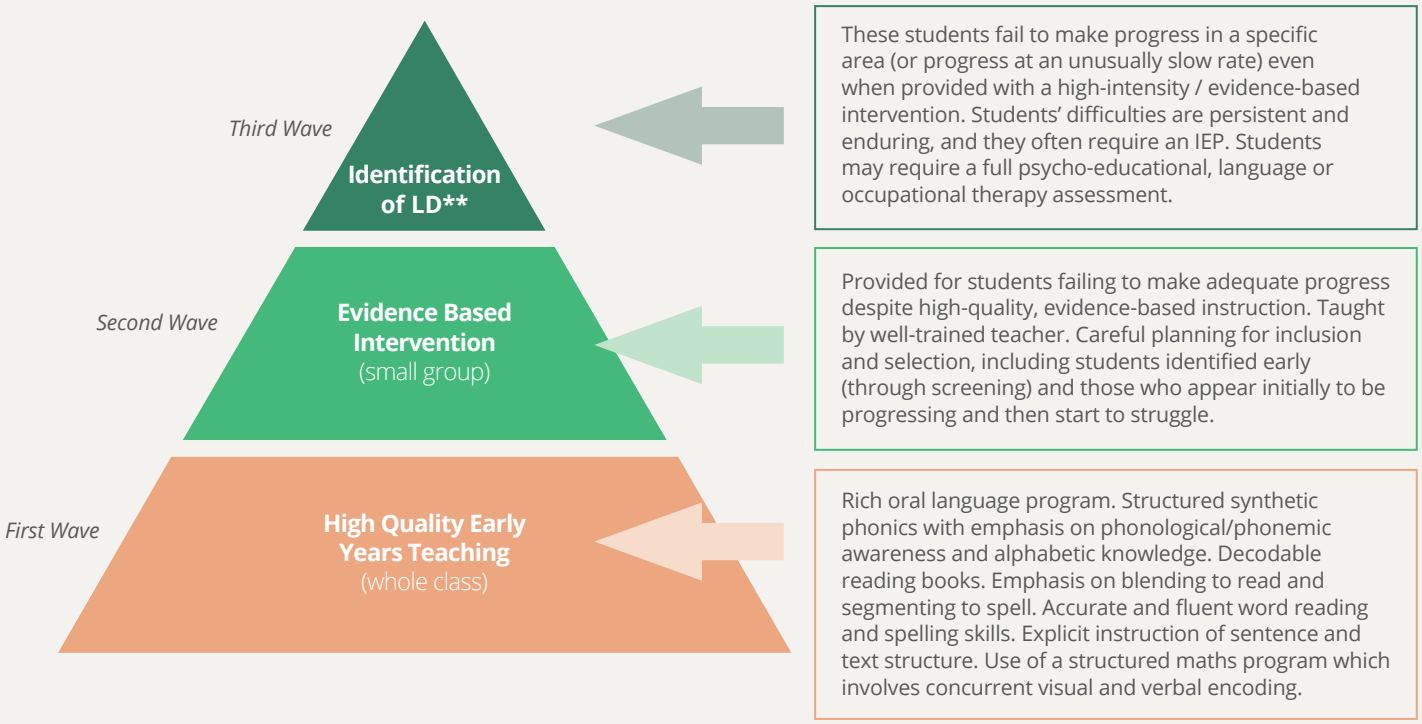
Historically, there has been a great deal of debate over the methods used to diagnose learning disabilities and the associated recommendations for intervention made as a consequence of diagnosis.

Until recently, the most frequently adopted approach to learning disability identification was the 'discrepancy model' which essentially defined a learning disability as a significant discrepancy between a student's measured intelligence and his/her actual level of achievement in a specific academic domain. This discrepancy between anticipated results, based on a student's cognitive ability, and their actual results, based on standardised achievement tests, was viewed as an indication of a learning disability.

There were (and continue to be) many criticisms of this approach. Firstly, it operates as a 'wait-to-fail' method because it is unlikely that a significant discrepancy will be found prior to middle and upper primary. This means that essential intervention is delayed. Secondly, it can serve to discourage intervention because improvements achieved through sustained intervention may result in a reversal of diagnosis once a substantially significant 'discrepancy' is no longer evident. This may, in turn, lead to reduced support. And, thirdly, the discrepancy calculation has been frequently found to vary from school to school, and district to district – thereby resulting in students being identified against inconsistent criteria.

In the DSM 5* Manual, learning disabilities are classified as 'specific learning disorders' and are considered to be one of a number of neurodevelopmental disorders. An essential component of the revised diagnostic criteria is that students identified with specific learning disorders will have failed to respond as expected to appropriate intervention.

**Figure 1. Identifying students at risk using the RTI model.**




* *DSM 5 – The Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition*

** *Learning Disability or other developmental disorder which impacts on learning*

## The Response to Intervention (RTI) Model

Over the past decade an alternative approach to learning disability identification has been suggested. The Response to Intervention (RTI) model involves the systematic monitoring of all students in an environment in which schools are providing an evidence-based core curriculum. The model also relies on the introduction of increasingly intensive intervention processes in response to more frequent curriculum-based assessment. Students who continue to struggle academically, despite evidence-based instruction and curricula, supplemented by systematic intensive intervention, are considered to be students in need of ongoing support. Given their persistent difficulties, it is also considered likely that these students have a learning disability.

The advantages of the RTI model include: the earlier and more systematic introduction of intervention for all students struggling to acquire basic skills; and, the promotion of high quality instruction and evidence-based intervention across whole school communities. As a consequence, it has the potential to reduce the number of students who present with learning difficulties as a result of poor instruction and/or curricula.

It does, however, remain important that in cases where students fail to make progress despite high quality instruction and evidence-based intervention, an appropriate individual assessment is conducted. In most cases this will be a psychoeducational or neurocognitive assessment. This allows for the documentation of underlying processing deficits, additional developmental disorders and/or other educationally relevant weaknesses that might serve as primary or additional barriers to a student's capacity to respond to otherwise appropriate intervention(s).

In order to diagnose a learning disability, it is recommended that a combination of RTI and individual assessment be adopted, resulting in a more equitable, preventative and individualised approach.

## Diagnostic criteria for specific learning disorder diagnosis

The current DSM 5 guidelines for Psychologists undertaking learning disability assessments specify that specific learning disorders with impairment in reading, written expression, and/or mathematics are diagnosed through a clinical review of an individual's developmental, medical, educational, and family history, reports of test scores and teacher observations, and response to academic interventions.

**The specific diagnostic criteria can be summarised as:**

A pattern of difficulties learning and using at least one academic skill (e.g. reading accuracy/fluency; spelling accuracy; written expression fluency; mastering number facts) that:

- appears during the school-age years;
- results in skills that are substantially below those expected for age (in the majority of cases);
- has the potential to significantly interfere with activities of daily living (including academic or occupational performance); and,
- has persisted for at least six months, despite well-founded, targeted intervention.

Although in most cases the affected academic skills will be well below average for age, it is appropriate to diagnose a specific learning disorder in cases where average achievement is sustained only through high levels of effort and/or support.

The academic deficits can be mild, moderate or severe and, although they begin during the school years, they may not become apparent until the demands on the academic skill exceed the individual's capacity (e.g. as in timed assessments, reading or writing lengthy texts).

It is important to note that a specific learning disorder will not be diagnosed if the academic skill deficit is better accounted for by intellectual disability, uncorrected visual or auditory acuity, other mental or neurological disorders, psychosocial adversity, a lack of proficiency in the language of instruction, or inadequate instruction.

# Implementing the RTI model

The needs of all students, including those with learning disabilities, can be catered for by implementing a three wave (or three tier) approach to instruction, assessment and intervention. Providing high-quality instruction in literacy and numeracy ensures schools are better equipped to identify and cater for the needs of students with both learning difficulties and learning disabilities. Using programs that are supported by reliable research evidence is central to this approach. The use of a structured synthetic phonics program is crucial to instruction at all levels, as well as the use of programs and/or teaching strategies to target additional areas of need such as working memory, vocabulary, comprehension and number work.

## Wave 1

**The effective inclusion of all children in daily high quality teaching**

Best practice teaching in the first wave (K-3) is based on a rich oral language program combined with a structured synthetic phonics program and structured mathematics program. Schools that achieve the best results and witness significant improvement for their students in this wave, are those where there is consistency of programs across the early years and deliberate planning across those years. That is, the same program is implemented successfully in all years as compared to different programs operating in all different years.

## Wave 2

**Additional small-group intervention to provide an opportunity to catch up**

Children who require intervention at the Wave 2 level are 'at risk' of underachievement. This stage of intervention is aimed at boosting their literacy and/or numeracy achievement levels. Children at this level do not necessarily have a learning disability, but their reading, writing and/or mathematics levels are below average. It is expected that children who receive the additional group support at this level will 'catch up' with their peers. Small group intervention may include early literacy and/or numeracy support, intervention programs or booster classes. Many of the strategies listed in Wave 1 apply to intervention at the Wave 2 level; however, their implementation will be more intensive, targeted and repetitious.

## Wave 3

**Specific targeted intervention for individual children requiring intensive support**

Students at this level require a more in-depth assessment of their literacy and/or numeracy skills in order to identify specific areas of need. They often require an Individual Education Plan (based on analysis of errors from assessment) which involves regular assessments and monitoring of progress. These students also require individualised, intensive, explicit and sustained intervention using professionally produced, carefully developed, and evidence-based programs and resources, and may receive small group support at the Wave 2 level.

Many of the recommended strategies provided below are appropriate for use across all three waves of instruction. It is, however, important to note that the strategies introduced at both Wave 2 and Wave 3 will almost certainly be of increased intensity, conducted at a slower pace, and include more opportunities for repetition and practise than when used for whole class instruction as in Wave 1. More detailed information on many of the strategies described below, in addition to recommended programs currently available, is contained on the attached USB.

| Recommended Teaching Strategies | Wave 1 | Wave 2 | Wave 3 |
|---|---|---|---|
| **Expressive Language** | | | |
| Allow extra time for students to produce an oral response after asking a question. | ● | ● | ● |
| If a student is having difficulty responding, ask a closed rather than open-ended question. | ● | ● | ● |
| If a student makes a grammatical error, repeat the sentence back correctly for them, modelling the language you want them to use. | | | ● |
| Model the desired behaviour; eg. When the student answers a question with a one-word sentence, respond by modelling back with a full, correct sentence, so that the student hears the words in the correct order. | ● | ● | |
| Tell students in advance that they will be called on. This gives students more time to compose their thoughts. | ● | | |
| **Receptive Language** | | | |
| Explicitly teach the meaning of concepts frequently used in oral and written directions (e.g. before, after, first, all). | ● | ● | |
| Teach and practise how to use memory rehearsal strategies, such as listening for the number of parts in an instruction, repeating the directions and carrying them out. | ● | ● | ● |
| Provide cues to encourage students to tune-in and attend to the instructions. | ● | ● | |
| Adjust the delivery of instructions to provide extra meaning. | ● | ● | |
| Encourage students to request clarification from the teacher or a supportive peer before commencing the task. | ● | | |
| Provide a clear transition between activities. Name the new activity/topic and explain in a few steps what will happen or be taught. Review and finish the activity by summarising what they should have learned before transitioning to the next activity. | ● | | |
| Short sentences are easier to understand than long ones. Cut one long sentence down into two or three short ones, with pauses between each one. Stick to the main point. | ● | | |
| **Phonological awareness and phonemic awareness** | | | |
| Choose programs in the early years that focus on developing the ability of students to hear: the words in sentences; the syllables in words; the onset and rime in words; and the individual phonemes that make up every word we say. | ● | ● | ● |
| Provide activities that teach alliteration and the identification and production of rhyme in the early years. | ● | | |
| Explicitly teach the phonemic awareness skills of oral blending and segmenting and extend to activities that include the manipulation of phonemes within words. | ● | ● | ● |

| Recommended Teaching Strategies | Wave 1 | Wave 2 | Wave 3 |
|---|---|---|---|
| Link spoken phonemes to written letters by providing students with opportunities to manipulate phonemes along with concrete letter forms (e.g. cut-out letters, plastic letters, or magnetic letters). Reinforce the sounds students are making when they speak, and relate these explicitly to the letters they use when they are writing. | ● | ● | ● |
| Encourage students to notice what is happening in their mouth when they make a new sound. For example, use mirrors/puppets to explore: the movement of the lips, the teeth and the tongue; the amount of air used to produce the sound; and whether or not the vocal chords are vibrating to make the sound. | | ● | ● |
| Commence literacy remediation lessons with a phonological awareness activity or game to help students 'tune in' to the sounds of spoken language (phonological awareness activities should continue beyond the pre-primary years as warm-up activities). | | ● | ● |
| Ensure that individual phonemes are modelled precisely and that students articulate them accurately. | ● | ● | ● |
| Read to children daily and expose them to a range of text types and genres. Choose high quality and inclusive literature. | ● | | |
| **Phonics** | | | |
| Choose an appropriate synthetic phonics program which is structured and systematic and includes lessons which follow the structure of review, teach, practise and apply to introduce phonemes and graphemes. | ● | ● | ● |
| Provide short, discrete, explicit phonics sessions which build on the oral foundation to teach the 44 phonemes and the way we map those sounds onto letters in order to read and write. | ● | | |
| Teach accurate decoding skills, separate from comprehension skills, in order to allow children to master decoding and move on to vocabulary and fluency development. | ● | ● | ● |
| Use decodable readers to provide opportunities for students to apply the knowledge and skills they have acquired. Provide texts containing only the phoneme-grapheme relationships and high frequency words they have been taught. | ● | ● | ● |
| Teach students to encode (spell) words as they are learning to decode to demonstrate the link between reading and spelling and the reversibility of decoding and encoding. | ● | ● | ● |
| Provide opportunities to apply phonic knowledge plus encoding (segmenting) skills through dictation using sentences containing previously taught code knowledge. | ● | ● | ● |
| Concurrently use visual and verbal strategies to teach new sound-letter correspondences. | ● | ● | ● |
| Provide small group instruction in addition to the core program provided to the whole class in the general curriculum. Ideally, small group instruction should be implemented for 20 to 40 minutes, three to five times per week and should consist of two to four students with similar abilities. | | ● | |
| Provide small group intervention that is teacher directed and includes explicit instruction with clear, corrective feedback given throughout the teaching and learning process. | | ● | |
| Build students' phonic knowledge gradually by teaching sound-letter associations starting with the most common of the 44 sounds in English. Teach first in isolation and then integrate them with other phonic combinations to help encourage skill generalisation. Provide students with many opportunities to practise and build their skills. | ● | ● | ● |

| Recommended Teaching Strategies | Wave 1 | Wave 2 | Wave 3 |
|---|---|---|---|
| Encourage students to apply phonic knowledge and phonemic decoding skills as their preferred approach to reading and spelling rather than 'whole word' or visual strategies. | ● | ● | ● |
| Spelling words should be introduced by listening to the word before the student sees the word. Encourage them to focus on the sounds in words, which can then be mapped to their letters and letter patterns. | ● | ● | ● |
| Ensure regular assessment and monitoring of students' progress. | ● | ● | ● |
| Choose an appropriate high quality program for Tier 2 or Tier 3 intervention that adheres to recommendations and evidence from research. Examples of such programs include, but are not limited to: Sounds~Write, MiniLit, Reading Tutor program (MultiLit), MacqLit, Reading or Spelling Mastery, Letters and Sounds, Alpha to Omega, and Jolly Phonics. | | ● | ● |
| Provide high quality evidence-based intervention on a one-to-one basis and with frequent sessions to students continuing to struggle even with small group work. These programs should be recognised as effective in a one-to-one high intensity intervention. For example: MultiLit (RTP); Sounds~Write; Reading Mastery (ideally three to five times per week). | | | ● |
| Use additional resources and specialised materials, such as letter tiles, magnetic letters, and cards to build or manipulate words. | | ● | ● |
| Incorporate gestures that demonstrate the blending of individual phonemes across a word from left to right in order to read words accurately. For example – in order to read the word shop from the board – point to 'sh' and say /sh/, then point to 'o' and say /o/ and then point to 'p' and say /p/. Follow this by pointing from left to right under the word and say 'shop'. | ● | ● | ● |
| Regularly review previously learnt concepts, particularly those that are not yet securely retained in the student's memory. | ● | ● | ● |
| Provide frequent and immediate error correction and feedback. | ● | ● | ● |
| **Vocabulary** | | | |
| Provide direct, explicit instruction and ample guided practice of the words selected for vocabulary instruction. | ● | ● | |
| Introduce no more than five new vocabulary words at a time for older students and one to two new words for lower primary | ● | | |
| Provide a student-friendly definition for each word or concept introduced. Where words about a story' have been selected, relate them back to the story and use the context to support understanding. | ● | | |
| Use vocabulary frames and templates, such as semantic webs and Frayer models, to develop student-friendly definitions of words. Identify examples and nonexamples of words, and ensure students discuss why they believe some concepts are examples of the word whereas other concepts are not. | ● | ● | ● |
| Provide examples of words in different contexts so students can see how a word's meaning changes and shifts. | ● | | |
| Use visual aids, word-mapping activities, word lists/charts that describe feelings, personality traits, or actions, to develop and extend students' vocabulary. | ● | ● | ● |

| Recommended Teaching Strategies | Wave 1 | Wave 2 | Wave 3 |
|---|---|---|---|
| Play vocabulary games to ensure student engagement such as: matching words with student-friendly definitions; associating selected words with students' own experiences; and extending sentence stems that include the target word. For example: The gregarious man was disappointed with the party because... | ● | | |
| Teach basic concept words (prepositions and adverbs) such as first, last, above, below, on top, behind etc. to aid students in understanding academic instructions. | ● | | |
| Develop activities that will ensure frequent and rich encounters with words, such as experimenting with selected vocabulary words in other school subjects or playing word games associated with a collection of words. | ● | | |
| Develop a system that encourages students to take their word learning outside the classroom (e.g. students are encouraged to bring in evidence of hearing, seeing or using target words). | ● | ● | |
| Preview texts to be read and pre-teach the meaning and written form of difficult vocabulary that will be encountered when reading. | ● | ● | |
| Ensure students can accurately pronounce new words in order to create a clear phonological representation (mental store) of it. Break the word into syllables for students who struggle to accurately articulate more complex words and encourage them to watch the modeller's mouth. Ask students to repeat the word 'out loud' on numerous occasions, for example: as a component of a game being played. | | ● | ● |
| Provide opportunities for multiple repetitions of the new words in varied contexts both in the short and long-term to refine understanding of each word's precise meaning. Repetition needs to occur on the day new vocabulary is learnt and for a week following the first exposure, to ensure the new vocabulary is stored in long-term, usable (expressive) memory. | ● | ● | ● |
| Once students can read accurately, encourage wide reading of a variety of text types including age-appropriate stories or information texts, wherever interest and motivation can be captured. | ● | | |
| Expose students to high quality oral language that is typical of the vocabulary and grammar of written, literate English when delivering instructions and stories. | ● | | |
| Explore meaningful parts of words (including prefixes, suffixes, roots and word compounds) and the use of contextual cues to infer a word's meaning; this allows for the development of independent analysis skills for interpreting word meanings. | ● | ● | ● |
| Read age-appropriate or motivating texts aloud to students to expose them to more sophisticated vocabulary and complex sentence structures that rarely occur in spoken language, but frequently do in written texts. | ● | | |
| **Fluency** | | | |
| Provide opportunities for 'repeated oral reading' of target word lists or short pieces of text. Students keep record of times and try to improve time over successive readings. | | ● | ● |
| Model fluent reading (read aloud) while students follow along in the text. After reading a sentence or short paragraph ask the students to 'echo read' the same passage with expression and intonation. | ● | ● | |
| Have students engage in repeated readings of texts at their independent level encouraging them to focus on intonation, flow and understanding. | ● | | |

| Recommended Teaching Strategies | Wave 1 | Wave 2 | Wave 3 |
|---|---|---|---|
| Create opportunities for oral reading practice with teacher feedback. | ● | ● | ● |
| Use a peer tutoring procedure to assist with the development of fluency of words, phrases and connected text. | ● | ● | |
| Continue reading to students with daily modelling of fluent expressive reading. | ● | | |
| Chart student's oral reading in words per minute (wpm) and monitor their progress over time. | | ● | ● |
| Ensure students become familiar with targeted high frequency words to consolidate the capacity to read connected text. | ● | | |
| Incorporate the use of software programs that focus on fluency through modelling and repeated readings (e.g., electronic talking books, Read Naturally). | | ● | ● |
| Use activities that involve timed repeated reading and chart the student's progress until the target reading rate is reached. | | ● | ● |
| **Comprehension** | | | |
| Activate prior knowledge of the content before reading a text, by previewing the information and encouraging students to make connections between what they know and what they will read. | ● | | |
| Encourage opportunities for students to ask and answer questions through the use of Bloom's taxonomy and have discussions that generate questions at higher levels. | ● | | |
| Use visual representations to help students identify critical information and concepts from their reading, such as mind maps, story outlines, sequence maps and compare/ contrast diagrams. | ● | ● | ● |
| Teach students to summarise during and after their reading in order to consolidate text information and extend classroom discussions. Students need to learn how to paraphrase. | ● | ● | |
| Include comprehension processes such as clarifying, making inferences and predicting as part of daily lessons. | ● | | |
| Focus on developing oral comprehension skills, including receptive vocabulary, knowledge of text structure and understanding of question forms, alongside reading comprehension skills and strategies. | | ● | ● |
| Target oral vocabulary, figurative language and spoken narrative to improve reading comprehension skills. | ● | ● | |
| Provide explicit teaching to develop students' knowledge of how sentences, paragraphs and texts are constructed. | ● | ● | ● |
| Model and explicitly teach strategies to self-monitor comprehension so that students can identify when the text fails to 'make sense'. Promote the re-reading of sentences, looking forward or back in the text, and inferring meaning of unfamiliar words based on context and word type. | ● | ● | ● |
| Encourage students in collaborative learning during structured reading activities. Students can take on specific roles (a) prior to reading: brainstorming prior knowledge and making predictions, (b) during reading: identify and discuss the main idea, difficult parts of the text or unfamiliar vocabulary and (c) after reading: identify questions and answers to check understanding. | ● | | |

| Recommended Teaching Strategies | Wave 1 | Wave 2 | Wave 3 |
|---|---|---|---|
| Teach students to utilise the 'KWL' strategy throughout the reading process: What do I already Know? What do I Want to learn? What did I Learn from my reading? | ● | | |
| Ensure students have receptive knowledge and use of common question forms and concepts, including 'when, where, who, how, why, which'. Begin with simple sentences as a base and then build to more complex sentences. For example: 'The boy ate the pie'. Who ate the pie? (the boy), what did the boy eat? (the pie) etc. | ● | | |
| Generate questions that can be answered by referring to the text (literal and inferential) and those that require higher-level thinking (critical analysis, interpretation, extension of ideas from the text). | ● | ● | ● |
| Teach the student to appropriately request clarification when they identify unfamiliar vocabulary or inconsistencies in written text. | ● | ● | ● |
| Teach explicitly the macrostructure of simple text types that follow a predictable format. For example, analyse a simple narrative to identify each structure element including setting (when, who, where), initiating event, problem, action, resolution and ending. | ● | | |
| Use aids such as highlighting, underlining, embedded questions, semantic feature analysis relationship charts, study guides and mnemonic illustrations, as well as explicit teaching in their use. | | ● | ● |
| **Spelling** | | | |
| Provide small group intervention in addition to the core program provided to the whole class in the general curriculum. Ideally, small group instruction should be implemented for 20 to 40 minutes, three to five times per week and should consist of two to four students with similar abilities. | | ● | |
| Provide small group intervention that is teacher directed and includes explicit instruction with clear, corrective feedback given throughout the teaching and learning process. | | ● | |
| Ensure regular assessment and monitoring of students' progress. | ● | ● | ● |
| Regularly review previously learnt concepts, particularly those that are not yet securely retained in the student's memory. | ● | ● | ● |
| Provide frequent and immediate error correction and feedback. | ● | ● | ● |
| Encourage students to identify how many syllables are in a word, what the first sound is, what the last sound is, etc. | ● | ● | ● |
| Encourage students to focus on the sounds in words by saying spelling words aloud before the students see the word. These sounds can then be mapped to their letters and letter patterns. | ● | ● | ● |
| Use additional resources and specialised materials, such as letter tiles, magnetic letters, and cards to build or manipulate words | | ● | ● |
| Introduce one or two high frequency words in a sequential manner using flash cards, matching games, etc. Encourage students to use their phoneme-grapheme knowledge and skills of blending to decode regular high frequency words. | ● | ● | ● |

| Recommended Teaching Strategies | Wave 1 | Wave 2 | Wave 3 |
|---|---|---|---|
| Draw the student's attention to the part of the high frequency word that can be decoded (this is the part of the word they already know) and any 'tricky parts' that are irregular. Explicitly teach "In this word the sound is... but we spell it like this." | ● | ● | ● |
| Develop students' knowledge of orthographic rules including acceptable letter combinations, letter sequences and the use of certain letters. | ● | ● | ● |
| Introduce homophones by explaining their different meaning, usage and spelling. | ● | ● | ● |
| Explicitly teach the impact of grammar on spelling. | ● | ● | |
| For older students, incorporate activities to develop their knowledge of word origins. | ● | ● | |
| **Written Expression** | | | |
| Teach students how to form simple, grammatically correct sentences. Explain the difference between speech fragments and complete sentences. | ● | ● | ● |
| Teach students the functions of the parts of speech (e.g. nouns, verbs, adjectives) and how they can be used to build descriptive sentences. Begin with simple sentences and expand. | ● | ● | ● |
| Provide explicit instruction on how to build complex sentences, adding clauses at the beginning, end and in the middle of simple sentences. | ● | ● | ● |
| Teach strategies that enable students to combine sentences to form well-structured paragraphs. | ● | ● | ● |
| Assist students to develop fluent spelling skills in order to reduce the cognitive demands of writing tasks. | ● | ● | |
| Teach students to identify and define key words related to their topic. Create a word bank of appropriate and interesting terms or phrases and teach the students how to use them in their texts. | ● | ● | ● |
| Analyse exemplary writing samples for specific features of the text-type, including content and structure. | ● | ● | ● |
| Teach students to use templates/scaffolds to assist with planning and constructing their written responses. Allow students to draw pictures or dictate ideas during the planning stage. | ● | ● | ● |
| Explicitly teach students all steps in the process of writing a text: planning (e.g. mind maps, dot points, graphic organisers), organising (using templates/scaffolds), writing a draft and finally editing to create a complete text. | ● | ● | ● |
| Model how to verbalise sentences, supported with visuals or actions, prior to writing them to ensure their grammar is correct and meaning is clear. | | ● | ● |
| Teach students to focus on proof-reading for one aspect at a time (e.g. sentence structure, punctuation, spelling errors). | | ● | ● |
| Consider allowing students to dictate their ideas onto a digital recorder before transcribing their dictation into writing. | | ● | ● |
| Allow students to dictate to a scribe or use assistive technology, such as iPad apps or Dragon Dictation, to transform spoken sentences into written text. This is particularly useful for students with poor spelling or laboured handwriting. | | | ● |

| Recommended Teaching Strategies | Wave 1 | Wave 2 | Wave 3 |
|---|---|---|---|
| **Handwriting** | | | |
| Encourage mature directionality (top to bottom, left to right, anticlockwise), using verbal prompts as the letter is being formed. | ● | ● | ● |
| Teach letter formation in letter 'families' (groups) organised by the way the letters are formed (e.g. the 'C' family: c, a, d, g, q). | ● | ● | ● |
| Practise forming letters in isolation (e.g. each letter) to establish automaticity, and then move to forming the letters in context (e.g. in whole words). | ● | ● | ● |
| Use dotted thirds in the early stages of writing instruction to assist students with consistent letter sizing and alignment. To be most effective, use consistent terms to refer to the different lines (e.g. head/body/tail or sky/grass/dirt). | ● | ● | ● |
| Consider increasing or decreasing the size of the lines the student is writing on, or using dotted thirds (if not already in use across the classroom) to assist with letter sizing. (If using dotted thirds, use consistent terms to refer to the different lines, as described above.) | | ● | ● |
| Encourage use of a consistent strategy to ensure spacing between words and minimal space within words (e.g. finger spacing, pen/pencil, popstick space man or rubbish truck). | ● | ● | ● |
| Use visual prompts and aids to support correct letter formation, sizing, and alignment (e.g. a green dot at the far left of the line and a red dot at the far right to encourage correct start and finish points on each line; use specialised writing paper with darker or raised lines to assist with line placement). | | ● | ● |
| Encourage a mature, efficient pencil grip by using thicker pencils, placing a dot on the pencil to show the student where to place their thumb, encouraging students to tuck their 4th and 5th pencil into their palm, and encouraging students to rest their wrist on the table while writing. | ● | ● | ● |
| For students who have not responded well to intervention for handwriting using print (unjoined) letters, consider teaching cursive writing. Cursive writing requires learning a new motor plan, which may be easier than trying to change an existing, incorrect way of writing. | | | ● |
| For students who have persistent and enduring handwriting difficulties, allow them to write in a font (whether print or cursive) that is most effective and which proves to be most legible for them (and others). | | | ● |
| **Number Work** | | | |
| Choose an appropriate evidence-based numeracy program which is structured and systematic and that logically builds on existing skills and returns to previously mastered skills to ensure understanding. Instruction in mathematics should emphasise conceptual understanding, and not just procedural knowledge. | ● | | |
| Use concrete materials and manipulatives (Cuisenaire rods, MAB blocks, counters) to develop students' concept of number. Students should gradually transition towards using diagrams and pictures in place of concrete materials, and eventually receive an introduction to the symbol system that will enable them to represent number work in a more abstract way. | ● | | |

| Recommended Teaching Strategies | Wave 1 | Wave 2 | Wave 3 |
|---|---|---|---|
| Concurrently use visual and verbal strategies to teach maths concepts. | ● | ● | ● |
| Provide opportunities for students to apply their knowledge to real life situations, as well as abstract number problems. | ● | | |
| Explicitly teach the language of maths and what the function of each word is. | ● | | |
| Use questioning and ask students for explanations of thinking strategies and procedures, estimation of results etc. | ● | | |
| Foster positive attitudes towards number work, and numeracy more generally. | ● | | |
| Play games that teach and reinforce number concepts. | ● | | |
| Provide small group instruction, in addition to the program provided at a whole-class level. Small group instruction should be implemented for 20 to 40 minutes, three to five times per week. | | ● | |
| Vary instructional strategies, using different manipulatives, examples and visual aids as necessary to assist student's understanding. | | ● | |
| Model concepts using concrete materials, and allow students to use concrete materials for longer periods of time rather than rushing into the transitional and abstract phases. | | ● | |
| Monitor students' progress and understanding in order to determine next steps in intervention. | | ● | |
| Provide a high number of opportunities to practise skills. | | ● | |
| Have students use calculators and/or addition and multiplication grids for computations. | | ● | |
| Teach foundational knowledge and proceed in small progressive steps with frequent repetition of material and practise of skills until they appear to be mastered. | | | ● |
| Prepare multiple representations of the same information (e.g. numbers can be represented with dots, objects, number and name). | ● | ● | ● |
| Limit memory demands through the use of memory aids such as mnemonics and use of concrete manipulatives. | | | ● |
| Check regularly that students have remembered and retained previously learnt concepts and material, and 'put back'/review any knowledge which has been forgotten. | | | ● |
| Build up reasoning strategies for when faced with tasks that require a long sequence of steps due to memory problems. | | | ● |
| Provide substantial opportunities for students to practise performing newly learned skills. | ● | ● | ● |
| Encourage students to verbalise their thinking as they work through maths problems in order to identify any errors and monitor the stage they are at. | ● | ● | ● |
| Prepare scaffolding questions to help students complete complex, multi-step tasks. | | ● | ● |

# Selecting a successful intervention program

There are many intervention programs available to use, some of which are produced commercially and others that are freely available on the internet. It is important to note that the cost of the program does not necessarily determine the effectiveness. The following criteria are associated with programs most likely to achieve successful outcomes.

| | |
|---|---|
| **Evidence-based** | It is important that the program is based on current research evidence and that its effectiveness is supported by independent reviews (i.e. not evaluated solely by the program manufacturer). Structured synthetic phonics programs (SSPPs) are considered to be evidence-based because they have been the subject of systematic reviews. |
| **Explicit and direct instructional methods** | Content is taught clearly and directly, not in an embedded or implicit manner. Explicit instruction directs student attention towards specific learning in a highly structured environment. See additional information on following page. |
| **Incorporates dual coding** | Programs that involve the effective combination of language (either spoken or written) and visual images (e.g. pictures, icons, diagrams, displays, slides, graphic organisers etc.) to deliver information can assist students to remember information and consolidate learning. |
| **Cumulative sequence** | Builds on what has already been learned and previous learning receives further practice. |
| **Sequential** | A prescribed sequence of learning targets presented in small steps. |
| **Repetitive** | Regular systematic review of concepts and over-learning to ensure learning is retained in long term memory. |
| **Systematic** | Concepts and skills are taught in a step-by-step manner. For example, in a structured synthetic phonics program, a complete set of phoneme-grapheme relationships are taught sequentially, cumulatively and systematically. |
| **Appropriate pace** | It is important to introduce concepts and skills in small steps but at a reasonable pace. Each component is taught on its own with ample opportunity for practice. In subsequent sessions (preferably daily), previous learning is reviewed, new concepts and skills are taught, and – again – ample opportunity for practice is provided. |
| **Cover all areas of instruction** | For example, possible areas for literacy remediation include: phonemic awareness, phonics, decoding, fluency, comprehension, spelling, grammar, sentence structure, and vocabulary. |
| **Assessment** | Regular ongoing assessments of concepts taught to ensure the student is provided with instruction, resources and activities at the right level. |

# The components of effective instruction

Research indicates that the most effective teachers ensure students have acquired, rehearsed and connected knowledge effectively and efficiently, and incorporate the use of hands on activities once students have learned the basic material.

*(Rosenshine, 2012)*

These component steps of acquiring, rehearsing and reviewing are critical to improved rates of achievement. Regularly reviewing material strengthens the connections between prior, current and future learning. It helps students to recall words, concepts and procedures effortlessly and automatically. In order to develop a skill to mastery students will sometimes require thousands of hours of practice. Reviewing the knowledge and concepts relevant to a particular area of learning prior to a lesson not only assists students to practise more successfully, but also assists any student with working memory weaknesses.

Successful teachers restrict the amount of material they present at any one time and ensure that guided practice is provided. This guidance should involve step by step modelling of each component skill with clear and concise explanations and feedback being provided.

The idea that students have unique learning styles has been a popular theory for many decades. However, there is little evidence to indicate that individuals have an innate preference for receiving new information via a particular sense (e.g., visual, auditory, or kinaesthetic). Another instructional approach that has maintained popularity is that of “multi-sensory” learning. Whilst providing information to students in various formats is likely to be beneficial, “multi-sensory” teaching approaches are not well validated in current research.

Students need both: to engage in a significant amount of practice; and, to experience a high rate of success throughout the time they are practising. If the student is not experiencing a high rate of success throughout this period they may be rehearsing and retaining errors; these can then be very difficult to shift. Explicit instruction provides students with frequent practice and ongoing success.

## Explicit instruction

Hollingsworth and Ybarra (2009) describe a number of instructional practices that underpin explicit instruction. These include:

- making the learning objective clear;
- reviewing and incorporating prior learning;
- teaching students both the underlying concepts and the skills required to achieve the learning objective, in a pre-determined step-by-step manner;
- ensuring students understand the importance of the lesson;
- providing extensive guided practice – working with the students until they have an understanding of the concepts, and are able to master all component steps;
- reviewing the goal to ensure that it has been achieved; and,
- providing opportunities for independent practice of the acquired skill.

In order to deliver explicit instruction effectively teachers must: explain concepts and skills carefully and precisely from the outset; problem-solve by 'thinking out loud' so that students can learn how the teacher decides on a particular course of action; check for understanding (CFU) frequently – providing immediate targeted feedback; and, make use of meaningful objects to explain content and support learning.

## Strategies that will improve learning outcomes for all students

Research indicates that there are a number of effective strategies that will improve the learning outcomes for all students, not just those with learning disabilities. Detailed below are the eight teaching and assessment strategies considered to be highly effective in supporting and enhancing learning and academic outcomes of students within the classroom.

| Strategy | How to implement | Example of Resources/Approaches |
|---|---|---|
| **High expectations** | • Articulate a belief that all students can achieve improved academic levels<br>• Do not 'dumb down' the curriculum, but rather encourage and support students to set high personal learning goals<br>• Maintain an expectation that students can achieve in line with their potential<br>• Use appropriate resources to provide students with access to the same material | • Provide material in alternative formats (text, audio, video) if required<br>• Discuss goals with the students in advance, making expectations clear<br>• Ensure students are aware of the steps required to achieve goals<br>• Provide scaffolding and feedback to ensure success |
| **Ensure access to curriculum** | • Plan at a whole-school and classroom level for every student to be able to participate and learn<br>• Make adjustments to ensure students are able to engage with the curriculum and minimise barriers to learning<br>• Use explicit teaching methods and scaffolded learning, as well as offering multiple means of representation, engagement and expression | • Alternative methods to access curriculum content, such as e-books, video, assistive technology (voice to text/ text to voice software)<br>• Provide additional time to access material or complete an examination or assessment task<br>• Provide summaries of teaching content, and glossaries of new terms<br>• Provide a range of tasks for students to choose from |
| **Reduce task into small 'chunks'** | • Do not present too much material, particularly new material, at once as this is likely to overwhelm students<br>• Break down new skill sets, concepts and tasks into small clear achievable steps that need to be taken in order to achieve the set objectives<br>• Proceed through the task on a step-by-step basis and in such a way that each step is mastered before the next step is introduced<br>• Provide immediate corrective feedback and reinforcement to ensure students have the skills and knowledge to achieve at each step | • Teacher or peer modelling of the steps required to complete the task<br>• Provide an example of the finished piece of work so that expectations are clear<br>• Ask students to complete smaller "chunks" that build together to complete the larger task |

| Strategy | How to implement | Example of Resources/Approaches |
|---|---|---|
| **Teach to mastery** | • Organise curriculum material into short units and create formative assessment for students to take on completion of each of the units<br>• Require that students are to 'master' one set of lessons before they proceed onto the next<br>• Unless students have attained mastery there is a danger that weaker students will fall behind when the next set of lessons is taught<br>• When compared with students in traditionally taught classes, students in well-implemented mastery teaching/learning classes have been consistently found to reach higher levels of achievement and develop greater confidence in their abilities | • Use of direct instruction<br>• Use of explicit, structured, cumulative programs at both a whole-class and small group/one-to-one level; e.g., Jolly Phonics, Letters and Sounds, Sounds~Write, MultiLit, Spelling Mastery, Elementary Maths Mastery.<br>• Ensure systems are in place for ongoing monitoring of individual student's progress |
| **Support/ scaffolding** | • Provide scaffolds and support when concepts and skills are first introduced to students, and gradually withdraw as students become more competent.<br>• Allow access to scaffolds for weaker students and when a particularly difficult problem/task is encountered<br>• The provision of scaffolds and support assists students to achieve their learning goals and reduces anxiety | • Teacher modelling of the steps required to complete a task<br>• Cue cards, checklists, concept maps and writing templates/guides<br>• A model of the completed task against which students can compare their own work<br>• Use of assistive technology (e.g. electronic spellchecker, literacy software programs)<br>• Provide the opportunity for students to receive feedback on drafts of assignments, or discuss outlines |

| Strategy | How to implement | Example of Resources/Approaches |
|---|---|---|
| **Two way feedback** | • Repeatedly use visual and verbal strategies concurrently to teach new concepts and skills<br>• Feedback should explicitly communicate about some aspect(s) of the students' performance relative to a specific target criteria and provides information to help students progress in meeting those criteria<br>• Feedback should be given at a time and frequency that allows it to be useful to students (e.g. immediately following completion of a task)<br>• Check for understanding by asking students whether they have understood a specific teaching point<br>• Ask students about quality of teaching – are they learning from the way in which materials and concepts are presented? Are there things that could be done differently? | • Provide detailed written feedback on assignments, projects, tests<br>• Use a marking grid that offers specific feedback against a pre-determined criteria<br>• Offer oral feedback to students outlining specific ways in which they could improve their performance<br>• Provide examples of high quality responses/performance and clarify what makes these examples high quality<br>• Ask students for oral feedback on performance<br>• Use questionnaires to gather information on effective or useful teaching styles and what areas could be approached differently |
| **Revisit/ repeat/ reinforce** | • Provide multiple opportunities for students to engage with new concepts and skills through a variety of mediums (visual, auditory, kinaesthetic)<br>• Key statements, concepts and instructions should be repeated and/ or highlighted in some way<br>• Clear, explicit links should be made between new learning and previously learnt material in order to aid understanding<br>• The more curriculum material is revisited, repeated, and reinforced, the stronger the neural connections to this knowledge become and the more easily accessible it is | • Use a variety of teaching styles and methods including visuals, hands-on materials, and verbal explanations<br>• Use repeated teaching methods, rehearsal of tasks, and intermittent practice<br>• Have students summarise learnt material or repeat directions or procedures<br>• Stop and check for students' understanding of material presented during lessons |
| **Differentiate assessment** | • Make adjustments to and modify assessment tasks for individual students to cater for different learning needs.<br>• Consideration should be given to the functional impact of the student's difficulties on their learning, following which alternative assessment strategies can be considered | • Provide alternative modes of assessment<br>• Allow extra time on examinations to read and analyse questions, organise thoughts, plan answers, and sequence material |

# Accommodations

Students adversely affected by learning disabilities are entitled under the Disability Discrimination Act, 1992 (DDA) to both a differentiated curricula and differentiated assessment. The aim of the DDA is to ensure that all students are provided with access to the curriculum and are given the opportunity to demonstrate their skills, knowledge and understandings, on the same basis as their peers.

The Australian Disability Standards for Education (2005) provides guidance to teachers, school administrators and parents on their rights and responsibilities with respect to the DDA.

## Accommodations include:

- Adaptations and modifications of classroom practices (teaching style, materials used, speed of delivery, method of teaching and the use of assistive technology)
- Strategies that do not reduce educational standards and requirements
- The use of alternative assessment procedures which take into account students' needs

Without accommodations, students will not be able to access the curriculum and will consequently learn less and less than their peers, they will not be able to demonstrate their skills and understandings, and they are more likely to experience a high level of frustration and anxiety; reducing their chances of learning even further.

## Useful Support Strategies

When considering the number and type of accommodations that each individual student requires, it is important to consider a number of factors.

1. Every student is different. The strategies that are useful for one student may not be as useful for another. Careful consideration of the individual profile of strengths and difficulties is required.
2. The type and level of accommodation needed by a student is likely to change over the course of their education. A younger student may need more support in developing and accommodating for early reading and spelling difficulties. As that student progresses through school and there is a higher demand on writing, provision of specific support in the areas of written expression, organisation and comprehension may be more suited.
3. The use of assistive technology is only as good as the student's familiarity with the software/ hardware and the level of ease with which they are able to use it. Assistive technology does not suit everyone.

## What do we mean by universal design?

The concept of universal design comes from architecture where it is recognised as essential to design buildings that will be accessible to everyone, including people with disabilities. Many of the design features used are viewed as universally positive, such as automatically opening doors and ramps into buildings. The concept in education is the same. Curricula, delivery methods and assessment should be designed in such a way that all students can participate and benefit.

# Examples of effective accommodations

The following examples of accommodations are provided as a guide for teachers. Additional resources and information sheets can be found on the attached USB.

**"Maintaining a Universal Design for Learning approach allows me to address the fundamental question faced by all educators in all settings: Can everyone in the class access the content I am delivering? This is just as relevant in a higher education environment, as it is in early childhood settings. If we want all our students to learn – we need to mix it up and cater for the whole class."**

*Dr John O'Rourke, Senior Lecturer ECU School of Education*

## Working Memory

| Area of weakness | Accommodations |
|---|---|
| **Difficulty noted in:**<br>• **Retaining information**<br>• **Processing lengthy task requirements or instructions** | • Parents and teachers should be aware of any identified or suspected difficulties in working memory<br>• Structure instructions in a clear, concrete format by breaking them into small steps. Include visual prompts and a hands-on demonstration rather than relying on the student's memory for task instructions<br>• Check that students have understood all verbal instructions by asking them to explain or repeat task requirements<br>• Encourage the development of a diary system to set reminders for routine tasks/assignments and teach students how to use this effectively<br>• Encourage students to seek clarification or request information to be repeated in a different way by classmates or the teacher<br>• Highlight or clearly define what information the student needs to gain from a text prior to reading<br>• Rehearse steps or pre-learn strategies for complex tasks<br>• Underline or highlight key pieces of information while reading text<br><br>*For further information or suggestions, see tip sheet on Working Memory contained on attached USB* |

## Processing Speed

| Area of weakness | Accommodations |
|---|---|
| **Slow visual processing speed** | • Use a timer to help the student keep track of the time when working<br>• Provide additional time to complete work<br>• Rehearse steps or pre-learn strategies for complex tasks<br><br>*For further information or suggestions, see tip sheet on Low Processing Speed contained on attached USB* |

## Reading

Students with difficulties in reading comprehension, reading fluency and reading speed are significantly disadvantaged in the classroom, especially once the reading demands increase in upper primary and secondary school. The following accommodations are designed to reduce the impact of poor reading skills.

| Area of weakness | Accommodations |
|---|---|
| **Difficulties with reading comprehension, reading fluency and reading speed** | • Use story maps to help the student gain meaning from passages<br>• Highlight key words or phrases in the text while reading. Identify and teach those words to the student with which they are not familiar before introducing a text containing those words<br>• Assist the student to determine what information would be preferable for them to gain from a text prior to reading<br>• Teach the use of 'think-aloud' reading comprehension strategies<br>• Ensure that print is not the only source of information for students<br>• Enlarge print or change the font and line spacing. Number the lines and paragraphs in a text and give specific reference to the location of information<br>• Provide extra reading time<br>• Avoid asking students with reading difficulties to read out loud if doing so embarrasses them<br>• Use pair or group discussions to complete revision exercises<br>• Set practical tasks instead of using tests requiring fluent reading skills<br>• Provide alternatives to reading passages, such as using illustrations for interpretation of subject content<br>• Encourage the use of assistive technology or ICT to reduce the burden of reading (e.g. audiobooks, text to voice software, reading pens and video recordings to support and illustrate text content)<br>• Arrange extra time for students who have an SLD in reading to complete a test<br>• Provide examination questions in a tape recorded format so students can listen to the questions<br>• Keep written questions and instructions short<br><br>*For further information or suggestions, see tip sheets on Reading and Assistive Technology contained on attached USB* |

## Oral Language

| Area of weakness | Accommodations |
|---|---|
| **Poor language comprehension** | • Teach the use of visual aids (such as Venn diagrams, concept maps, or spider maps) to explore what is already known about a topic and to assist with linking verbal information in a visual manner<br>• Encourage students to seek clarification or request information to be repeated in a different way by classmates or the teacher, and respond positively when a request is made<br>• Allow the use of a clarifier to define words or reword questions contained within examinations and tests<br><br>*For further information or suggestions, see tip sheet on Oral Language Difficulties contained on attached USB* |
| **Poor expressive language** | • Adapt assessment materials to include multiple choice and short-answer questions<br>• Avoid speaking tasks if alternate assessment is available<br>• Provide visual clues to help students order ideas effectively before expressing them<br><br>*For further information or suggestions, see tip sheet on Oral Language Difficulties contained on attached USB* |

## Spelling

Spelling difficulties have the potential to significantly impact a student's writing capacity and often result in less sophisticated written vocabulary and longer writing times.

| Area of weakness | Accommodations |
|---|---|
| **Difficulties with using effective spelling strategies and poor orthographic processing** | • Allow the use of a spell check on the word processor or a hand held spell checker when spelling is not the area of assessment<br>• Allow content knowledge to outweigh spelling in written expression tasks<br>• Provide a word bank or glossary of terms relevant to the topic<br>• Encourage the use of assistive technology when the purpose of the assessment is not spelling (e.g. word prediction software, talking spell check)<br><br>*For further information or suggestions, see tip sheets on Spelling and Assistive Technology contained on attached USB* |

## Written Expression

| Area of weakness | Accommodations |
|---|---|
| **Delays in written expression ability that are preventing the demonstration of skills and knowledge** | • Provide extra writing time<br>• Provide alternative modes of assessment such as oral work, illustrations, multiple choice format as a substitute for a long written assignment<br>• Provide a framework for extended writing tasks and model different types of subject writing<br>• Issue writing guidelines, templates, and paragraph headings to support the structure of extended writing<br>• Use mind mapping, bullet points, etc. to help with planning and structure<br>• Encourage students to work in note form, concentrating on key words or terms<br>• Provide access to a computer for written work and make sure that editing features and the spellchecker are used<br>• Allow rests when extended writing is required<br>• Allow the use of technological aids such as spellcheckers, word processing, planning tools and voice-activated software for writing tasks.<br>• Permit the use of digital audio recorders to be saved as voice files or transcribed later<br>• Provide clear and explicit feedback on errors in writing and suggest possible corrections/ amendments for redrafting<br>• Arrange extra time for students who have an SLD in written expression to complete a test<br><br>*For further information or suggestions, see tip sheets on Written Expression Difficulties and Assistive Technology contained on attached USB* |

## Handwriting

| Area of weakness | Accommodations |
|---|---|
| **Handwriting difficulties** | • Allow extra time for writing tasks or reduce the amount that needs to be written<br>• Allow student to take breaks when writing so they can put pencils down and shake or stretch their hands<br>• Provide a template or blank copies of diagrams, charts, etc. for completion rather than asking the student to create one from scratch<br>• Allow alternatives to hand-written responses; e.g. use of a computer, a scribe, or a digital recorder<br>• Do not penalise a student with handwriting difficulties for poor presentation of work or spelling<br>• Teach strategies for improving handwriting skills where possible<br>• Limit the need for draft copies, or have the student type their final copy instead of re-writing it<br>• Allow students to write with pens or pencils of their choice<br>• Allow students to write smaller or larger depending on their preference<br><br>*For further information or suggestions, see tip sheets on Handwriting Difficulties and Assistive Technology contained on attached USB* |

## Copying Information

| Area of weakness | Accommodations |
|---|---|
| **Difficulty copying information correctly, accurately and with comprehension** | • Reduce the amount to be copied across all subject areas by providing the information in another form, such as typed notes, an audio copy of the information, or a photocopy of another student's notes<br>• Check the student's copying and correct any errors in the accuracy of the information<br>• Notes on the board can be written with lines in alternating colours to aid the student with keeping their place<br>• Do not expect a student to stay back in class to finish copying information<br>• Allow students to take a photo with an electronic device (e.g. iPad, iPhone) |

## Mathematics

| Area of weakness | Accommodations | |
|---|---|---|
| **Difficulties with conceptual understanding and procedural knowledge in mathematics, and poor understanding maths vocabulary** | • Create word walls, word banks, and other resources to help with vocabulary terms for mathematics<br>• Make problems easier to understand by revising sentences to be shorter and more direct<br>• Clarify and re-word directions to ensure understanding of key steps. Identify essential vocabulary and decide on common terms to have consistency across the grade(s)<br>• Allow the use of a calculator and computer software programs (e.g. Numbershark)<br>• Use graph paper to assist in organisation of digits when writing<br>• Adjust the level of difficulty by reducing the complexity of tasks or using friendlier numbers<br>• Change the sequence of problems on an assessment to start with easier ones | • Reduce the number of problems on a page and provide more room for the student to show their work<br>• Allow the use of manipulatives to assist with visualising maths concepts<br>• Provide a times table chart to refer to during mathematical calculations and multi-step problems<br>• Provide a list or diagram of steps in a mathematical process for the student to refer to<br>• Arrange extra time for students who have an SLD in mathematics to complete a test<br><br>*For further information or suggestions, see tip sheet on Mathematics contained on attached USB* |

## Attention and Concentration

| Area of weakness | Accommodations |
|---|---|
| **Difficulty sustaining attention and completing set tasks** | • Start lessons with a task that students are able to complete successfully then increase the task demands incrementally<br>• Use peer-assisted learning to increase active engagement in tasks<br>• Divide assignments into manageable parts<br>• Have a set procedure for the class<br>• Maintain structure within the classroom<br>• Use a signal to focus or refocus attention<br>• Provide visual aids to reinforce what has been said orally<br>• Provide concrete manipulative materials<br>• Provide direct instruction<br><br>*For further information or suggestions, see tip sheet on Attention and Concentration contained on attached USB* |

## Organisation and Planning

| Area of weakness | Accommodations |
|---|---|
| **Difficulty planning and organising tasks, and working independently** | • Provide additional scaffolding and structure for assignments and in-class activities<br>• Provide clear guidance on the steps required to organise and complete tasks<br>• Use visual aids (e.g. structured writing guides or visual checklists) so that students can check they have followed the correct sequence, or completed the requirements of a given task<br>• Use pictorial cues to assist students with remembering the items they require for school or specific tasks<br>• Monitor the notebook/diary system, particularly homework assignment pages.<br>• Teach students to break assignments into steps and help them to organise their work and get started<br>• Provide a weekly time for cleaning out desk and reorganising materials<br>• Colour code materials and resources. This can be linked to colour coding class/student schedules<br><br>*For further information or suggestions, see tip sheet on Organisation and Planning contained on attached USB* |

## Anxiety

| Area of weakness | Accommodations |
|---|---|
| High anxiety in test situations | • Allow more time for written assignments<br>• Allow the test to be taken in a different environment<br>• Give shorter and more frequent tests<br>• Provide additional practice of tests and rehearsal of task requirements/strategies<br>• Place fewer questions or problems on a page and enlarge print<br>• Reduce the number of items in matching tests<br>• Give multiple-choice tests instead of objective tests<br>• Be aware of overall test readability<br>• Discuss the test format ahead of time<br>• Give additional prompting and structure during the test<br>• Summarise the most important ideas with concept cards<br>• Review material with concept cards<br>• Encourage the use of relaxation and anxiety management strategies. Support and guidance regarding these can be obtained from the School Psychologist |

## Study Skills – Note Taking

| Area of weakness | Accommodations |
|---|---|
| Difficulties summarising and revising learnt material | • Provide a printed or electronic summary of the information to be presented in class in advance<br>• Identify a partner or classmate whose notes can be photocopied<br>• Allow the use of a digital or tape recorder so that students can record important information<br>• When dictating, spell out any technical or difficult words for all students<br>• Provide summaries of chapters of books to support students' note taking skills<br>• Provide a framework for note taking to help students organise their own notes<br>• Teach the use of bullet points and summaries for note taking<br>• Allow the use of mind maps, charts, and diagrams for note taking<br>• Allow the student to use a computer to type notes if touch typing skills are well developed<br>• Encourage the student to highlight important information in text prior to note taking |

"Once I was given the opportunity to use a 'talk-to-text' program in many of my subjects, my academic results improved dramatically!"

**Katie**
Aged 16 years

# Use of assistive technology

When considering the processing difficulties frequently evident in the profiles of students with learning disabilities, it is not surprising that the challenge to participate becomes even more difficult as the demands of schooling increase.

Whilst remediation and good quality literacy and numeracy instruction go some way towards improving students' underlying skills, the use of assistive technology not only allows students the opportunity to improve their understanding and engagement in the learning process, it also allows them to better demonstrate their skills and knowledge more independently and at a level more commensurate with their overall understanding.

## What is assistive technology?

The term "Assistive Technology" is usually applied to electronic devices and computer hardware and software that increase or maintain the capabilities of an individual with a disability. Assistive technology (AT) includes those devices that assist all students, regardless of the presence of a disability, and those devices that have been specifically designed to assist individuals with a disability (adaptive technology).

For students with an SLD, the opportunity to use AT to support and reinforce the learning process along with reducing the functional impact of their learning disability, means that their overall level of success is greatly improved. As with other classroom accommodations, the purpose of using AT is not to provide the student with an advantage but rather, to reduce some of the burden of lower literacy or numeracy proficiency.

All students, including those without a learning disability, can benefit from using some of the assistive technologies available. AT can be used in a variety of ways within the classroom environment to support the general teaching process and to provide additional remedial support as it allows for repetition and rehearsal of learnt skills.

The term "Assistive Technology" is usually applied to electronic devices and computer hardware and software that increase or maintain the capabilities of an individual with a disability.

## What are some examples of assistive technology?

Assistive technologies include, but are not limited to, the following:

| | |
|---|---|
| **Text to Speech** | Allows any electronic text that can be highlighted to be read aloud by a computer or mobile device. |
| **Reading Pens** | Allows students to scan text in print mediums and convert it into voice. Some versions include an in-built dictionary that will display the definition of a word and read it aloud. |
| **Voice Recognition** | Allows a computer or enabled hand held device to be trained in how you speak, and once trained, to write down everything you dictate into any active textbox. |
| **Digital Recorders** | Enables students to recall, plan, practise speeches, practise pronunciations, and dictate information. |
| **iPads and Tablets** | Provides a multisensory learning experience and there are a large number of apps that can be used to support students across a variety of learning areas. |
| **Electronic Spell checkers** | Uses phonetic patterns to suggest words for a poor speller when a computer is not available. |
| **Word Prediction software** | Uses phonetic and grammar patterns to suggest words as each letter/ word is typed. |
| **Visual Search Engines** | Displays a picture of a page rather than the text headings or written content of a webpage. |
| **Literacy Specific Software** | Used to support reading and writing. Includes templates for writing, graphic organisers, grammar checkers, and study tools. |
| **Educational Software** | Provides support for the development of phonological awareness and phonics. |
| **Electronic Resources and books** | Can be used with reading software and mp3 players/iPods. |

Some of the concerns raised by teachers, parents and students about the use of AT include: the cost of purchasing multiple software titles; the need to switch from one application to another; and, the lack of integration between the applications recommended and those used by the school. Companies such as Microsoft and Apple have responded to these concerns and have embedded a variety of different AT tools into their products.

The use of multimedia and electronic information allows students with reading disabilities to improve their comprehension of a topic or idea without being dependent on their reading ability.

**Examples of effective AT options for the student with a learning disability**

- The use of multimedia and electronic information allows students with reading disabilities to improve their comprehension of a topic or idea without being dependent on their reading ability
- Computers and word processors can reduce the burden of editing and re-writing assignments, making the writing process faster and allowing students to work more independently
- A photo taken with any device that has a camera may be used to replace copying information from a whiteboard by hand. This information can be stored digitally and in some cases converted to text
- An MP3 recorder on any device can record ideas and help overcome short term memory difficulties

**When should Assistive Technology be introduced?**

Some students will find it very beneficial to use assistive technology and educational software to support the early development of literacy skills and letter-sound awareness. Other students will find that their need for AT does not emerge until much later in their education.

Matching students' needs with the use of assistive technology should happen when the need arises.

Early on in Primary school, students are more likely to benefit from the use of educational software and online learning programs to help support reading and spelling development. Students at this level are also likely to benefit from the multisensory nature of iPads, tablets and the interactive whiteboard.

In Upper Primary and Secondary school, the use of AT may be extended to the provision of assistive technology to accommodate for the difficulties that the student may be experiencing. Software such as Text to Speech allows for better comprehension of information and independent learning, whilst software to support the writing process can be introduced to assist with the high demand on writing in the later years of school.

Technology to assist with organisation, study skills, time management and memory can be introduced at any stage.

# What is a Learning Disability-Friendly school?

An LD-Friendly school is essentially a school community that welcomes, values, and includes all students, regardless of their level of ability or capacity to engage successfully with the school curriculum.

These schools ensure that they have appropriate policies and practices in place that will result in all students being able to participate on the same basis as their peers, and that will enable all staff members to feel confident and well-prepared in their endeavours to successfully support students affected by learning disabilities.

**LD-Friendly schools are schools which:**

- Recognise the effect of a learning disability on student achievement and wellbeing
- Actively improve the support of students with learning disabilities in the school
- Value the professional knowledge of teachers and support staff through a commitment to the provision of ongoing professional learning opportunities in the areas of learning disability and literacy
- Develop policies and practices to ensure that students with learning disabilities receive high-quality teaching and appropriate intervention and accommodation
- Implement and ensure adherence to such policies
- Recognise that, within the LD-Friendly school, everyone has a role. These roles must be resourced and supported appropriately

There are a number of existing LD-Friendly school models that are comprehensive and easily accessible. An excellent example is provided by the International Dyslexia Association.

See the IDA guide to Dyslexia in the Classroom: What Every Teacher Needs to know at **dyslexiaida.org/wp-content/uploads/2015/01/DITC-Handbook.pdf**

# Appendices

APPENDIX 1

# Contents of attached USB

**Full Copy** – Understanding Learning Difficulties: A Practical Guide (revised edition)
**Full Copy** – Disability Standards for Education 2005

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**Information Sheet 1** – Structured Synthetic Phonics: A Guide for Teachers and Parents
**Information Sheet 2** – Examples of High Quality, Evidence-Based Phonics and Resources
**Information Sheet 3** – Developing Phonemic and Phonological Awareness Skills
**Information Sheet 4** – Alphabet Activities
**Information Sheet 5** – Reading Remediation for Lower Primary Students
**Information Sheet 6** – Reading Remediation for Upper Primary and Lower Secondary Students
**Information Sheet 7** – Reading Remediation for Older Students and Adults
**Information Sheet 8** – Assisting Reading Development: A Guide
**Information Sheet 9** – Spelling Remediation for Lower Primary Students
**Information Sheet 10** – Spelling Remediation for Upper Primary and Lower Secondary Students
**Information Sheet 11** – Spelling Remediation for Older Students and Adults
**Information Sheet 12** – Phoneme Grapheme Mapping
**Information Sheet 13** – Strategies to Support Students with Oral Language Difficulties
**Information Sheet 14** – Wonderful Words: Building Vocabulary and Phonological Awareness
**Information Sheet 15** – Explaining the Link Between Speech and Literacy Skills
**Information Sheet 16** – Written Expression Remediation for Primary Students
**Information Sheet 17** – Written Expression Remediation for Secondary Students and Adults
**Information Sheet 18** – Writing Exam Essays
**Information Sheet 19** – Hamburger Writing Model
**Information Sheet 20** – Improving Handwriting and Pencil Grasp
**Information Sheet 21** – Strategies to Address Letter Reversals
**Information Sheet 22** – Remediation for Mathematical Difficulties
**Information Sheet 23** – Resources to Support Numeracy Development
**Information Sheet 24** – Strategies and Accommodations to Support Mathematical Difficulties
**Information Sheet 25** – Low Processing Speed in Primary School Students
**Information Sheet 26** – Low Processing Speed in High School Students and Adults
**Information Sheet 27** – Strategies to Support Poor Auditory, Visual and Working Memory
**Information Sheet 28** – Support for Individuals with Working Memory Difficulties
**Information Sheet 29** – Remediation Strategies for Students with Orthographic Processing Difficulties
**Information Sheet 30** – Attention and Concentration
**Information Sheet 31** – Accommodations for Handwriting Difficulties
**Information Sheet 32** – Classroom Accommodations for Students with Learning Difficulties and Disabilities
**Information Sheet 33** – Accommodations for Older Students and Adults
**Information Sheet 34** – Accommodations for Adults to Help at Work
**Information Sheet 35** – Accommodations for Adults to Help with Training
**Information Sheet 36** – Computer Software and Assistive Technology for Lower Primary Students
**Information Sheet 37** – Computer Software and Assistive Technology for Upper Primary and Lower Secondary Students
**Information Sheet 38** – Computer Software and Assistive Technology for Older Students and Adults
**Information Sheet 39** – Recommended Literacy Apps for Primary School Students

**The information on the USB can be photocopied for school purposes only.*

APPENDIX 2

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We suggest that the contents of the attached USB be downloaded so that it can be accessed whenever it is required. The information sheets may be photocopied for school purposes only.

## Would you like more information?

There are SPELD organisations in almost all Australian States and Territories offering a wide range of support and educational services to families, schools and allied professionals. Please go to the AUSPELD website for further information, or to locate the contact details of your nearest SPELD.

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