

A resource for schools to support children who have or may have Special Educational Needs

Chapter: The importance of an integrated approach when learning to spell

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The first half of this chapter explains why some children find learning to spell difficult and the second half draws on my Ph.D research findings to explain what can be done about this within a whole class approach.

Why do some children experience difficulties learning to spell?

If the primary method of teaching children to spell is an alphabetic strategy, children who are insensitive to orthographic patterns when reading are seriously disadvantaged. To come to a common understanding of what we mean by orthographic knowledge, it is essential to make a clear distinction between alphabetic knowledge and orthographic knowledge. Alphabetic knowledge relates to the letters of the alphabet and the phonemes they represent. Because English has multiple mappings between graphemes and phonemes, orthographic knowledge is required to know if a spelling 'looks right'. A representation of the word, or key word parts, must already be in memory to know if the correct letters have been chosen from the range of plausible alternatives, for example, 'because' not 'becos'.

Orthographic knowledge, therefore, is knowledge of clusters of letters that represent phonemes blended together as units, that is patterns in print at the 'onset and rime', 'syllable' and 'whole word' level. Orthographic knowledge is also identifiable in parts of words that cannot be identified by sound: for example, double letters or silent letters or individual phonemes that can be represented by a number of different letters; a further example is the 'cuh' sound which can be represented by 'c' or 'k' at the start of a word or 'ck' at the end of a word. Good readers who are good spellers can detect patterns in print and learn about spelling rules and regularities implicitly from their reading experience, without being taught these rules. This is unlike good readers

who are insensitive to orthographic patterns, and do not benefit from frequency sensitivity when reading (*good readers / poor spellers*). Children with dyslexia have been found to have an implicit learning deficit meaning they will require explicit instruction to develop orthographic knowledge so that they can capitalise on the beneficial role of orthographic patterns and sequences in learning to spell.

Insensitivity to orthographic patterns cannot be picked up at the preschool stage because of children's insufficient reading experience. A consequence of the predominance of an alphabetic strategy has been neglect in ensuring the development of orthographic knowledge from the beginning of the formal learning process; the neglect is evidenced in disfluent readers and in spelling errors that represent the sounds in words but with the wrong selection of letters.

The research discussed later in this chapter (McMurray, 2004) found that significant gains in learning to spell can be achieved by all children when an integrated approach to teaching phonic, orthographic and morphemic knowledge is implemented ($p=0001$; effect size 1.19). This research is important today because teaching methods in the UK continue to follow a phonics-first staged approach which focuses on phoneme-to-grapheme knowledge.

A significant risk factor is that in cases where the term 'phonology' is interpreted as being synonymous with a phoneme level approach to phonics, that is synthetic phonics (fine grain level phonics), coarse grain levels of phonics teaching (intra syllabic unit, syllable) and their link with orthography may be neglected.

Synthetic phonics alone- a cause of long-term spelling difficulties

A synthetic phonics approach teaches children to segment spoken words into phonemes and map these onto graphemes. As these sound-to-letter correspondences increase in accuracy, the alphabetic principle is established and children can utilise this knowledge to support the spelling of phonologically regular words and word parts. However, when faced with words that include phonemes that can be spelled a number of different ways, the alphabetic strategy is insufficient, because it is dependent on sufficient orthographic knowledge being in place to ensure the correct choice of letters.

It is important to recognise that phonics can be divided into four levels of sound:- phonemes (representing alphabetic knowledge), onset and rimes (c/an, m/an, r/an; b/est, w/est, t/est, r/est), syllables (in/ter/est/ing) and whole words (yacht, queue, the, are, eye). The latter three levels, which are larger than the individual phoneme level, can be described as orthographic knowledge; the development of orthographic knowledge at these coarse grain levels is essential for normal spelling development.

It is critical that phonics teaching, therefore, includes more than phoneme-level knowledge of sounds. The ability to recognise orthographic units, that is, letter patterns that represent phonemes blended together, negates the necessity for decoding phoneme by phoneme for reading or encoding phoneme by phoneme for spelling and enables the development of automatic retrieval from memory.

This automaticity, which can be developed through learning to spell, also enhances reading fluency. The deep nature of English orthography is characterised by a complex orthographic spelling system where one phoneme can be represented by

different graphemes. Consider the vowel phoneme in toe, though, grow, not, float or the vowel phoneme as in flew, blue, shoe, room, through. Conversely a grapheme can represent more than one phoneme. Consider different sounds made by the letter (grapheme) 'a' as in want, can, late, draw. The development of orthographic awareness is essential for the beginning speller to prevent dependence on encoding phoneme by phoneme which can lead to entrenched spelling errors that are difficult to change. In cases where this strategy is the only strategy the child can use, the phonemes in words are known and easily identified, but incorrect letters which represent the phonemes are chosen, for example, cum for come, becos for because, sed for said, skool for school, cote for coat, cilt for killed. It is essential that the acquisition of orthographic knowledge is not left to implicit learning when reading. Just as some children can have a phonological deficit (insensitivity to sounds in words), there is a group of children who are insensitive to orthographic patterns. In the synthetic phonics 'first and fast approach' to beginning reading, it has been a flaw to assume that the sources of knowledge essential for its success are in place or can develop through implicit learning.

Morphemic knowledge

Morphemes are the smallest unit of meaning in spoken language. English consists of free morphemes and bound morphemes. Morphemes that can stand alone as a word are called 'free' morphemes. Single syllable words are examples of words that have one morpheme; for example, home / work/ cup /board are words consisting of one morpheme, however, they can be combined to make new words that have two morphemes; for example, homework and cupboard. Bound morphemes (affixes) do not stand alone as words but change the meaning of words (free morphemes) when

they are bound to them, as in, for example, well- **un**well // event - **un**event**ful**. It is important to consider meaning (morphemic knowledge) with children of 5-6 years of age who are learning to spell and not just the orthographic pattern or rule. The spelling 'lap' represents 4 free morphemes: 'the cat sat on my **lap**'; 'the water **lapped** against the shore'; 'I ran a **lap** of the track' and 'the cat **lapped** up the milk'. Consider the spelling of the free morpheme 'read' as in 'Can you **read**?' or 'I have **read**'. Five morphemes can be spelled with the letters 'bow' as in 'a **bow** on a dress' or 'the **bow** of the ship' or 'to **bow**' (tilt your head) or 'a violin is played with a **bow**' or 'a **bow** and arrow'. Consider the spelling of the bound morpheme '**ed**' frequently misspelled when it is spelled by sound, for example, 'landid (landed), helpt (helped), jumpt (jumped), dancd (danced), cald (called)'. How a morpheme or morphemes in a word are pronounced can only be determined by the meaning of the word and the context in which the spelling of the morpheme appears in a sentence.

Also consider the pronunciation of the morphemes 'prove, glove and stove' and 'cough, bough, though, through and rough'. These orthographic groupings were common in spelling lists up to the 1990s. Proponents of this traditional view believed that children memorize the sequence of letters in each word with no reference to the sounds in words, or patterns that apply to more than one word at a time. Learning to spell according to Peters (1993, p180):

'depends on looking carefully at words containing the same letter sequences without regard to sound'

This theoretical position neglected the important role of sounds in learning to spell and the current phoneme/grapheme approach has neglected the important role of orthography; both have led to failure for different groups of children.

The importance of ensuring the development of phonemic, orthographic and morphemic knowledge (POM) at compatible levels

All of the sources of knowledge associated with the spelling of a word should be established at point of learning and not as a later 'add on' to remediate difficulties. There is sufficient evidence of failure (see Norwich et al, 2018) to suggest that the current difficulties with reading fluency and spelling, experienced by some children, have been caused by failure to ensure the development of all three sources of knowledge in tandem.

For example, in England, Norwich, Koutsouris & Bessudnov (2018), report that

'..almost 20% of children in English Primary Schools on entering Key Stage 2 (KS2) are delayed or non-starting readers (Department for Education (DfE), 2017)

It is wrong to assume that sufficient orthographic and morphemic knowledge are in place to support a synthetic phonics approach to learning just as it is wrong to assume that the whole-language approach to learning (Goodman, 1967; Smith, 1978) is sufficient for the absorption of a phonics strategy through implicit learning when reading.

A focus on one primary source of knowledge only, such as phoneme to grapheme correspondence, for children who do not process orthographic and morphemic knowledge implicitly from their reading experience, means that phoneme to grapheme correspondence is the only source of knowledge on which a child experiencing difficulty can draw. The strategy intended to be of benefit becomes a major contributor to entrenched spelling difficulties.

Working memory difficulties and the orthographic factor

Another important consideration is raised by research into working memory. According to Alloway (2011), a child of 7 years of age with average working memory capacity, can hold only two items in memory. This level of capacity makes blending many words in English difficult for children with average working memory and it is beyond the capability of those with working memory difficulties. The reason is that many syllables in English can be up to 6 phonemes long, for example, 'strand'. It is clear, therefore, that encoding phoneme by phoneme (for spelling) and blending phoneme by phoneme (for reading), are not appropriate strategies for children with working memory difficulties in the 5-7 age group. Children experiencing difficulty need to have the opportunity to utilise a more effective orthographic strategy at 'onset and rime' level otherwise entrenched difficulties occur that would not arise if teaching to reduce the load on working memory were incorporated. By way of illustration, the six phoneme word 'strand' requires recall of only two orthographic units, 'str' & 'and' if onset and rime orthographic patterns that are consistent in sound and spelling are taught. Orthographic units at the onset and rime level support 'chunking', which is an essential and long-standing strategy for children with weak working memory. Furthermore, onset and rime patterns enhance storage in long term memory and reasoning by analogy.

Spelling at phoneme level is a particularly arduous task, not only for children with poor working memory, but also for those with literacy difficulties and/or speech and language difficulties. Despite this, spelling at phoneme level remains the most frequently used method in UK teaching practice. Furthermore, strict adherence to phoneme-grapheme translation, can lead to phonetically plausible errors, such as

'sed' for 'said' (McMurray, 2008), and 'sgie' for 'sky' (Bourassa and Treiman, 2001). Unfortunately, as teaching moved away from rote visual memorisation the move to a phonics-based approach in the 1990s encouraged 'invented spellings' formed purely on the basis of sound. More recent research, however, has found that exposure to phonetically plausible spellings can have an adverse effect on spelling knowledge because phonetic spellings can become embedded in memory and resistant to change.

The interrelated nature of phonology, orthography and morphology

It is important to consider the impact of insensitivity to orthographic patterns on the extent to which a child can use a morphemic strategy for selection of the correct spelling or for word building purposes. It is, therefore, essential that children develop, through the use of onset and rime patterns, sensitivity to orthographic patterns, that do not carry meaning. This sensitivity to orthographic patterns that occur in onset and rime groupings aids the development of sensitivity to other orthographic patterns. This development, in turn, underpins the ability to recognise ortho-morphemic patterns across words. In written language, it is orthographic knowledge, orthographic rules and context, that determine the spelling of morphemes. English requires sensitivity to the meaning-related structure of words. Along with orthographic conventions, morphological knowledge is an important factor that drives the spelling selection process and they offer reciprocal benefits. English spelling is more regular at the level of the morpheme than the phoneme when a morpheme carries meaning across a range of words. An example of this is the morpheme *graph* as in *autograph*, *photograph*, *telegraph* or as mentioned previously adding 'ed' to make the past tense of regular verbs.

The link between phonic, orthographic and morphemic knowledge, and the importance of the integrated use of all three, can be demonstrated in this nonsense word. Consider the invented spelling '**gotle**'. Consider how you would pronounce it. Did you read it by taking each phoneme in turn and then blending them together or did you read the word in syllables because you recognised combinations of letters that represent combinations of sounds, removing the necessity to decode phoneme by phoneme? Either way, your pronunciation of the vowel sound will have been a guess because there are two possible pronunciations and you have nothing to guide you to the correct one. I am assuming that you will have identified syllables in your attempt to read the word. Did you pronounce it got/le, with the syllable division between the t and the l? Or did you pronounce it go/tle with the syllable division between the o and the t? You will see that there are two possible words sharing the same spelling. Now if I provide you with a meaning for each of these words, it becomes clear how each word should be pronounced because the correct pronunciation is denoted by meaning (morphological knowledge). Got/le meaning '*to get something by stealing it*', as in the sentence '*She gotled it when he wasn't looking*' OR go/tle meaning '*to go somewhere slowly*' as in the sentence '*He gotled on his way home and was late for his dinner*'.

As with orthography, the role of morphology becomes increasingly significant as it overrides potential sound-based errors and supports the assembly of increasingly morphologically complex words.

The importance of developing visual discrimination and memory

According to Frith (1998) *'reading literally changes the brain'* (page 1051) and according to Goswami (2006) *'it does so in somewhat different ways in different languages'* (page 692-3).

When I taught Year 1 (4-5 year olds) from 1980-1987, before teaching any child to learn to read, an assessment was carried out to assess **both** auditory **and** visual discrimination.

Each child's visual discrimination, sequential memory and pattern recognition was assessed with tasks increasing in difficulty to ascertain strengths and weaknesses in this area which might indicate future difficulties with word recognition. Auditory assessments were also carried out, for example, to assess if children could identify the sound at the beginning, middle or end of an auditory sequence to ascertain strengths and weaknesses that might indicate difficulties in establishing a phonics strategy.

It is a real concern that developing visual discrimination and pattern recognition has been lost from the beginning reading programme due to a primary emphasis on phonemic awareness and phoneme to grapheme links, taking each sound in turn all through the word. This has changed the nature of the reading **and spelling** process for children who cannot develop orthographic awareness (recognition of whole words and letter patterns) from implicit learning when reading. There is a group of children who cannot benefit from implicit learning when reading due to orthographic processing difficulties and there is a group of children who cannot not learn by phonics alone because they have a severe phonological deficit. This is evidenced by the increasing

numbers of children experiencing spelling difficulties due to overreliance on spelling by sounds alone. Chinese is a good case to look at because learning to read and write in Chinese depends on visual learning in conjunction with meaning. Children learning to read and write in Chinese develop the ability to recognise very small visual details with precision. Attention to visual details and very small differences in the formation of '*characters*' together with the ability to identify combinations of characters that represent words within a continuous sequence of characters that make up a sentence, results in highly developed visual precision and attention to visual detail; a skill that is underdeveloped in children learning to read in English where a synthetic phonics approach is used. Consider the young child learning to read written Chinese and the young child learning to read English. How would the development of the brain differ? What can we learn from the case of learning to read and write in Chinese? The importance of what Frith and Goswami have said about how reading influences the development of the brain becomes apparent when considering the level of visual discrimination and attention to detail that children must develop to be able to read and write the Chinese language.

Learning to read Chinese

Written Chinese comprises of characters which represent meaning. Written Chinese is universally used throughout China even though the meaning is expressed using different languages (dialects) in different regions of China.

This means that someone who speaks Mandarin may not be able to understand someone who speaks a different Chinese dialect, but they would know exactly what the person said if they wrote it down. This is because the same characters would be

used to convey the same meaning, i.e. what is being said in both dialects.

Chinese is not a written language that relates to sounds in words. It is entirely meaning based. A character generally represents one element of spoken Chinese. This may be a word on its own or a combination of word elements which make up a longer word. Chinese words are made up of one, two or three characters.

Harris (2016) reports that in China children of 5 years of age can learn 25 characters a day (unless they have difficulties remembering visually). Characters have intricate lines and strokes and require great attention to detail to notice and remember very small differences, for example, this is a word composed of three characters

乒乓球。

There are no gaps between written words in Chinese. Someone reading Chinese would need to have the various visual characters representing a word stored in memory. They would have to know how the characters combine together to make a word, thus enabling them to identify words within what appears to be a long sequence of characters. Look at this sentence. If you cannot read Chinese you would not be able to identify where one word ends and another word begins.

我们这些打乒乓球的女孩本来就爱吃冰淇淋。

This is the same sentence but each word has been separated with a dash so that you can identify the words.

我们 - 这 - 些 - 打 - 乒乓球 - 的 - 女孩 - 本来 - 就 - 爱 -
吃 - 冰淇淋 。

Learning around 2500 characters allows someone to read about 99% of a basic text. To read a newspaper using more complex language would require around 5000 characters. There are 10,000 characters in the Chinese language.

There is a character list issued by the Ministry of Education, the first 2500 are taught in primary school and a further 1000 in high school. So children should be able to read 3500 characters before leaving High School for basic literacy. In China children leave high school at 15 years of age. Children at 5 years of age would be expected to learn 25 characters per day.

Characters are taught grouped by meaning rather than the most simple characters first (some characters are made up of only a few strokes or lines and some can have up to 15 strokes or lines).

From a theoretical position, written Chinese could be adopted as the worldwide written language because the meaning of the characters can be conveyed by any language. This is because the recognition of the characters does not involve any particular sounds. This is a written language which is learned visually with associated meanings.

You can view four excerpts from the interview with Harris (2016) who explains that:

- Written Chinese is universal

<https://vimeo.com/464138043/8b8da955da>

- Written Chinese is learned visually with associated meaning

<https://vimeo.com/464138349/ea020beb1>

- There are no spaces between words in sentences

<https://vimeo.com/464138532/b8cd855b5c>

- You can read Chinese without being able to speak it if you learn what the characters mean

<https://vimeo.com/464138689/787c5f649e>

Written Chinese provides evidence that young children can learn to read visually and that visual memory is capable of developing high levels of precision and attention to detail. With the move to synthetic phonics to teach children to read in English, this aspect of learning has been neglected. Children are encouraged to sound out each phoneme all through the word which has prevented some children from recognising words automatically on sight without having to decode phoneme by phoneme.

Whilst we are fortunate that English is an alphabetic language because, unlike Chinese, we have a phonics strategy we can employ in combination with sight word recognition (visual / orthographic knowledge), meaning and syntactic awareness. We must recognise the impact of failure to ensure children develop the ability to process visual details in words and recognise words as wholes. It is essential that teachers ensure children develop orthographic awareness of what the word looks like with sufficient detail that it positively impacts reading fluency and spelling.

Phonics is a strategy which supports the beginning reading process but it should not be the primary method for learning to read and spell. Developing orthographic awareness and automatic sight word recognition is an important part of the beginning reading process and is critical for spelling development. Spelling development for children who have no difficulty processing orthographic and morphemic knowledge is underpinned and supported by implicit learning when reading. As a result of frequency sensitivity to words in print, orthographic and morphemic knowledge are learned implicitly supporting the organisation, storage and retrieval of words from memory.

Orthographic processing difficulties cannot be determined pre-school because children have limited experience of print at this age. It is not until the end of year 3 NI (6-7 years of age) that children with orthographic difficulties are clearly identifiable. It may be too late at this point to provide the necessary experience to ensure the development of orthographic knowledge at compatible levels with phonology.

Children who have difficulty processing orthographic knowledge show no benefit of frequency sensitivity when reading (*good readers / poor spellers*) and together with the group of *poor readers / poor spellers*, approximately twenty per cent of children with potentially entrenched difficulties can be easily identified. To avoid serious and unnecessary disadvantage for the group of children with orthographic processing and working memory difficulties, schools must ensure that phonic, orthographic and morphemic knowledge are developed at compatible levels from the very beginning.

Think 'sources of knowledge' when considering children's spelling errors.

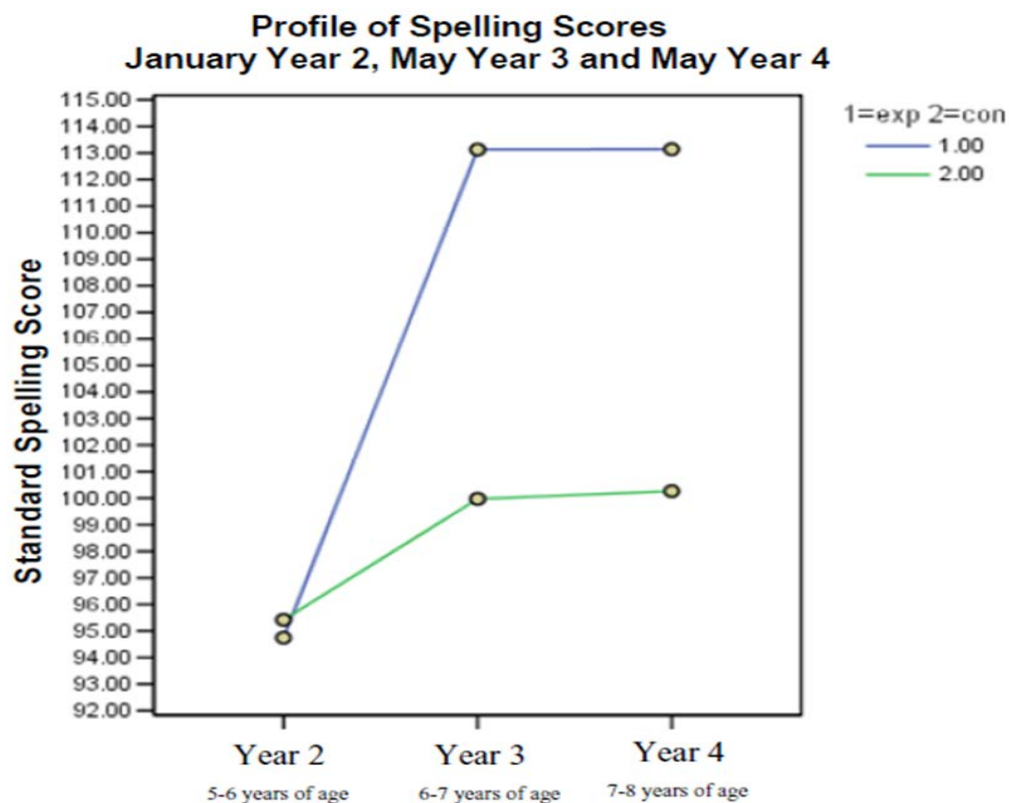
By looking at children's spelling in their independent writing we can ascertain how their spelling knowledge is developing. Attempts at spelling are attempts to spell the

sounds heard in a word. As discussed previously in this paper, if a child can only draw on knowledge of phoneme to grapheme correspondences, then spelling errors will abound. Attempting to categorize spelling errors such as 'sep' for ship is futile. Questions such as '*are the digraph 'sh' or the short vowel 'e' for 'i' orthographic errors?*' These are questions which offer no insight. Instead consideration of the sources of knowledge evident in spelling errors is much more informative. The only source of knowledge evident in this misspelling is alphabetic. The child has used phoneme to grapheme correspondence to spell the word. There is no evidence of orthographic knowledge in 'sep' for ship. Trieman (1993, 1994, 1995) documented how young children often cannot hear the second consonant in a word. Treiman found that regular words containing both onset clusters and final consonant clusters presented difficulty for inexperienced spellers. Second consonants were found to be more susceptible to omission than the first consonants.

Failure to recognise that the spelling errors which children make may be the result of neglect in explicit teaching to develop orthographic and morphemic knowledge, allows the '*good readers / good spellers*' group to advance well beyond their peers. Children who are '*good readers / poor spellers*' and '*poor readers / poor spellers*', who cannot acquire this knowledge from implicit learning when reading, are disadvantaged from the beginning. Stage theories fail to take account of the role of implicit learning in spelling development and have resulted in pedagogies which aim to follow this staged approach, reinforcing the disadvantage experienced by the '*good readers / poor spellers*' group and the '*poor readers / poor spellers*' group.

Research Evidence

McMurray, (2004) suggests that future research is needed to investigate the possibility that there may be an optimum time period for establishing effective interactions between all three sources of linguistic knowledge. The basis for proposing that future research is needed, draws on evidence from this 3 year quasi-experimental research study.



The graph illustrates that the Experimental schools, who were using the *CSP Spelling and Language Programme* (1998) by McMurray and Fleming (previously known as the Complete Spelling Programme until the name was changed in 2014) performed significantly better than the Control schools. It can also be seen that the Control schools were unable to make up this significant gap even in the final year when both the Experimental and the Control schools experienced a ceiling effect.

The Experimental Schools average post intervention spelling score was 113 standard points ($p=0001$; effect size 1.19) almost one standard deviation above the mean. The Control schools average post intervention spelling score was 100.46 standard points. Were it the case that the Experimental schools progress was accelerated in years 2 and 3 and the ceiling reached, it would be reasonable to expect that the Control schools would catch up by the end of year four. It would just take longer. The fact that the pattern of progress was the same for both the Experimental and Control schools, may be an indicator that the first four years of schooling might be the optimum time period for connections between the three sources of linguistic knowledge to be established. All of the children in the Experimental schools increased their standardised scores over the period of the research. For 25% of the children in the Control schools, the standardised scores decreased over the period of the research. These are the children who could not learn about morphology and orthography implicitly from their reading experience.

It is essential that we help children to develop phonological, orthographic and morphological processing in parallel, so that children can make the connections linking phonological, orthographic and morphemic knowledge. For many children this does not happen without sufficient linguistic experience at both an implicit level, through frequency sensitivity, and at an explicit level through intentional teaching and reinforcement. If children can only use phoneme to grapheme knowledge when spelling this will have a negative effect on their spelling development. This was also confirmed by the SEN CPD Literacy Project research (McMurray, McVeigh, Bennett and Finley, 2015).

SEN CPD Literacy Project Research

To ascertain the impact of synthetic phonics on spelling development in Year three children in a sample of SEN CPD Literacy Project research schools, research on spelling was conducted. The primary approach to teaching spelling was spelling by sound at the phoneme to grapheme level. Four of the EA regions were using Linguistic Phonics and one EA region was using Jolly Phonics, both of these are synthetic phonics programmes.

The spelling attainment of children using Jolly Phonics was compared to those of children using Linguistic Phonics. The measure used was the Single Word Spelling Test. In both of these groups spelling was taught using a phoneme to grapheme spelling strategy. The focus of teaching was on a particular phoneme (sound) and all of the variations used to spell the phoneme, for example, the 'oo' sound as in to, blue, flew, through, room. However, this approach fails to recognise that in cases where there is more than one way to spell a sound, the correct choice of letters cannot be made unless there is already an orthographic representation of the word in memory, that is, the child already knows what the word looks like. This method will appear to work because some children are acquiring orthographic knowledge implicitly from their reading experience. Other children who are not acquiring this knowledge from reading will experience failure due to the demands of learning a list of words with a shared sound but without a shared visual pattern which means that the shared sound is spelled differently in each word. An example is a list composed of words with the 'ee' sound as in *happy*, *beeach*, *feel*, *piece*, *even*. Spelling lists constructed on the basis of the same sound but different spelling, have a negative effect on spelling development.

499 children were tested in schools using Jolly Phonics and 467 children were tested in schools using Linguistic Phonics. The baseline standardised score for spelling in schools using Jolly Phonics was 98.29 and this increased to 100.31 post-intervention. The baseline standardised score for spelling in schools using Linguistic Phonics was 96.85 and this increased to 99.84 post-intervention. The results for both groups was close to the mean (100). The progress of SEN CPD literacy research groups who were using Linguistic Phonics (99.84) and Jolly Phonics (100.31) was similar to the Control schools (100.46) in McMurray's (2004) research. McMurray (2004) demonstrated that children in Year 2 (who do not have literacy difficulties) when attempting to spell a word, draw on phonic, orthographic and morphemic knowledge acquired from implicit learning when reading. The developmental sequence in the CSP programme takes account of working memory difficulties and the core programme aims to ensure that working memory demands are within the capacity of children who struggle. This is essential for success. McMurray (2004) also found that development of vocabulary understanding and usage, within a structured, sequential, cumulative and multisensory approach enabled the experimental group to increase their standardised score by, on average, 18 standard points over the period of the research; the final average group spelling score being 113. All of the children in the experimental group increased their standardised score over the period of the research. The final average group spelling score measuring the progress of the Control schools, who were not using the intervention, was 100.49 (mean =100) with standardised scores for 25% of children in the Control schools having decreased over the period of the research.

A proactive whole class approach to learning to spell

The intervention discussed in this section (McMurray, 2004) is designed to reduce the effects of working memory and orthographic processing difficulties for children who struggle, alongside providing challenge for children who learn to spell easily.

The group average standardised score at the end of the research from January, Year 2 (N.I, 5-6 year olds) to May, Year 4 (7-8 year olds) was 113 standard points, almost one standard deviation above the mean. All of the children using the programme increased their standardised score over the period of the research. These results were achieved because the teachers in the research schools understood how to implement the programme correctly and understood the importance of children having control of their own learning. The teachers in the research schools received training as part of the research and this next section discusses the essential requirements, and the understanding necessary, for correct implementation.

When reading this next section it is essential that teachers have at the forefront of their mind, that spelling is a visual activity. The speller has to know what the word they are trying to spell looks like because the majority of words in English involve the correct selection of letters from a range of possible choices, e.g. *cat* not *kat*, *said* not *sed*, *bought* not *bot*, *attacked* not *atakt*, *killed* not *cilt*. Whilst phonics can assist in spelling a word, children should **not** be taught to use phoneme to grapheme correspondence as the primary strategy. This can train the brain to default to a phonemic spelling strategy without regard for what the word looks like. This is particularly the case for those children who cannot assimilate what a word looks like through implicit learning when reading.

It is also essential that teachers understand that the sequence and structure of the programme should be followed as explained in the teachers' manuals together with explicit teaching at a whole class level. The spelling lists that are sent home and activity books that are completed in school provide follow up to explicit whole class teaching. This whole class teaching and the follow-up activities are essential to ensure children develop strategies that integrate phonic, orthographic and morphemic knowledge. Children cannot draw out from the spelling lists and the support materials the language development and connections between phonic, orthographic and morphemic knowledge that must be explicitly taught by the teacher. When these connections have been explicitly taught the activity books provide support, practice and/or application of the intended learning. They also provide the teacher with insight into what the child finds easy or more difficult.

1. Emotional wellbeing and maintenance of self-esteem

The single group with extensions approach to differentiation

It is imperative that consideration is given to children's emotional wellbeing and self-esteem. Presenting children with a learning experience that leads to failure impacts their self-esteem and anxiety levels and can inhibit engagement with the learning process. This is why the single group with extensions approach to differentiation is an essential element of the programme. All children learn together regardless of their ability or specific learning difficulty. Everyone covers the core programme with extension words and activities for more able spellers. This approach aims to prevent any negative impact associated with ability grouping on the performance of children

who struggle, especially those with specific literacy difficulties. It is essential that children understand that everyone is following the same programme and the class will be discussing the vocabulary understanding and usage at a whole class level. It is important that teachers recognise that children's receptive language and understanding may be well in advance of what they are able to write down and exposure to this language development will impact their written work further down the line, even if it is not identifiable at present. When it comes to learning the spellings and writing them down in tests or dictation sentences, everyone will learn and write down the core words and some groups will do the extension levels as well. Children who are learning to spell the core words only, can learn the extension words when they feel they can do more. It is their choice.

- High frequency words

The comprehensive design and structure of this programme, including the developmental sequence, ensures that any child working at the core level of the programme only (i.e. not doing the extension levels), does not miss the opportunity to learn the frequency words and activities included in the extension levels. This is achieved by building these extension frequency words and activities into the next stage of the programme, within the core lists and activities.

- Onset and rime patterns

The sequence in the onset and rime lists from Stages 1-3 has been designed to reduce the demands on working memory and build orthographic awareness and strategies for improved recall. This is to ensure that the demands on working memory increase incrementally within the working memory capacity of 5-8 year-old children. The

morphemic knowledge associated with these onset and rime patterns provides significant challenge for children who find onset and rime patterns easy.

- Children who have working memory and/or orthographic processing difficulties

The careful planning for the frequency words and onset and rime patterns is to ensure that there are no gaps in learning and that what children are being asked to learn is achievable. The extensive curriculum planning that has gone into this sequence is to enable children who struggle to recognise that they can initiate a move to a higher level; they are not stuck in an ability group that they cannot get out of. This design enables movement to a more challenging level with the safety net of knowing that there will be no gaps in their learning as the core programme is completed by everyone. This is a motivating factor for children who find learning to spell more difficult.

- The spelling test

There is one spelling test for the whole class each day as seen on the next page. Children participate in the spelling test to the level that they have been working at. The level they are working at is denoted by the associated differentiated activity sheets which they complete in school, and by the spelling list that they take home, i.e. the core spelling list or the core spelling list with extension words. Because all children have been part of the learning through whole class discussion, any child can opt to attempt one or more of the extension words if they want to, even though the extension words are not in the spelling list they take home. The spelling test is designed to put children in control of their own learning.

Example of how spellings are tested through the week

Tuesday		Wednesday		Thursday	
1.one	1.lot	1.day	1.qot	1.day	1.not
2.once	2.cot	2.one	2.lot	2.bus	2.qot
3.cylinder	3.dot	3.upon	3.pot	3.one	3.cot
		4.once	4.dot	4.upon	4.dot
		5.sphere	5.cot	5.once	5.pot
		6.cylinder	6.spot	6.long	6.hot
				7.cuboid	7.lot
				8.cylinder	8.spot
				9.sphere	9.shot
					10.knot

All of the class spell these words.
 The middle and top groups continue on and spell these words.
 The top group only continue on to spell these words in the test.

All spellings are tested again on Friday as above and also the dictation sentences are given. The dictation sentences allow you to test the words in context and monitor the retention of some of the words taught in previous weeks.

When marking spellings it is important to give credit for the parts of the word that are spelled correctly by putting a tick above the letters that are correct, and then writing the correct spelling beside the incorrect spelling highlighting the changes needed. It is important that the child knows where he/she has made an error so that he/she can work on spelling the word correctly. The child might find practice using coloured writing helpful, i.e. the child writes out the word and uses a different colour for the letters he/she had got wrong. Another child might find spelling the word using wooden or plastic letters helpful.

This is an example of testing on Wednesday.

Above Average Group

1 day	1 got
2 one	2 lot
3 upon	3 pot
4 once	4 dot
5 cylinder	5 cat
6 sphere	6 spot

Average Group

1 day	1 got
2 one	2 lot
3 upon	3 pot
4 once	4 dot
	5 cat
	6 spot

1 day	1 got
2 one	2 lot
	3 dot
	4 cat
	5 pot

Below Average Group

Child or Children on E.P.

Two separate test booklets are needed. Frequency words are tested first and the book is handed to the teacher.

Frequency words

1. day	
2. one	

The child must write these words from memory.

Rhyme pattern

1. got	
2. lot	
3. dot	
4. cat	
5. pot	

The child is allowed to look at his/her list using the Listen, Search, Select and Write technique.

As the spelling test is called out for the whole class, the below average and average groups will stop when all of the words they have learned have been called out. They will then listen to the rest of the words in the spelling test. They can, however, attempt a spelling that is not on their list to learn for that day's test. This 'opt in to do more' is a motivator for many children, but it is important that the teacher does not create pressure to do this.

- Giving children control of their learning

The single group with extensions approach to differentiation is about giving children control of their learning by creating the opportunity for them to stretch themselves when they feel they can. Children are made aware from the outset that they can initiate a move to a different level when they feel they are ready. This allows children greater control over the group in which they are placed and therefore greater control over their own learning. The fact that the grouping is flexible is intended to have a motivating effect on children who might otherwise 'give up' because they feel that important 'others' such as the teacher, do not expect them to succeed. Some children may settle at a level that provides them with challenging activities and success and therefore may not need or want to move between levels. This allows children to experience success, feel challenged and enjoy learning. There must be no pressure or competition to work at 'another' level. A move to a different level must not be perceived as an end in itself but simply an appropriate level to be working at. This is made possible as the language development and discussion of activities is at a whole class level.

It may also be necessary to explain the methodology of the programme to parents and the importance of ensuring maintenance of self-esteem. The goal is to build confidence through success. If a child becomes anxious because he or she fears failure then learning will be inhibited. If children achieve success they are more likely to develop the confidence to persevere with more difficult tasks. This is why it is important to acknowledge successes that are achieved, no matter how small. If the teacher provides positive feedback on the parts of the word that have been spelled correctly and how to correct the spelling error in the word, this will help children to develop metacognitive awareness of how they learn and help them recognise that success is achievable.

- Language development at a whole class level

All children participate in the whole class discussion about the meaning and usage of words to be learned. There are teachers' notes to guide the teacher as seen below.

Words relating to topics children will be asked to write about should be chosen from the word bank at the back of this book, or you can choose the optional extension words below.

OPTIONAL EXTENSION WORDS: frightened scared alone

LIST FOUR

ROW 1
My dad and I like to play with my toys.
The man had a cap on.

ROW 2
I ran down the street to meet my dad.

WORD MEANINGS AND USAGE

lap --- noun -- part of your body
noun -- a circuit in a race
verb -- water breaking gently against the shore
verb -- animals drinking by collecting liquid on their tongue

tap --- noun -- a water tap
verb -- to hit gently

This is the spelling list for Stage 2 list four for the average group (see below). One or two rows of curriculum words can be added to the frequency word list for more able spellers providing four rows of words in addition to the onset and rime lists. For children who find spelling more difficult, the second row of frequency words can be removed so that this group has only one row of frequency words to learn.

LIST FOUR **DATE**

RHYME PATTERNS

1 <table border="1" style="margin: auto;"> <tr><td style="text-align: center;">ap</td></tr> <tr><td style="text-align: center;">cap</td></tr> <tr><td style="text-align: center;">lap</td></tr> <tr><td style="text-align: center;">clap</td></tr> <tr><td style="text-align: center;">slap</td></tr> </table>	ap	cap	lap	clap	slap	2 <table border="1" style="margin: auto;"> <tr><td style="text-align: center;">ap</td></tr> <tr><td style="text-align: center;">map</td></tr> <tr><td style="text-align: center;">nap</td></tr> <tr><td style="text-align: center;">rap</td></tr> <tr><td style="text-align: center;">snap</td></tr> </table>	ap	map	nap	rap	snap	3 <table border="1" style="margin: auto;"> <tr><td style="text-align: center;">ap</td></tr> <tr><td style="text-align: center;">gap</td></tr> <tr><td style="text-align: center;">tap</td></tr> <tr><td style="text-align: center;">trap</td></tr> <tr><td style="text-align: center;">wrap</td></tr> <tr><td style="text-align: center;">scrap</td></tr> </table>	ap	gap	tap	trap	wrap	scrap
ap																		
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nap																		
rap																		
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ap																		
gap																		
tap																		
trap																		
wrap																		
scrap																		

FREQUENCY WORDS

A

play
down

B

and
street

C

toys
meet

Children with specific literacy difficulties can become very aware that they are being treated differently; learning different spellings from the rest of the class can be stressful. This whole class teaching approach enables children who are unable to demonstrate their language skills in written form, to participate in the same teaching focus and class discussion as the rest of the class. This whole class teaching provides them with the opportunity to demonstrate their vocabulary understanding and usage orally but with appropriately differentiated written follow up activities.

2. The Programme's structure and sequence

The programme is designed to facilitate the organisation and storage of spellings in the orthographic lexicon (visual memory store for whole words and letter patterns) and the development of links to the various other long term memory stores (auditory / phonological, semantic / meaning, motor / handwriting) to ensure the development of connections which enable effective retrieval.

Visual / orthographic patterns based on sound similarity in the '*rime*' with consonant '*onsets*' being changed to generate a new word (thus linking orthographic and phonological memory), reduces the amount of information required to be stored in orthographic memory. The orthographic lexicon (orthographic memory store) can retain whole words or orthographic patterns (i.e. rime patterns and syllables). From orthographic rime patterns, entire lists of words can be generated, as long as sufficient phoneme knowledge is in place in the phonological store to produce the initial sounds required to generate new words. The ability to reason by analogy is therefore dependent upon orthographic and phonological processes interacting. Further links, ensuring that the meaning of words are known, allow semantic memory to interact with

orthographic and phonological processes when recall is required. Motor memory can also be an aid to recall; joined handwriting has been found to be of particular benefit.

Where possible, and particularly in Stage 2, high frequency words are presented in semantic and syntactic groupings and not strictly in order of frequency of occurrence. This is so that words presented each week can immediately be used in context. For example, 'going to the', 'my mum was', 'we went home' are examples of some of the groupings in the core high frequency words in Stage 2. This helps children to see the link between what they are being asked to learn to spell and their independent writing. The curriculum extension words also ensure that more able spellers can apply what they are learning to spell. This is important so that the purpose of learning spellings is clear, and the opportunity for application of spellings learned is immediate. This immediate application allows for over learning through practice in real contexts.

Because many high frequency words are irregular in phoneme / grapheme mappings and abstract in meaning in a 'stand alone' situation, e.g. *are*, *the*, *was*, *our*, they can be difficult to recall. Demands on orthographic memory would be considerable were it to be the only strategy available in recall where phoneme/ grapheme rules cannot assist. It is, therefore, important to support orthographic memory by interaction with other knowledge bases that can support recall such as semantic and syntactic knowledge.

In Stage 1 the focus is on CVC words for the onset and rime patterns, plus one row of core high frequency words with a second row of high frequency words to extend more able spellers. Spellings are not sent home to be learned. The primary aim of the whole class teaching is to help children develop and engage visual processing to notice the visual detail in the spelling of a word and to develop a visual image of it. It is essential

that children are encouraged to visualise what the word they are learning looks like so that they develop the correct orthographic representation of the word in memory. Teaching one of the words from the onset and rime list *visually*, enables children to develop an anchor word in orthographic memory from which many more words can be spelled. For example, if a child can spell 'man' by recalling its visual representation (not by encoding phoneme by phoneme) then the child can spell, *man, can, ran, fan, pan, tan* by changing the initial phoneme. This is how phonemic knowledge can support spelling. Please note that teachers must always be mindful of the working memory demands of learning to spell and for this reason onset and rime words that start with blends and digraphs are not included in the onset and rime lists until Stage two, i.e. **span**, **plan**, **flan**. Stage 1 is designed to build confidence in all children. How to teach children to visualise will be discussed further in the section on spelling strategies. The Stage 1 activities are designed to help teachers identify children with orthographic processing difficulties. The activity pages are the same for all children and there are four activities on each page.

1. Choose and write

In this first section of each page, children have to choose the correct word from the top of the page and match each word to the correct picture. Children following the core programme should write the correct word for each picture on the lines below the picture, while children following the extension levels should attempt to write a sentence. Linking the word to the picture (and writing a sentence) is important to establish connections with the meaning of the word and its orthographic representation in memory.

2. Colour

Children search for words from left to right, colouring in the target words as instructed. Children who have poor orthographic awareness will find this activity difficult because they have difficulty seeing words as wholes. This tracking activity helps children develop visual awareness of the sequence of letters in the words. This is one of the activities that will alert teachers to possible orthographic processing difficulties. Children who find this very difficult should be asked to search for one word only until they become better at picking out the word they are looking for. Children who have good orthographic awareness will be able to identify the words as a whole within the sequence. This activity is important to help all children to develop the level of visual discrimination necessary for recognising words as wholes. (Reflect on what you read previously in this chapter about young children learning to read in Chinese. A child reading Chinese has to be able to pick out the characters that make up words in sentences that have no spaces between each character and each word.)

3. Match and write

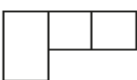
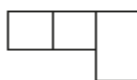
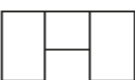
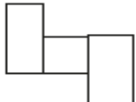
This is another activity that encourages children to pay greater attention to visual details and helps to develop their visual discrimination. Children place the correct letter in the word into the correct sequence of boxes. It is important that the teacher draws attention to the size, shape and position of each letter compared to the other letters in the word. Ensure that children notice that some letters stand taller and others hang below. Children should be encouraged to match and write the words even if they are not taking all of the words home in their spelling list.

4. Write a sentence using

The first row of frequency words are included in the activity page. The second row of

frequency words should be added for children learning to spell these words. Children should write sentences using each of the frequency words they are learning to spell. They should attempt to spell all of the words in the sentence. If the child insists on help with spelling a word then the teacher should write the word at the bottom of the activity page so that there is a permanent record of the help given.

Activity page 4. 1 (Activity page for week 4. The 1 denotes the first activity page of 3)

<u>Choose and write</u>		cap	lap	gap	4:1
					
<u>Colour</u> gap - red lap - yellow cap - blue → glapcapclapgapslicelapgap lampsblapcuptlapcapgapslant slogapcapclaspculapcapsip How many? gap lap cap					
<u>Match and write</u> cap lap gap yes    					
<u>Write a sentence using</u> yes					

In Stages 1 - 2 the onset and rime patterns move very slowly to enable children with orthographic processing difficulties to develop awareness of orthographic patterns.

Poor orthographic awareness is a cause of long-term spelling difficulties resulting in some children spelling words how they sound without the recognition that they have chosen the wrong letters e.g. "skool" for "school", "cote" for "coat", 'sed' for 'said '. It is important that teachers recognise the importance of developing orthographic knowledge for children at risk of long-term spelling difficulties and follow the pace set out in the programme.

- Developing morphemic knowledge to enhance understanding and application in independent writing

A focus of teaching from Stage 2 onwards is the development of understanding about the meaning and usage of the onset and rime spelling patterns and high frequency words so that they may be used appropriately in independent writing. In Stage 2 bound morphemes (suffixes) associated with the 'doubling rule' are taught. Many of the 'onset and rime' words function as verbs. The past tense (ed) and continuous (ing) are needed when writing independently, e.g. lap, lapped, lapping. This provides challenge for children who find spelling the onset and rime patterns easy. It is important that teachers focus on developing morphemic knowledge (word meanings, suffixes, prefixes) for the onset and rime patterns to extend the majority of the class but also to develop the receptive language understanding of children who may not be learning to apply these suffixes as yet but can benefit from the oral language discussion.

High frequency words also provide differentiation for more able spellers in Stage 2. Adding curriculum words as a third or fourth row, as instructed in the manual, ensures that the words taught will be required by children when writing independently.

In Stage 3, the programme starts with CVCC, CCVCC, CCCVCC words, where the final two consonants are the same, e.g. hill, grill, shrill. This means that at the start of

the Stage 3 programme children are learning a longer sequence of letters, but they do not have to discriminate another consonant phoneme at the end of the word. The extension frequency words in Stage 2 are now the core frequency words in Stage 3.

3 Strategies for learning spellings

The acquisition of orthographic knowledge for words with irregular spellings that do not belong to any visual pattern is vitally important for spelling development. Many high frequency words, which do not conform to regular phoneme to grapheme correspondences or an onset and rime pattern, are required by children in their earliest attempts at independent writing. For this reason, from the very beginning, it is necessary to develop orthographic knowledge for words that occur frequently. However, this is not the only reason for teaching children how to spell these words. It is important that the brain learns to respond to the demands of the task of spelling a target word. The task demands of spelling '*pan*', which can be spelled using phoneme to grapheme correspondence, is different to the task demands of spelling '*could*' or '*was*'. '*Could*' and '*was*' cannot be spelled without drawing on orthographic knowledge. As discussed previously, children learning to read and write in Chinese learn to notice very small visual details. It is important that children learning to read and write in English learn to see and remember sufficient detail in written words to recognise them on sight for fluent reading, but even greater attention to detail is required to recall all of the letters in a word, in the correct order, to be able to spell correctly. This is why it is important to teach children to notice visual details and to teach them to visualise the word. This should be done from the very start of learning to spell in Stage 1 of the programme.

Remember that maintaining children's self-esteem is important and some children struggle with spelling due to orthographic processing and working memory difficulties.

To help children maintain their self-esteem it is important that children can work privately, therefore, everyone should have their own screen as seen below. One of the teachers in the research schools made 'No Peeping' screens which the children decorated and kept under their desk so that they could use them when they wanted, or needed, to work privately. This provides security for children who may feel self-conscious if they are finding activities difficult and allows the teacher to discretely observe how everyone is coping. Every child also needs a whiteboard.



- **Look, Visualise, Say, Cover, Write and Check: A visual strategy**

The frequency words are learned using **Look, Visualise, Say, Cover, Write and Check. LVSCWC**

Look: Look at the word

Visualise: Look at the size, shape, position / orientation of each letter in the word

Say: Say the word

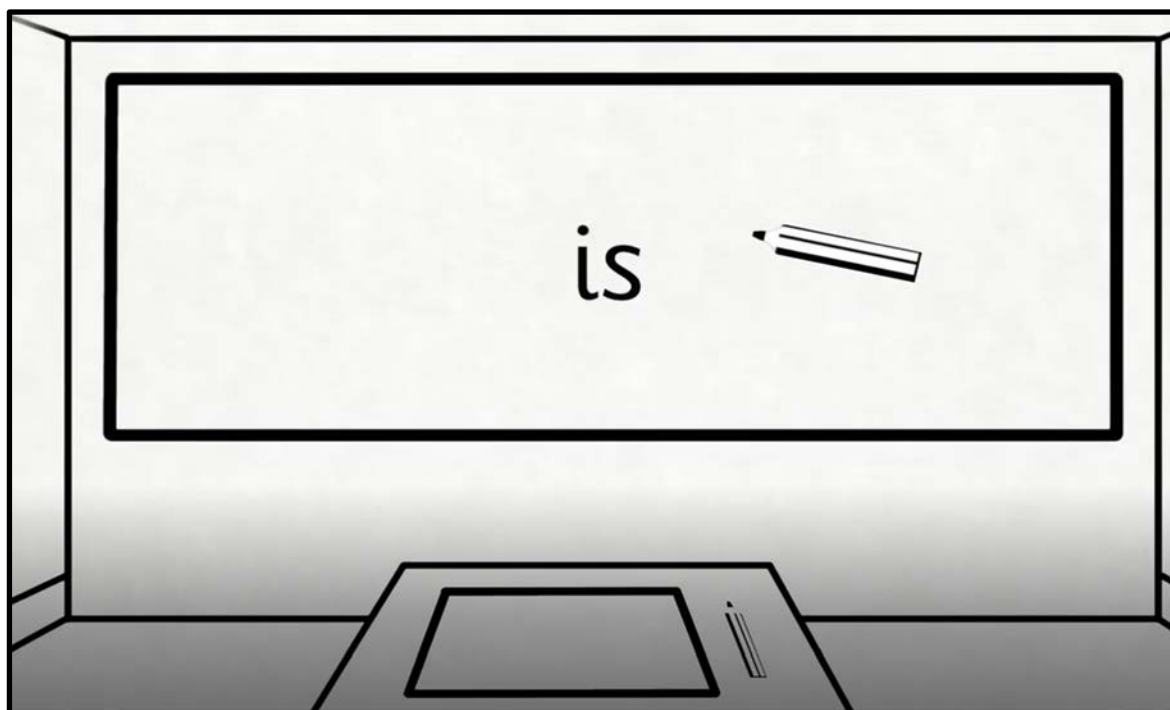
Cover: Cover the word

Write: Write the word from memory

Check: Check you have written the word correctly and try again

When teaching children to use this strategy for learning words it is important to help them to visualise as follows.

The high frequency word is written on the board as seen below.



The teacher discusses the size, shape and orientation of the letters and the order of the letters. The teacher traces over the letters to demonstrate the order and how each letter is formed and children trace large letter shapes in the air. As the teacher and the class spell the word with large sweeping movements through the air, they say the name of each letter as they make the shape. The teacher then asks the children to look carefully at the word on the whiteboard and close their eyes to see if they can see (visualise) the word in their mind. The teacher asks everyone to keep their eyes closed and to raise their hand if they can't picture the word in their mind. If any children raise their hand the class are encouraged to look again at the word; to imagine they are taking a picture of the word. They look carefully at the word again, they say the word and take a picture in their mind. The teacher covers the word on the whiteboard while the children write it on their own individual whiteboard. It is important for children to use their 'No Peeping' screen when doing this. The teacher uncovers the word on the board and the children check they have written it correctly. The teacher should discretely move round the class taking note of children who may have written the letters in the wrong order or left letters out.

In the Stage 1 programme, spellings are not sent home to be learned. The process of learning how to use the strategies is carried out in class so that the teacher can monitor each child's progress and help any child who is experiencing difficulty. The aim of the programme is, therefore, to identify difficulties at this early stage and to help children develop effective learning strategies. The majority of the class should be able to complete the activities with ease.

- **Listen, Search, Select and Write (LSSW).**

The second strategy employed in the programme is Listen, Search, Select and Write (LSSW). This strategy was developed by the author in response to the extensive difficulties that a small minority of children have establishing sound symbol correspondences and hearing and discriminating sounds. This strategy is used as a teaching and learning strategy in the first stage of the programme and can be retained in Stage 2 if necessary. This allows any child or group of children to have a 'scaffold' enabling them to experience success in smaller steps.

On Monday, Tuesday and Wednesday the words from the rhyme pattern (onset and rime) are taught using the LSSW strategy. The rhyme pattern for that week is built up cumulatively over the first three days. The teacher writes the rhyme words on the board. Then the teacher draws attention to the initial letter in each word and how they are different and also the letters at the end of the word and how they are the same. The class is encouraged to LISTEN carefully as the teacher calls out each word in turn (but not in the same order as they are written on the board). As each word is called out the class SEARCH the list to SELECT the correct word and WRITE it down.

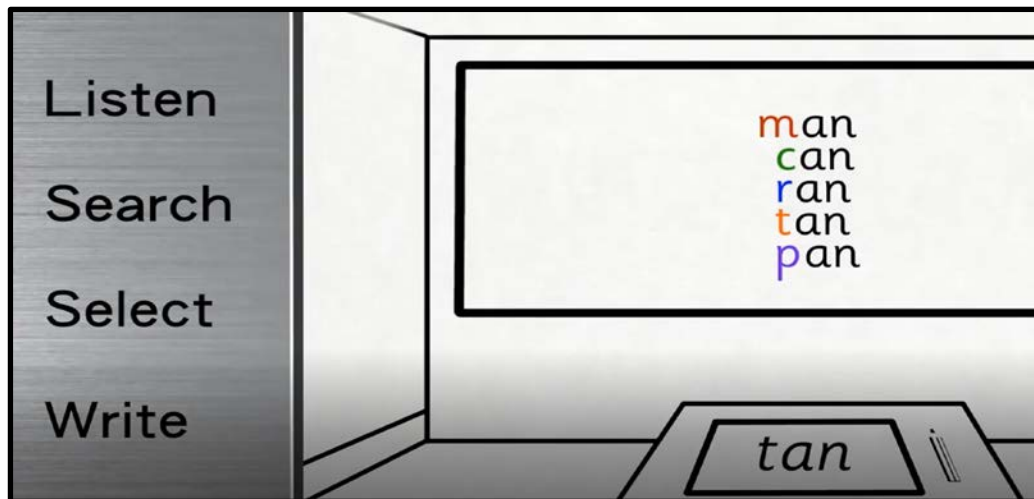
- **LSSW: Strategy for learning the onset and rime patterns**

Listen: Listen to the word when it is called out. Listen carefully to the sound at the beginning of the word.

Search: Look carefully at the words in your list. Look at the beginning of the words.

Select: Choose the word that starts with the sound you heard.

Write: Copy the word down carefully.



The teacher observes as the children do this to determine which children may be experiencing difficulty.

For this group of children, the approach is designed to establish sound/symbol relationships, not by teaching sounds in isolation (as in a synthetic phonics approach) but by increasing listening skills and visual discrimination. Such a technique allows children, not only to identify where they have heard the sound within the word, but also how that sound links with the letters on the page. This group may include children who fail to be able to access a phonics strategy through explicit teaching of phoneme to grapheme correspondences (alphabetical knowledge) because this method of learning is decontextualised and places significant demands on memory. The LSSW method helps children establish 'anchor words' in memory to which phoneme to grapheme knowledge can be connected. The learning outcome for these children, in this first instance, will be that they develop sound symbol relationship for initial consonant sounds and then rimes and final consonant sounds. This develops through exposure to the highly structured developmental sequence in the daily lists of onset and rime words and through the use of the strategy. These lists, together with the

progression through the programme, facilitate the development of connections that need to work together to support recall of the correct letters when spelling.

This is the rationale behind all children advancing through the programme together with a new onset and rime pattern being studied every week. Using the LSSW strategy allows the child with the greatest difficulty to participate in the same programme as the rest of the class but with the focus being on different learning outcomes. For those children with insensitivity to orthographic patterns it may be after 10, 20 or 30 different patterns that the brain recognises the common features that make up visual onset and rime patterns and the sounds representing them; only at that point does memory begin to organise effectively. Adams (1990) points out that 500 words can be generated from 37 'rimes'. This significantly reduces the load on memory.

As the majority of children already have this knowledge to draw on, their learning outcome will be that they can use their phonological knowledge effectively to process and manipulate sound segments of spoken language in order to spell target words. If children can spell the word 'man', then by changing the sound at the beginning of the word they can spell 'ran'. This considerably reduces the load on orthographic memory because each word does not have to be stored as an individual unit but can be generated by analogous reasoning.

4.Support materials: Fun with Spelling Activity Books

The support materials are an important aspect of the programme because they allow children to engage in activities related to the spellings they have been learning. They provide opportunities for children to employ the strategies that they have been developing and apply spellings in the construction of sentences to convey meaning.

This section provides examples of some of the activities from Stage 2 and Stage 3

Examples from Stage 2

There are two different activity books for each term from Stage 2 onwards. *Fun with Spelling Book A* is for children who find spelling more difficult and *Fun with Spelling Book B* is for the rest of the class.

This is page 4.1 from the A activity book. The first number denotes the list (4) and the second number is the page number of the activity for that list (1). Activity pages 1-3 are completed Monday-Wednesday and activity page 4 is completed on Thursday. If there are activity pages 5 and 6 these are also completed on Thursday. This A activity page can be differentiated for two groups of spellers who find spelling more difficult.

Fill in the missing letters. ap 4:1 c _ _ l _ _ cl _ _ sl _ _	
Fill in the missing words. 1. The cat sat on my _____. 2. My dad wears a _____. 3. _____ is another word for hit. 4. Everyone will _____ at the end of the play.	
Write the correct sentence.	
 _____ _____ _____	 _____ _____ _____
 _____ _____ _____	 _____ _____ _____
Now write a sentence using play	
_____ _____ _____	

There is a comprehension activity on Monday (4.1), Tuesday (4.2) and Wednesday (4.3). Any child experiencing extensive literacy difficulties may continue to use the LSSW strategy in Stage 2 participating in the whole class language development associated with these words. If any child is unable to read these sentences independently then he/she has the picture prompt beside each sentence enabling him/her to complete the cloze procedure using the picture clue as a guide to where to write the sentence.

Children who are learning the rhymes from memory but find it difficult to think of ideas of their own, should attempt to write their own sentences for each picture using the picture as a stimulus for ideas.

Fill in the missing letters. ap 4:1

c _ _ l _ _ cl _ _ sl _ _

Fill in the missing words.

1. The cat sat on my _____. 

2. My dad wears a _____. 

3. _____ is another word for hit. 

4. Everyone will _____ at the end of the play. 

Now write your own sentences for the words above.
Remember some of the words may have more than one meaning.

Now write sentences using 1. play 2. down 3.

This is the comprehension activity in the B activity book.

Here children write sentences of their own for each of the rhyme words. An example from the research study can be found in the completed activity sheet at the bottom of this page.

Children also write a sentence for each of the frequency words they are learning. A space has been left at the number 3 for the curriculum word to be written in.

Children should attempt to spell all the words in these sentences themselves, thus providing a permanent record of their attempts at spelling the target spelling words, words they have learned previously and also words they have not yet learned to spell. If a child insists on help with any word, then this word should be written by the teacher at the bottom of the page. This allows the teacher to look back at previous work undertaken, knowing the extent of the help given. This in turn gives a more accurate assessment of the child's level of independence.

Words that have not been taught are not corrected but the errors allow the teacher to monitor the knowledge the child is applying in his/her attempts to spell unknown words. Words that have been taught and are misspelled are drawn to the attention of the child and positive feedback given for the correct parts of the word and guidance given on what needs to be corrected.

Fill in the missing letters. ap 4:1

~~cap~~ ~~slap~~ ~~lap~~ ~~clap~~

Fill in the missing words.

1. My dad wears a cap.

2. slap is another word for hit.

3. The cat sat on my lap.

4. Everyone will clap at the end of the play.

Can you write your own sentences for the words above?

My Dad wears a cap when hee is going to work. 

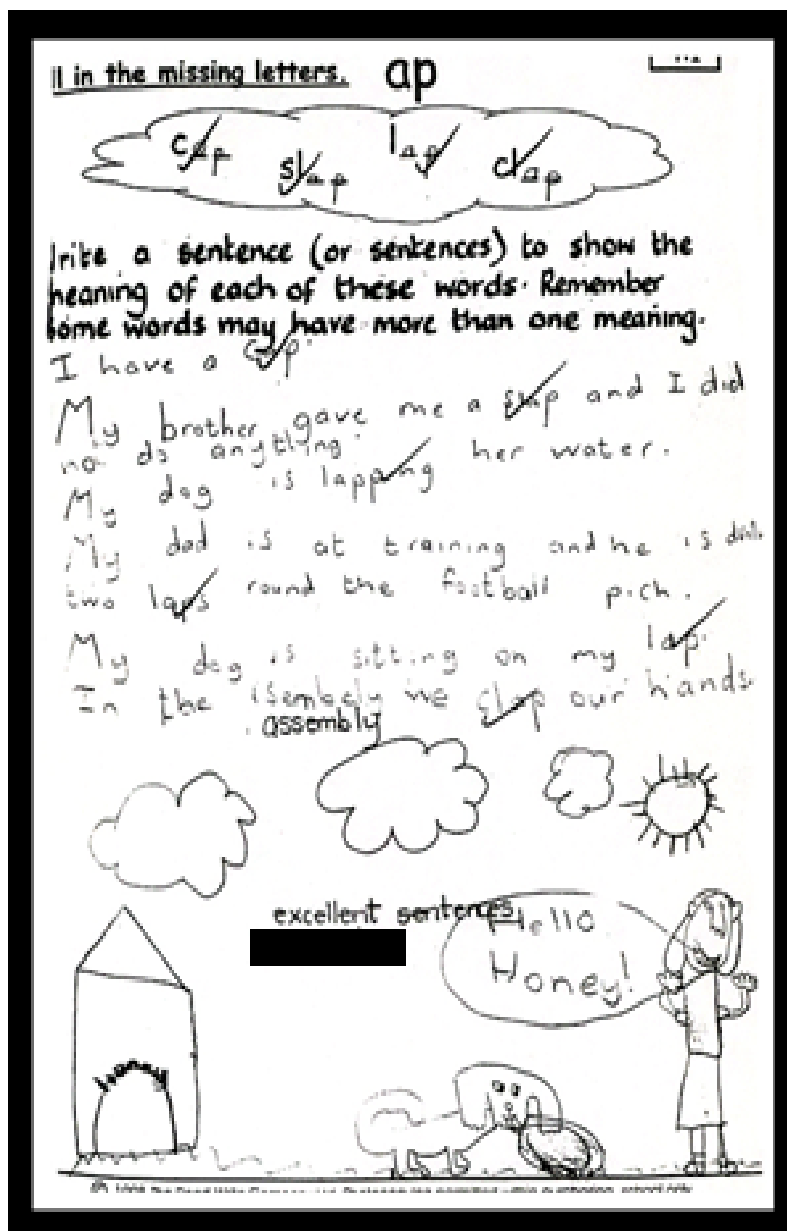
My dad dis slap me when I am bad.

I sleep on my dads lap.

I clap my hands when the play is over.

The same comprehension activity below is also from the research study and shows further differentiation for very able spellers.



The cloze procedure has been removed and unlike the previous two activity sheets this group has no word bank to draw on. The inclusion of the cloze procedure for the other groups allows the children to use it as a word bank. The same assessment principles apply to this group.

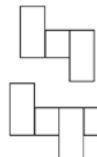
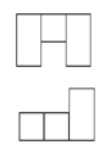
This level of differentiation can be used to extend and challenge children who are confident writers. This will require the teacher to amend the B activity pages.

Activity book A page 4.4

4:4

Match and Write

and cap	gap play	toys tap
------------	-------------	-------------

Colour
 map - yellow tap - red
 gap - blue lap - green

dograploptapcapriplogmaptagtap
 capsiplaplipcupmapagnagmopdrap
 maplapnippagprannapniplapsipcap
 nabtapcopnapmaplapgapliptopcap

How many? map tap
 gap lap

span>map
tap
cap
nap
lap

Write the correct rhyme word.



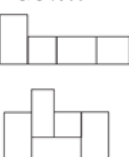
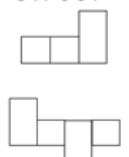
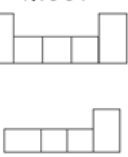



The match and write activity at the top of page 4:4 is designed to stimulate visual discrimination drawing attention to the size, shape, position and orientation of each letter. This activity is continued from Stage 1. This is designed to ensure children look closely at the letters in the word they are attempting to learn. It ensures that visual details are noticed and cannot be bypassed. The activity at the bottom of this page is designed to encourage children to identify the initial phoneme in each word and using this knowledge and recognition of the 'rime' to read the whole word. They then match it to the correct picture which shows whether they have read the word correctly. The activity in the middle section is a continuation of the word searches in Stage 1.

4:4

Match and Write

and down	play street	toys meet
-------------	----------------	--------------

Write the letter before
 _ e _ i _ u _ y
 _ m _ p _ s _ z.

Put these letters in alphabetical order.

div style="border: 1px solid black; padding: 2px 5px;">d h c f g e

→

m k o p n l

→

r s w u v t

→

Write the correct rhyme word for each picture.







Activity book B page 4.4

This is the differentiated B activity page for more able spellers. It includes work on alphabetical order and in the final activity children have to recall the rhyme words from memory.

Activity book B page 4.5

Answer the clues.

1. A little piece of paper _____
2. A type of dance _____
3. A street plan _____
4. A small hole _____
5. Something you can't get out of _____
6. A type of hat _____
7. To show you enjoy something _____
8. To parcel a present _____

4:5

Now put these words into the right boxes.

1.

2.

3.

Make new words.

clap	→	clapped	→	clapping
lap	→	_____	→	_____
tap	→	_____	→	_____
snap	→	_____	→	_____
wrap	→	_____	→	_____

Write out these sentences adding 'ed' or 'ing' to the underlined word.
Remember the rule!

1. The cat lap up all the milk.

2. My dad wrap up the present.

In this B activity page 4:5 semantic memory is the primary target in the activity at the top of the page. This 'answer the clues' activity is the forerunner to crosswords. Only semantic memory can be used to retrieve the correct word from the orthographic lexicon. The meaning activates recall from the orthographic lexicon with additional support from phonological memory if required. The support materials play an instrumental role in ensuring that all the underlying cognitive processes work together to achieve the correct spelling.

The two activities below the 'clues' activity, focus on the usage of some of the words in the rhyme lists. Many of these words function as nouns and verbs. Here children learn to add the verb inflections 'ed' and 'ing' because the ability to do this is important for independent writing. This brings in the *doubling rule* as many of these verbs double the last letter before adding 'ed' and 'ing'.

Examples from Stage 3

Stage 3 activity book A page 5

20:5A

WORD SEARCH

p	r	c	r	i	e	d
l	o	s	s	o	c	k
r	c	o	e	d	p	l
y	k	r	r	k	r	o
n	e	r	d	o	e	c
t	i	y	c	l	y	k
p	r	e	s	e	n	t

COLOUR

sock - blue

rock - yellow

lock - red

present - purple

sorry - orange

cried - green

Jumbled Sentences

1. week. next It my is party

2. granny coming My is my to house.

3. the played garden. in My and friend I

Look at these words. Colour each syllable a different colour.

sorry

present

open

wanted

In list 20 page 5 (20:5) the words in the word search are written from left to right and up and down. The words do not cross over each other as this can be confusing for the 'A' group (children who find spelling more difficult). The target words are listed for this group and they have to search for the words and colour them in. The activities under the word search include jumbled sentences and a syllable activity.

The word search activities in Stage 3 are an extension of the search activities in Stages 1 and 2.

Throughout Stages 2 and 3 all words used in the activity books are words the children have previously been taught to spell.

Stage 3 activity book B page 20.5

WORD SEARCH

u	s	d	n	e	b	c	l	o	s	i
l	o	c	k	i	l	a	u	y	h	f
t	p	r	e	s	e	n	t	s	o	r
s	c	i	a	o	d	o	r	r	c	o
b	l	e	m	r	c	k	o	b	k	n
p	o	d	e	r	f	a	u	l	t	a
a	t	r	o	y	i	t	b	a	s	e
k	n	o	c	k	o	b	l	i	m	s
r	y	f	r	o	c	k	e	e	o	o
l	d	s	a	u	k	d	o	k	c	n
p	o	u	b	r	r	y	o	c	k	t

Put a ring around the words in the square and write the words below.

How many words can you find?

Homophones

Words that sound the same but are spelt differently.

are or our

- _____ mums and dads are coming up to school tonight.
- There _____ too many children in the swimming pool.
- We hang up _____ coats outside the classroom.
- We have to try _____ best in the test.
- They _____ allowed to go to the football match.
- The children _____ worried that they will be in trouble.

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In the B activity book in the word search the words are left to right, up and down and left to right diagonally. The target words are not listed so children have to complete this activity entirely from memory. Activities included in these pages are homophones, jumbled sentences or alphabetical order.

Stage 3 activity page 4

Joined writing practice

20.4

Match the correct word to each picture.

lock
dock
sock
flock
clock
frock







Write 3 sentences using the words above.
Write the sentences in joined writing.

- _____
- _____
- _____

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In the Stage 3 A and B activity books joined handwriting is introduced in the fourth activity page.

Stage 3 activity books A and B, page 20.6

CROSSWORD 20:6A



ACROSS

1. A very big stone _____
2. Daddy got a _____ when the mouse ran up his leg.
3. The ship was at the _____ s.
4. She _____ because she wanted to be with her sister.

DOWN

1. You should say _____ if you have annoyed someone.
2. You put this on your foot. _____
3. This tells the time. _____
4. Did you _____ the back door?
5. He got a lot of _____ s for his birthday.

These rhyming words double the last letter before adding 'ed' and 'ing'.

nip	→	nipped	→	nipping
rip	→	_____	→	_____
drip	→	_____	→	_____
trip	→	_____	→	_____
skip	→	_____	→	_____

Write a sentence using these words.

dripping _____

ripped _____

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Crossword 20:6B



ACROSS

1. If there is a _____ there is something wrong.
2. A gift
3. To make fun of
4. He _____ for help.
5. This measures time
6. A group of sheep
7. A _____ of flats

DOWN

1. It wasn't me. Don't _____ me.
2. A nasty surprise
3. _____ on the door before you enter.
4. If it is hard to do you have _____ doing it.
5. To apologise is to say _____

Make new words by adding 'er' and 'est'.

clean	→	cleaner	→	cleanest
old	→	_____	→	_____
young	→	_____	→	_____
soon	→	_____	→	_____

Write a sentence for each word.

1. sooner _____
2. oldest _____
3. younger _____
4. cleanest _____

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As in the Stage 2 programme the crosswords are used to retrieve words on the basis of meaning. The other activities included in these activity sheets are based on morphological rules. The A sheets include adding 'ed' and 'ing' which was not covered by this group in Stage 2 and the B sheets introduce new morphological rules and compound words.

Anchor words assessment

The CSP Spelling and Language Programme is a proactive programme to prevent or reduce difficulties when learning to spell. There may be children in your school who have been taught to spell using a synthetic phonics approach and have very poor spelling skills as a result. In 2005, I worked with a 10 year old child who could identify all the phonemes in a word but could not read any words by sight, and spelled by encoding phoneme by phoneme with the wrong choice of letters. This child was unable to reason by analogy. It appeared that there were no words in the child's orthographic memory. I developed this assessment technique to identify what was in memory to help the child to reason by analogy.

Over a number of weeks I assessed the 37 rimes identified by Adams (1990) that can generate over 500 words. I found that the child had 28 words in memory but was unable to use them. I was able to use these identified anchor words to build up onset and rime patterns. I created dictation sentences that included a word that belonged to the onset and rime pattern for one of the identified 28 anchor words the child had in memory, for example,

'I can pack my bag'.

If the child attempted to spell a word phoneme by phoneme, that was related to one of the child's 28 anchor words, for example, **pack**, I would say *'You don't need to sound that word out, you can spell **'back'** so you can spell **'pack'**, just change the sound at the beginning.'* This process enabled connections to form between orthographic memory and phonemes in the phonological store, so that over time, and with practice linking these associations, the child began to be able to spell words without having to encode phoneme by phoneme.

Anchor Words Assessment

(McMurray, S. 2006)

The purpose of this assessment is to find the word in the list that the child can spell automatically without having to work out the spelling using any strategies. Read the list slowly and watch the child as he/she listens. If you detect that he/she is having to work out the spelling then this is not an anchor word. The first word that he/she spells really quickly, without any effort, should be recorded as his/her anchor word. This is the word that he/she has established in his/her visual memory and from this word, by changing the initial sound, the other words in the list can be generated. It is very important to establish the words that belong to the spelling pattern and also the associated meaning. The activities that follow are designed to help develop these associations.

Instructions

'I am going to read you a list of words and I want you to listen very carefully.

I want you to write down the first word that you can spell without thinking. If you have to think about the sounds in the word to work out how to spell it then don't write that word down, listen for the next word. Remember you don't have to spell all the words. Just listen for the one you can spell without having to think about it.

gap
rap
cap
nap
lap
map
snap
slap
clap
trap
scrap

If the child cannot spell any words without using sounds then he/she has no anchor word for this spelling pattern. It is important to establish an anchor word and then work on the activities that follow to develop the necessary associations in memory to aid automatic recall for the other words belonging to the pattern.

The video links included in this chapter are excerpts from an interview with:

Harris, C. (2016) Graduate in Chinese Studies from Newnham College, The University of Cambridge, England

For the fully referenced peer reviewed journal article on which this chapter is based please read:

McMurray, S. (2020) Learning to spell for children 5-8 years of age: the importance of an integrated approach to ensure the development of phonic, orthographic and morphemic knowledge at compatible levels. *Dyslexia*, Vol, 26, 4 pages 442-458. Wiley. <https://doi.org/10.1002/dys.1663>

The Intervention used in the Ph.D research discussed in this chapter is:

McMurray, S and Fleming, C. (1998, 3rd edition 2014). *The CSP Spelling and Language Programme* published by The Read Write Company Limited.

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