

Chapter 8

Reading Models and Methods

The previous chapter looked at the acquisition of literacy and particularly the skills needed for developing literacy. This chapter will look specifically at models of literacy and strategies that can accompany those models. It is important also to consider the debate and the controversy associated with teaching reading and to consider the experience of learning to read from the perspectives of students with dyslexia. It is important to have this in mind as you consider the different theoretical and practical approaches.

Bottom-Up and Top-Down Models

There are two general models of the reading process. These have come to be known as bottom-up (i.e. data-driven) and top-down (i.e. concept-driven) models (Box 8.1).

The bottom-up model suggests that, first, we look at the stimulus (i.e. the components of the letters) and then move to the meaning.

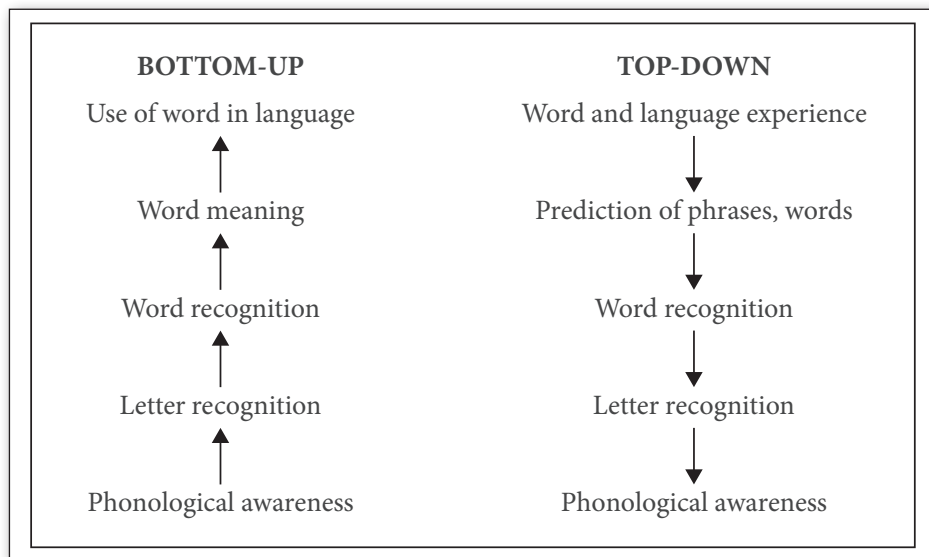
Bottom-up theorists argue that the brain attends to every bit of available information, thus we read letter-by-letter so quickly that it becomes automatic. The top-down model is concept-driven. The reader attempts to absorb the meaning of the text from the cues that are available. These cues can include:

- the context of the passage being read—this relates to the syntactic context (i.e. the structure of the sentence) and semantic context (i.e. the anticipated meaning of the passage);
- the graphic information available (i.e. what the word looks like)—the reader anticipates the word or sentence from these descriptive cues.

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Goodman's (1976) model, known as the psycholinguistic guessing game, strongly advocates a top-down approach to reading. This model asserts that good readers make efficient use of hypothesis formation and prediction in reading and thus make good use of the contextual cues available to the reader. Additionally, the efficiency in prediction of text means that good readers, according to Goodman, will have less need to rely on graphic cues and therefore do not have to process every visual characteristic of text.



Box 8.1 Bottom-up and top-down models

Goodman's model of the reading process has, however, been subject to powerful criticism. The main exponents of this criticism are Tunmer (1994), Stanovich (1988), Adams (1990a) and Liberman and Liberman (1992). Essentially, the counterarguments to Goodman's model suggest that the central tenet of the model, that good readers are dependent on context for word recognition, is inaccurate. It is suggested, in fact, that it is poor readers who are dependent on context; good readers do not need to rely on context as they possess efficient word recognition skills, can recognise words effortlessly and can utilise maximum cognitive capacity for comprehension. The effort required for poor readers to recognise words reduces their cognitive capacity for comprehension.

Additionally, there is now considerable evidence (Adams, 1990b) that good readers actually fixate nearly every word as they read. This process is achieved rapidly in efficient readers; therefore, less cognitive effort is required than, for example, with poor readers. So, even when the word is highly predictable, good readers actually process every word visually.

Lovegrove (1993) shows that poor readers have a weak transient visual system and a normal sustained one. This results in interference between the two systems and has implications for the processing of visual stimuli in reading, since reading involves the synchronisation of both transient and sustained systems. This may have

implications for masking parts of a page that are not being focused on at that time. It certainly has implications for allowing sufficient processing time for poor readers: eye movement studies reveal that they fixate on practically every word in a text, sometimes more than once (Ehri, 2002).

Although there may be weaknesses in the detail of Goodman's model, many of the messages contained within it require consideration, such as the view that skilled readers have the ability and the opportunity to make efficient use of context. Additionally, Goodman's (1976) emphasis on reading for meaning should not be lost, but must be balanced with other reading skills within a teaching programme.

Both top-down and bottom-up models have limitations in terms of an understanding of the reading process, because clearly readers draw on both these processes when reading. The Interactive Compensatory Model attempts to explain how these dual processes work. This model acknowledges that reading involves recognising words based on information provided simultaneously from both the text and the reader, and, as proposed by Stanovich (1988), focuses on the following assumptions:

- Readers use information simultaneously from different levels and do not necessarily begin at either the graphic (bottom-up) or the contextual (top-down) level.
- During their development of reading skills, readers may rely more heavily on some levels of processing than on others (e.g. they may use context to a greater or lesser extent).
- The reader's weaknesses are compensated for by his or her strengths.

Stanovich casts doubt on the view that good readers use the top-down model more than poor readers. Indeed, as indicated above, good readers pay more attention to graphic detail and poor readers rely more on context. Thus, higher-level processing of text does not necessarily need the completion of all lower levels of processing.

Stanovich's model, therefore, takes account of the fact that many poor readers have developed strategies for compensating for their information processing difficulties. Most models of reading are derivations from the top-down or bottom-up processes.

Connectionist Models

The dual route model (Coltheart, 1978) has for many years predominated in relation to the development of reading. It assumes that readers have two strategies at their disposal—a direct/visual strategy that is used for reading familiar words, and an indirect route that involves the use of phonological strategies, which are used for reading unfamiliar words that are not within the child's sight vocabulary. There are now several alternatives to this view. These alternatives can be referred to as connectionist approaches or parallel distributed processing (PDP) models. These models offer a framework that can be applied to a range of cognitive processing activities, such as language acquisition and memory as well as reading (McClelland, 1988).

The connectionist model applied to the reading process suggests that children learn to read through the reciprocal association between knowledge of letter strings and phonemes and the development of the ability to map letters and strings of letters to the phonemes that make up the sound units in language. This model would suggest that children access all the cognitive capacities at their disposal to do this. Ehri (1995a, 2001), in fact, suggests that children develop a single orthographic system over time rather than utilising a dual route model. The connectionist approach also implies that regular words will be accessed more easily than irregular words, as the former will conform to a pattern that the child will learn over time and exposure to print.

The English language, unlike some other languages such as German, Spanish and Italian, contains a considerable number of irregular patterns that contradict a pattern that the child may have learned. For this reason, regular words are more easily learned than irregular words, and, because knowledge of irregular patterns places cognitive demands on memory and familiarity with phonological representations, these can be quite challenging for dyslexic children. One of the difficulties with models such as the connectionist model is that they may explain the processes involved in reading, but they do not inform us about the conscious reading strategies that readers may adopt. Nevertheless, this model does place some importance on overlearning as it implies that the connections become stronger with associations, and the more associations that are made, the stronger the connections will be.

According to Snowling (2000), these connections form a knowledge base that can be drawn upon when the child is faced with a new word. Snowling (2000) discusses adaptations of these models, and one in particular that is attractive is the adaptation by Plaut et al. (1996), which provides a role for semantic representation as well as phonological representation in the development of connections within the reading process.

Moats (2004) cites genetic studies that suggest that reading skills can be partly attributed to biological wiring and life experiences. This further emphasises the importance of the pre-school literacy culture and early intervention.

Balance Model of Reading

Robertson and Bakker (2002) acknowledge in the balance model of reading that the reading process can be complex. In order to achieve fluency in reading the beginning reader first has to understand the perceptual features of text, and this has to become an automatic activity that the child can do without consciously thinking about it. Second, the child eventually becomes more familiar with syntactical rules, and this is accompanied by an increase in the number of known words that the child can read automatically. This means that the child will be able to process large parts of a sentence as one chunk rather than reading individual letters and syllables. According to Robertson and Bakker, the balance model of reading implies that reading is guided by syntactical rules and linguistic experience and is predominantly mediated by the left cerebral hemisphere. This means that reading develops through mediation, initially of the right

hemisphere when the child automatises the perceptual features of the letter and then through the left hemisphere as the syntactic and lexical features of reading develop.

Bakker (1979, 1990) suggested when he first introduced the balance model that it was possible that some children may not be able to shift from right to left in the hemispheric mediation of reading. This means that these children remain beginning readers in that they will lack the reading fluency that accompanies advancement in reading and they will continue to read slowly and in a fragmented fashion. Bakker classified these children as P-type dyslexic children (P for perceptual), as it was hypothesised that they very likely stick to the perceptual features of text.

Similarly, it was also thought possible that some other children shift to left hemispheric processing of text too early. These children read quickly, but as they tend to overlook the perceptual features they make many errors. Bakker classified these children as L-type (linguistic) dyslexic readers in view of their efforts to use linguistic strategies.

The implication of this for teaching has been the subject of a great deal of research, and techniques such as hemisphere-specific stimulation (HSS) have been applied. Such programmes provide for the flashing of words in the right (for P-types) or left (for L-types) visual field, in order to stimulate the left and right cerebral hemispheres. Words are spoken to the right ear of P-dyslexics (left hemisphere stimulation) while the other ear is listening to non-vocal music, and to the left ear of L-dyslexics (right hemisphere stimulation) while the other ear is listening to non-vocal music.

Hemisphere-alluding stimulation (HAS) is a technique that provides the reader with phonetically and syntactically demanding text for P-types in order to stimulate left hemispheric processing, and the reading of perceptually demanding text in order to stimulate right hemispheric processing. This model has been applied in a number of research studies and in practice in many countries (Robertson, 2000; Robertson and Bakker, 2002).

Method of Teaching Reading

The most popular methods used by teachers in the teaching of reading include the following:

- phonic or phonically based;
- look-and-say—reading through sight word recognition;
- language experience—using context, background knowledge and language understanding.

Phonic Model

The phonic method highlights the importance of phonology and the sounds of letters and letter combinations, and the Jolly Phonics pupil/student checklist is very useful for this (Figure 8.1).

Jolly Phonics Pupil/Student Checklist

Name: _____

knows sounds	blends regular words with these sounds	writes regular words with these sounds
s	a	t
i	p	n
c	k	e
h	r	m
d	g	o
u	l	f
b		

ai	j	oa	ie	ee	or
z	w	ng	v	oo	
y	x	ch	sh	th	
qu	ou	oi	ue	er	ar

ay	ea	igh	ow	ew
a-e	e-e	i-e	o-e	u-e
ir	ur	au	aw	al
oy	ow (cow)	y (my/funny)		

knows sound	knows name	forms correctly

Alphabet – lower case letters

knows sound	knows name	forms correctly

Alphabet – capital letters

sings / recites	knows

Alphabet order

1 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 - 60

Able to read tricky words

1 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 - 60

Able to spell tricky words

slowly	steadily	fluently

Reads – age-appropriate books

with difficulty	steadily	fluently

Able to write independently news or short story

Figure 8.1 The Jolly Phonics pupil/student checklist

Source: Reproduced with permission of Jolly Learning Ltd.

Phonic methods can help children who have an obvious difficulty in mastering and remembering sound blends and vowel digraphs and have difficulty in synthesising them to make a word. Children with dyslexia may experience difficulties in merging the two components of reading (i.e. knowledge of sound and knowledge of language) to facilitate a meaningful reading experience. The Jolly Phonics chart can help to monitor this.

Chall and Popp (1996) emphasise the need to teach phonics and argue that if taught well, it is highly meaningful—through phonics children can get close to the sound of a word and through that to the meaning of the word. They suggest a systematic phonics approach from pre-school, with related activities set within a total reading programme. This is consistent with the Rose Report (2009), which also recommends synthetic phonics.

Frith (1995) emphasises the nature of the phonological ‘core variable’ in literacy learning and particularly how it is associated with dyslexia. The Causal Model Framework (Frith, 2002) highlights the distinctiveness of phonological competence by focusing on three levels for assessing phonological difficulties: biological observations about brain functioning, at the cognitive level in relation to the hypothetical constructs of intellectual ability and phonological processing ability, and at the behavioural level in relation to performance in assessments such as phonological awareness tests, naming speed tests, and non-word reading and spelling tests.

Support for the phonological core variable model as an explanation of the difficulties associated with dyslexia has led to illuminative research activity and the development of phonological skills training programmes (Reason and Frederickson, 1996; Henry, 2003; Sawyer and Bernstein, 2008).

Look-and-Say Model

Look-and-say methods emphasise exposure to print on the grounds that children will become familiar with words and build up a sight vocabulary with increased exposure. The emphasis is therefore on meaningful units of language rather than sounds of speech (Figure 8.2). This type of method therefore requires attractive books that can become progressively more demanding. Flashcards and pictures can be used in the initial stages. The method, however, assumes a good memory for shapes of letters and words as well as the ability to master many of the irregularities of spelling and sound—symbol correspondence. This, of course, may be difficult for children with dyslexic difficulties, particularly since their memory may be weak and can rapidly become overloaded. Some elements of the phonic approaches can accompany most look-and-say methods. Indeed, Chall and Popp (1996) suggest that a good phonics programme needs to pay attention to sight recognition and that fluent reading depends on both automatic sight recognition and the application of phonic knowledge.

THE PHONEMES OF THE ENGLISH LANGUAGE			
Vowels (20)		Consonants (24)	
Symbol	Sound (or value)	Symbol	Sound (or value)
aɪ	try - write	b	back - rubber
aʊ	noun - now	d	day - rudder
ɑ	father	dʒ	judge - George - raj
ɒ	wash - odd	ð	this - other
æ	cat - trap	f	few - puff
eɪ	day - steak - face	g	got - bigger
əʊ	go - goat	h	hot
ɛ	get	j	yet
ɛə	fair - square	k	car - key - clock - trekked - quay
ɜ	her - stir - word - nurse	l	lip
i	he - see	m	much - hammer
ɪ	ship	n	now - runner
ɪə	hear - here	ŋ	sing
o	force	p	Pen - pepper
ɔ	north - war	r	round - sorry
ɔɪ	noise - toy	s	see - missed
u	lunar - pool	ʃ	ship - mission
ʊ	foot - put	t	ten
ʊə	pure	tʃ	church - latch
ʌ	bud - blood - love	θ	three - heath
		v	very
		w	will
		z	zeal
		ʒ	decision - treasure
(Total = 44)			

Figure 8.2 The phonemes of the English language

Source: Doyle, 1996. Reproduced with permission of Wiley.

Language Experience Models

Language experience models focus on the use of language, both oral and written, as an aid to learning to read through various modes of language enrichment. This helps the reader develop important language concepts and schemata, which in turn help to bring meaning to print. Although the child may have a decoding problem, the experience gained in language can help to compensate for this and bring some meaning to the text. This model engages the child in the process of going from thought to speech and then to encoding in print and from print to reading.

Ehri (1999), however, suggests that there are three essential interrelated ingredients in the knowledge base for teachers that help to inform them in making

decisions on reading instruction. These are (1) knowledge about the reading process, (2) knowledge about teaching methods and how these facilitate the reading process and (3) knowledge about observational procedures to identify the processes that readers are facilitating and the processes they have difficulty with. Therefore, knowledge of the reading process is important, but it is equally important to relate this knowledge to classroom practices and particularly to observing how children relate to the reading process in the class. Clay (1985) has devoted a considerable part of the assessment component of the reading recovery programme to analysing children's reading behaviours.

Developing Reading Skills

There is considerable evidence to suggest that pre-reading activities can significantly assist the development of the reading process. Such activities, as well as developing pre-reading skills, help to develop essential skills in reading comprehension. Reading is interactive, as it combines the reader's background experience and previous knowledge with the 'new' text to be read. This interaction provides the reader with meaning and interpretation. Reading, therefore, is an interaction of previous knowledge involving the use of semantic and syntactic cues and accuracy in the decoding of print. It is important that in teaching reading these aspects are considered. It is likely that the child with dyslexia will find this interactive process difficult as his or her efforts and cognitive capacities are directed to either mechanically decoding the print or obtaining the meaning from print—the simultaneous interaction of these processes is not easily accomplished.

Two key elements of reading are the understanding of print and the message (purpose) of the print (Box 8.2). They both have to be carefully considered in the selection and development of reading programmes and strategies for children with dyslexia.

UNDERSTANDING OF PRINT

- Alphabet skills
- Organisation of letters and words
- Visual features of letters and words
- Phonological skills
- Word rules
- Understanding of syntax

PURPOSE OF PRINT

- Semantic understanding
- Vocabulary skills
- Use of inferences
- Comprehension skills
- Prediction skills
- Concept and schema-building

Box 8.2 Reading skills

Teaching Reading—the Debate

The teaching of reading and the field of literacy have been subject to long-standing debate. Theories and methods have been reviewed, revised and recycled. Literacy is one of the areas that appear vulnerable to political initiatives and educational trends. It can become a heated subject of debate, particularly following revelations of dismal and disappointing attainment scores in national and international surveys. The issue of reading standards can be a national concern and lead to national debate. This has been evident in the UK regarding the follow-up debate to the Rose Report (see Chapter 6).

Soler (2002) suggests that the literacy debate has been a consequence of the increase in scientific procedures to measure progress and the increasing interest in international comparisons in literacy levels, which in some cases show a decline. Many have argued that the decline is due to a trend towards the whole-language model of reading. Wray (2009), however, challenges this view by arguing that the evidence for suggesting that a decline in reading standards is due to the move toward a whole-language approach is not strong. He suggests that the whole-language movement is not practised widely enough to account for such a decline in reading standards. He further suggests that the criteria for assessing reading attainment need to be questioned since they raise the fundamental point, ‘What is reading?’

At the same time it might be argued, ‘What is whole language?’ Bergeron (1990) attempted to obtain a consensual definition of whole language from the literature and found that it was defined as an approach, a philosophy, an orientation, a theory, a theoretical orientation, a programme, a curriculum, a perspective on education and an attitude of mind. It is difficult either to promote or to criticise a movement when it is so loosely defined.

To attempt to find the positive aspects of this loose interpretation called ‘whole language’, one can look for some common factors in Bergeron’s responses. Adams (1990a) argues that some commonalities include:

- construction of meaning from text;
- developing and explaining the functional dimensions of text;
- student-centred classrooms;
- integration of language arts.

The long-standing view that emerged from the work of Goodman (1976; Smith, 1971) suggests that skilful readers do not process individual letters, spelling–sound translations are irrelevant for reading and it is therefore not necessary to teach spellings and sounds. This view suggests that the teaching of phonics should not be emphasised, because children have to learn phonic rules by themselves and can only do this through experience in reading. Phonics teaching, therefore, according to this view, can result in an overemphasis on the technical decoding skills and as a result the meaning of the text will be lost.

There are considerable arguments against this (Adams, 1990a; Turner, 1991; Rose, 2006). These centre on the need for children to read words and acquire automaticity in the technical subskills of reading before they can obtain meaning from a text. Adams (1990a), in fact, argues that automaticity develops from actually reading words and not by ignoring or guessing them.

This view is supported by researchers and educationalists in other countries. Adamik-Jászó (1995) describes the Hungarian experience as based on reading programmes focusing on the oral language development of the child. This indicates that phonemic awareness is an essential prerequisite of reading instruction. Studies by Johnston et al. (1995), comparing the book experience approach in New Zealand with a systematic phonics approach in Scotland, showed that children in the phonics programme were significantly better at reading non-words and had significantly superior reading comprehension.

Ehri (1995a, 2002) suggests that for sight word reading to develop, learners must acquire and apply knowledge of the alphabetic system. She asserts that a weakness in the whole-language approach is the absence of systematic phonics instruction at the early stages. Attention is not paid to the need for young children to master the alphabetic system through learning letter shapes and names, sounds and letter correspondences, and blending sounds into words. Many children do not acquire these skills merely through exposure to print.

Tunmer and Greaney (2008), from a New Zealand perspective, argue that providing struggling readers with explicit and systematic instruction in word analysis skills outside the context of reading text is crucial. They suggest that this would ensure that children with reading difficulties recognise the importance of focusing on word-level cues as the most useful source of information in identifying words. They also maintain that this helps them overcome a tendency to rely on sentence context cues to identify unfamiliar words in text rather than using context to supplement word-level information. Pressley (2006) argues that one of the major distinguishing characteristics of struggling readers is their tendency to rely heavily on sentence context cues to compensate for their deficient alphabetic coding skills.

This view, however, is not without counterargument. For example, Stainthorp (1995) reports on a study that suggests that top-down, context-driven strategies can modify performance in reading. She accepts, however, that the beneficial effects of context are partly dependent upon children having developed some decoding skills, and the skills required for decoding should not be left to chance. This view is reiterated by Turner (1995), who suggests that children learn to read by being taught, although he suggests that the component skills of reading are initially learned independently.

Bryant (1994) contends that both forms of linguistic knowledge, constituent sounds and language experience, play an important part in children's acquisition and development of reading and writing skills. He reports on a longitudinal study in which children's scores in phonological tasks predicted the progress they made in learning about letter-sound associations, and that scores in semantic and syntactic

tasks were good predictors of children's ability to use context and decipher difficult words within a meaningful context. Bryant concludes that each form of linguistic knowledge makes an independent and specific contribution to the reading process, particularly since the children's scores in the phonological task did not predict the children's success in the use of context and, similarly, scores in the semantic and syntactic tasks were not significant in predicting phonological skills.

Wilkins (2003), Singleton (2009) and Everatt (2002) provide evidence to support the importance of visual aspects of the reading process. Singleton suggests that visual stress interferes with the ability to read for any reasonable duration and consequently children who suffer from this problem tend to avoid reading. As a result, they lack the amount of practice that is essential for the development of fluent decoding of text and good reading comprehension. This can have implications for children with dyslexia, as Singleton and Henderson (2007) found that 41% of dyslexic children in their study showed high susceptibility to visual stress; the corresponding figure for the non-dyslexic control group was 23%. White et al. (2006) found that 35% of their sample of dyslexic children aged 8–12 years met criteria for visual stress, while only 18% of the non-dyslexic control group matched for non-verbal IQ met criteria for visual stress.

Singleton (2009) provides an interesting hypothesis, which he calls the 'threshold shift'. He argues that the degree of threshold shift is determined by cognitive factors, demand factors, ophthalmic factors, optical factors and subjective factors. The cognitive factors relate to the reading problems such as those associated with dyslexia—decoding, working memory and text difficulty. The demand factors include the increase in the amount of reading necessary to function effectively in education and in society. The ophthalmic factors relate to presence and severity of visual problems, and the optical factors relate to lighting conditions, glare, line spacing, contrast and flicker. The subjective factors include the personal tolerance and discomfort the individual may experience.

Singleton argues that dyslexia tends to increase a person's susceptibility to visual stress, because the effect of dyslexia is to shift the threshold for visual stress from higher to lower. The threshold shift theory, he argues, is consistent with much of the current evidence on visual stress and predicts that visual stress will be more prevalent in people with dyslexia than in the rest of the population.

Balanced Approach

Clearly, a balanced approach is necessary when looking at the teaching of reading. Each of the different models and the range of methods have many commendable aspects and should be utilised according to the individual needs and the individual profile of the reader.

Welch and Freebody (2002) suggest that psychology, human development and educational measurement have been the disciplines that have traditionally informed our understanding of how to teach reading, and this has assumed that the teaching

of reading is politically neutral and objectively quantifiable. However, according to Wearmouth et al. (2003), this view has been countered. They suggest drawing on the work of Welch (1991) on cross-disciplinary studies, which itself draws upon history, politics, linguistics and economics. These studies counter this traditional view of the teaching and evaluation of literacy and link them to differing dominant visions of what literacy is for and how we must teach it. The implication is that reading and literacy practices not only meet cultural and social needs, but also actually shape how cultures develop.

Welch and Freebody (2002) suggest that there are some general aspects to reading debates across national and international contexts. These include concern about literacy standards and particularly declining standards (slide hypothesis). Also, the increase in demands for literacy competencies for effective civil, social and cultural functioning in our society have perhaps created the misleading impression of a decline in literacy standards. It should, however, be noted that children with dyslexic difficulties usually have considerable difficulty in phonological awareness and, as a result, in acquiring alphabetic and phonic knowledge. This therefore needs to be considered in the development of a balanced programme for dyslexic children.

Reading Interventions

Vadasy and Sanders (2008) argue that most reading interventions have been designed and evaluated for use by teachers. They suggest, however, that some programmes have been designed for teaching assistants (paraeducators). These include some popular US programmes:

- *Phono-Graphix* (www.readamerica.net; Fill et al., 1998; McGuinness et al., 1996);
- *Spell Read P.A.T.* (www.kaplan12.com; Rashotte et al., 2001);
- *Read Naturally* (Hasbrouck et al., 1999);
- *Great Leaps* (Mercer et al., 2000) fluency building programme;
- *REWARDS: Reading Excellence: Word Attack and Rate Development Strategies* (Archer et al., 2000; Archer, 1981; Vachon, 1998).

In the UK, teaching assistants are often assigned to teach reading from a prescribed approach. Reid and Green (2007b) suggest that teaching assistants have considerable potential to offer support to staff and students and can be seen as a major contributor within the school. One of the key features of this is the management commitment to training teaching assistants and management recognition of the potential of teaching assistants who have enhanced levels of training. In the case of students with dyslexia it is critically important that teaching assistants have at least some training as they can then support the teacher in implementing literacy programmes.

Vadasy and Sanders (2008) designed a study using approaches that could be used by trained teaching assistants. This study specifically targeted four areas of instruction recommended by the National Reading Panel (2000). These are:

- phonemic awareness;
- phonics;
- fluency;
- motivation.

The interventions in this study provided students with explicit and systematic instruction in letter–sound relationships, decoding strategies and carefully coordinated spelling instruction. Students had daily opportunities to practise accurate and fluent reading in decodable stories that feature the letters and sounds they are learning. Letter–sound relationships are introduced at a reasonable pace, with extensive practice opportunities and cumulative review of previously taught relationships. Decoding instruction was explicit, with guided practice, scaffolding and modelling. The outcome of these studies was highly encouraging, with the students showing gains in most areas.

Vadasy et al. (2006) implemented a kindergarten intervention that was evaluated in three studies, two randomised and one quasi-randomised. In the first randomised study, the teaching assistants (paraeducators/tutors) provided 18 weeks of individual instruction in phonemic and alphabetic skills to kindergarten students who averaged in the 10th–25th percentile at pre-test in receptive vocabulary, phonological awareness and reading accuracy. The instructional components were:

1. *Letter–sound correspondence*—Letter names and sounds were introduced at a rate of about one new letter name/sound every two lessons. Students practised pointing to the letters, saying the sounds and writing the letters that matched the sounds provided by the instructor.
2. *Phoneme segmenting*—Students practised segmenting consonant–vowel–consonant (cvc) words into three phonemes. Students were instructed to repeat the word, point to each box as they spoke a phoneme, and then sweep their finger under the boxes and say the word fast.
3. *Word reading and spelling*—This involved phoneme blending, pointing to an example word in each lesson, stretching out the sounds without stopping between phonemes, and then saying the word fast. Students then practised blending orally six to nine words per lesson, with scaffolding and assistance. There was explicit instruction in how to map letters to phonemes.
4. *Irregular word instruction*—The lessons featured high-frequency irregular words that appeared in the decodable texts. The tutor supplied the word, and the student pointed to the word, spelt it aloud and read the word again.
5. *Phoneme blending*—To add practice in recognising orally blended words, the tutor asked the student to guess the word (say it fast) that the tutor said in a slow, stretched-out way (without stopping between phonemes, just as the student was learning to do in the word reading activity).

6. *Alphabet naming practice*—Depending upon the student's progress in alphabetic skills, the tutor implemented one of these activities: (a) say the alphabet (letter names) while pointing to the letters on the letter-sound card; (b) say the alphabet (letter names) without looking at the letters/chart; (c) point to the letters that the tutor names; or (d) name the letters that the tutor points to.
7. *Assisted oral reading practice*—Students practised reading aloud in decodable storybooks for the last 10 minutes of each instructional session.

They found that tutored students maintained higher levels of performance across reading outcomes through the end of first grade. The phonics-based interventions described include features associated with the sustained use of reading interventions: high student acceptance; practical, concrete and accessible materials; high degree of specificity; professional development that includes modelling of strategies and ongoing problem solving; attention to implementation in typical schools; and perceived benefits for students. Vadasy and Sanders (2008) argue that trained teaching assistants (paraprofessionals) can be responsible for implementing this type of programme, and that students who fail to respond to this first line of instruction in the early years can then be evaluated before it is too late and more intense and more skilled intervention implemented.

Sawyer and Bernstein (2008) tested the assumption that more rapid mastery of phonological awareness skills would offer an advantage to those children with dyslexia with a core phonological deficit. They suggest that it appeared that those who had mastered phonological awareness skills earlier also demonstrated greater gains in decoding overall.

Their study substantiates the supportive role of phonological awareness in the acquisition and development of literacy skills. Sawyer and Bernstein also argue that because dyslexia is the most common learning disability in the USA, accounting for 80% of all learning disabilities (Katusic et al., 2001), it is imperative that all teachers be educated to understand the nature of dyslexia and the specific difficulties these students encounter in their progress towards literacy. They argue that an integrated approach to literacy instruction with dyslexia is necessary.

There is no doubt that virtually every country is committed to improving the literacy levels. A good example of this is the UK Vision for Literacy 2025 (National Literacy Forum, 2014). The report shows concern for the potential of falling literacy standards and advocates that literacy support in the early years is embedded within a range of existing community services. The report indicates that children at risk of developing weak language and literacy skills for social or developmental reasons need to be identified and supported before starting school.

Methodological Issues in Reading Intervention Research

Several factors need to be considered in interpreting and in designing and evaluating reading intervention programmes. One important factor is the characteristics of

the sample and whether or not the sample is a discrete group. Tunmer and Greaney (2008) suggest that poor readers with comorbid disorders such as attention or behaviour problems may respond differently to particular interventions compared to children without these disorders.

The setting, or combination of settings, under which the teacher–student interactions are carried out can also be influential, as well as the period of time, for how long and for what reasons (Tunmer and Greaney, 2008). In the case of dyslexia, conceptual factors are also important. For example, Tunmer and Greaney argue that the conceptualisation of what skilled reading is and how it is acquired will greatly influence how we define reading disability or dyslexia. Therefore, factors such as the causes of the problems in learning to read, and what we believe are the most effective intervention strategies for helping students to overcome persistent literacy learning difficulties, will influence research studies. This can have implications for the selection of the sample as well as the selection of the reading programme.

The nature of the reading approaches used in research on reading intervention needs to be considered alongside the current level and the current characteristics of the participant in the study. Torgeson (2005) suggests that the stage of reading development at which the difficulty occurred, and the type and severity of the processing deficit responsible for the difficulty, are influential and will affect the outcome of the study.

For example, Tunmer and Chapman (2004) argue that, as a consequence of developmentally limiting deficits in phonological awareness and knowledge of print at the outset of learning to read, many struggling readers take longer than usual to acquire the self-improving alphabetic coding skills necessary for achieving progress in reading. To support their view, Tunmer and Greaney cite Vellutino et al. (1996), who point out that ‘any given level of reading achievement is a by-product of a complex interaction between one’s endowment and the quality of one’s literacy experience and instruction ... the optimally endowed child may be able to profit from less than optimal experience and instruction, whereas the inadequately endowed child may have difficulty profiting from even optimal experience and instruction’ (p.62).

Factors to Consider in Developing and Using Reading Approaches

Ehri (2002) suggests that teachers need to monitor beginning readers’ progress in acquiring letter knowledge and phonemic awareness to make sure that it is occurring for each child. This is particularly important in the early stages because there is considerable variability among children in the rate of development of reading skills. Ehri suggests that even at this early stage, extra teaching time is required for children who enter school without letter knowledge and phonemic awareness or for those children who experience some difficulty acquiring these skills. She suggests teaching the major grapheme–phoneme correspondences, vowel correspondences, how to

segment pronunciations into the full array of phonemes and how to match these up to graphemes in the spellings of words to fully analyse words.

There are many activities that can be utilised to support a structured phonics programme. Among the most appropriate of these is the use of games and structured activities to reinforce a particular teaching point. These games and activities can be developed by teachers, although there are some excellent examples available commercially (see www.crossboweducation.com).

Activities can include syllable segmentation games such as clapping out the sound of children's names, rhyming skills games such as nursery rhymes and alliteration games such as games using pairs of objects with the same sound.

Other strategies that can be used are those that rely on the use of context. Readers can utilise two principal types of context:

- *Syntactic context*—The grammatical structure of sentences and clues from pre-fixes, punctuation, word endings and word order.
- *Semantic context*—The meaning of words and the meaningful relations between words.

Syntactic context helps the reader predict the written word. If the child is reading only key words he or she will not be able to draw on syntactic context for meaning. Snowling (2000, 2002) refers to the triangle model of reading (Seidenberg and McClelland, 1989) and the connectionist model (Plaut et al., 1996), which highlight the connections between orthography and phonology, and the connections between these aspects and semantics stemming from the context (Figure 8.3). Snowling (2002) suggests that the semantic pathway of dyslexic readers operates normally and, although dyslexic children tend not to be fluent readers, they can show extensive use of comprehension-monitoring strategies and self-correction to ensure they have understood what they have read. The study by Nation and Snowling (1998),

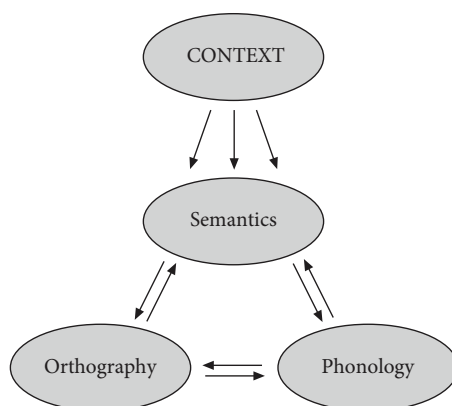


Figure 8.3 The triangle model of reading

Source: Reproduced by permission of BPS; from Snowling, 2002.

which compared the ability of dyslexic readers and poor comprehenders, showed that in the context condition the dyslexic children fared best, which highlighted the view that dyslexic children benefited more from context than both a younger control group matched for reading age and poor comprehenders. Nation and Snowling therefore suggest that dyslexic readers who have decoding difficulties may be able to compensate by relying on contextual cues to support the decoding process. Semantic or contextual context relates to the meaning of words and how they convey messages. This acts as a powerful aid to reading, and many readers with poor decoding skills can rely, perhaps too much, on the use of semantic context. Using inferences and even accurate guessing can be a powerful aid to dealing with the written word. It is important, therefore, that learners develop skills in using inferences and identifying the main theme and points in a particular story.

Context, therefore, as a reading strategy can be important and is evident in the following ways:

- within the sentence—before and after the word being read;
- within the text—before and after the sentence being read;
- within the reader—entire store of knowledge and experience.

To utilise fully the benefits of contextual reading it is also important for the reader to have a stock of sight words in order that the context can be accurately obtained. For example, it has been argued by the proponents of the language experience approach that, instead of helping children build up a stock of sight words in order to read, perhaps teaching should be directed to help children read in order to build up a stock of sight words. This would mean that sight words can be built up gradually within the context of reading itself.

It is interesting to note that the 220 words on the Dolch list—that is, the most commonly used words—make up around 75% of the words in primary reading materials (Chall and Popp, 1996).

A classic dilemma is exemplified here between encouraging, indeed insisting on, reading accuracy of all the words and accepting the accurate reading of key words that should be sufficient through the use of semantic cues for comprehension acquisition.

The reading of every word, although it may help the reader obtain the full use of the benefits of syntactic cues, can restrict the reader's use of prediction and inferences because attention and concentration are absorbed in accurate decoding.

Contextual strategies can be effective because:

- words are easier to identify in context than in isolation;
- beginning readers can often identify words in context that they cannot identify in isolation;
- they can be used to predict what might come next;
- the syntactic and semantic context can help to confirm or correct these identifications.

The Literacy Experience

Au and Raphael (2000) make a strong case for supporting the literacy development of a diverse range of students with both age-appropriate and reading-level-appropriate materials. They suggest that 'teaching reading carries with it two obligations. On the one hand, we must make sure that all students are taught at an instructional level, within their zone of proximal development so that they make appropriate progress each year. On the other hand regardless of reading level, we must engage students of every age in critical thinking using age-appropriate materials' (p.152). This has implications for dyslexic children and for motivation and positive attitudes towards the nature of literacy. Eames (2002) reports on successes despite dyslexic students' difficulties with written language—the children in the study reported motivation in reading about their own interests, which included car magazines, sport, history and warfare.

There is now a considered opinion that literacy can be an agent of change, and the thrust of this chapter has indicated that literacy is much broader than reading alone.

Literacy has been presented in terms of a socially constructed phenomenon embedded within the cultural context (Eames, 2002; Wray, 2002; Vygotsky, 1978; Bruner, 1986). It therefore stands to reason that the teaching of literacy should consider both the diversity of the children being taught and the cultural and social implications of literacy. Moreover, the cognitive and critical thinking aspects of literacy should also be considered.

The experience of language and of learning is vital for a critical appreciation of literacy, and it is therefore vital that groups such as dyslexic children should not be overlooked as they need to obtain the broader perspectives offered by literacy to appreciate different societies and cultures. Ideally, this should be received through reading and careful provision of age-appropriate reading material. But if this is not feasible, the social, cultural and cognitive implications of literacy should be achieved through some other medium—discussion, film or listening. Similarly, assessment needs to reflect and capture this broad view of literacy and measure appropriate outcomes. Eames (2002) suggests that these factors give rise to a number of key implications for practice. These include:

- the notion of a broad definition of literacy that stresses higher-order functions and critical thinking;
- the recognition that literacy is not simply a single ability or process, but rather the symbiotic interaction of abilities and learning processes;
- the need for well-thought-out teaching programmes that reflect a broad definition of literacy and that are responsive to dyslexic children's interests and preferred learning styles;
- teaching materials and literature should reflect philosophies of teaching and need to be both age- and reading-level appropriate.

A balanced view, therefore, of the teaching of literacy needs to include constructivist approaches to learning and literacy where the teacher is the key agent. Teaching programmes should emphasise a range of interactive and reflective teaching methods that engage the learner in metacognitive processes to promote critical thinking as well as the social and cultural factors that enrich the learning and the life of readers.

Framework for Teaching

An example of a framework for teaching literacy followed on from the release of the National Literacy Strategy in England (Framework for Teaching, DfEE, 1998). This document set out the teaching objectives in literacy for students from reception to Year 6. It was this document that set out the format of a Literacy Hour as a daily period of time throughout the school that would be dedicated to 'literacy teaching time for all students' (DfEE, 1998, p.8). The Hour was intended to cover both reading and writing and was to take the form of an introduction of 30 minutes, 20 minutes of independent work and a 10-minute plenary. It essentially comprises the whole class, with a balance of reading and writing (15 minutes approximately), focusing on shared text work; another whole-class 15 minutes on word work; group and independent work for 20 minutes, such as independent reading; and whole-class review for the final 10 minutes, reflecting and consolidating teaching points.

This has laid the foundation for the current national curriculum and national literacy strategies (Department for Education, Department of Health, 2014, updated 2015). The framework document the national curriculum in England published in July 2014 emphasises the importance of reading fluency as well as vocabulary building. There is also an emphasis on building up phonic knowledge in Year 1. Throughout the literacy strategy there is an emphasis on developing reading for pleasure and extending the wider context for reading, and by Years 5 and 6 there is an emphasis on inferential reading and discussion of books.

Although it is generally accepted that dyslexia is more than a reading difficulty (Fawcett, 2002), there is still little doubt that literacy is a crucial element of dyslexia and indeed in success at school. The school curriculum is dominated by the need to acquire literacy skills, and without these skills children can be placed at a marked disadvantage throughout school. Additionally, it has been shown that literacy can have significant sociocultural as well as cognitive implications (Wearmouth et al., 2003). The acquisition of literacy, therefore, is necessary for the development of learning and life skills.

The importance of literacy is highlighted by Welch and Freebody (2002), who argue that 'literacy education is at the centre of debates about society and instruction, in and out of school ... and is a site from which to view the shifting fortunes of contesting interests; public and private ... host communities and ethnic minorities and increasingly school, work-place and market-place. Further these contests often

target the issue of standards of literacy, rather than, say, the methods or the materials of literacy education' (p.62). It is precisely this situation that can disadvantage the child with dyslexia. Governments' demands for higher overall levels of literacy achievement, while on the surface commendable, can be sought at the expense of failing to acknowledge the specific methods needed for children with specific literacy difficulties. As this chapter has shown, there is more to literacy development than an increase in reading age. Eames (2002) pinpoints this when she reports that governments are essentially responding to the rising demands for literacy and not to the declining absolute standards of literacy. She argues that 'the educational community needs to be aware that these higher demands may be unrealistic at certain developmental stages ... [we need to] be reasonable in our expectations of students' literacy performances and not overdriven by market forces' (pp.336–337). It is important, therefore, to ensure that children with dyslexia who may require specific teaching approaches are not casualties of such market forces. The implications of this are that literacy is more than a single ability or process and should be viewed from a broader perspective. The perspective should include critical thinking skills and metacognitive processes, as well as the family and sociocultural needs. Teaching programmes for literacy, therefore, need to reflect this broader conceptualisation and need to consider the individual student's cognitive, social and cultural needs, as well as the need to achieve higher attainment levels as might be measured by conventional tests. But the importance of the cognitive, social and cultural factors that can be associated with literacy development should not be lost in the increasing desire, particularly among politicians and policy makers, for quantitative data on literacy levels.

Summary

This chapter has looked at some principles in the acquisition of literacy by focusing on reading and has examined a variety of approaches by discussing some of the problems children with dyslexia may display in relation to reading. Since the concept of dyslexia is essentially a multifaceted one with neurological, psychological and educational perspectives, it follows that the teaching of reading should be flexible and should consider the child's learning difficulties and preferences in the educational context. Clearly, no one approach can be singled out, and a combination of methods involving the teaching of sight words, phonics and context is preferable. It is also important to consider the visual aspects of reading and the potential visual challenges noted in this chapter that children with dyslexia can experience.

The learning environment is also important and we need to look at what the child brings to the situation and have some knowledge of the child's background knowledge and preferred learning styles and strategies. All of these aspects are important to facilitate the acquisition of literacy.

Points for Reflection

- Consider the different models of reading. Reflect on the strategies and approaches you may use for each of some of these models.
- Consider the implications for teaching reading for the models mentioned in this chapter. Reflect on the model(s) you use in your teaching. What are the advantages and disadvantages of these models?
- Reflect on the debate on the teaching of reading. How might you achieve a balanced approach to the arguments and the debate?
- Consider how you might evaluate your practice in the teaching of reading. Reflect on some of the methodological issues discussed in the chapter.
- Consider the factors you need to take into account when developing materials to assist in the teaching of literacy. Consider phonological awareness approaches, literacy frameworks and the literacy experience.
- Consider how you can work in partnership with parents in supporting their child overcome the barriers they experience in reading.