

3 | The Code-Emphasis Method

Part 1 Research: What Teaching Approach – a Mixture of Methods or a More Efficient Route?

Dangers of the Mix-of-Methods Philosophy

There are a number of dangers in adopting a mix-of-methods philosophy, whether a real mix or not, most particularly at the beginning stages of reading, when a combination of reading methods is not appropriate. Because a child must grasp the alphabetic principle in order to learn to read, a code-emphasis approach is particularly relevant during the initial stages of instruction. Research shows that, whatever the methods of instruction used, 75% of children will eventually discover the alphabetic principle and learn to read, but unless they receive the appropriate instruction at an early stage, at least 25% of children may not learn how to read at all (Lieberman & Shankweiler, 1991).

What Is in the Mixture?

One of the dangers of adopting a philosophy that advocates a mixture of methods is that it obscures the need to examine exactly what is in the mixture. There is a tendency to accept such a philosophy as reasonable and ‘balanced’ (National Curriculum, SCAA, 1994a, p.7). To question such a concept would be, by implication, an unbalanced thing to do. However, in the light of research findings, there is a need to question whether the methods being delivered are those most appropriate to the particular stages of reading development.

Research evidence, for example, shows that children taught by phonics methods early on progress faster and further than children taught by whole-word methods (see Jorm & Share for reviews that support this claim, 1983). There is a danger that the reading progress of even those lucky 75% who do learn to read, regardless of method, will not be as fast as it could be. Seymour and Elder (1986) have found, for example, that after

three years of whole-word instruction, readers were decoding phonologically (no longer 'reading' words as whole units or shapes), and had discovered the alphabetic principle, but their performance was much poorer than that of a comparison group taught by phonics. Much research (where I.Q. and reading levels have been controlled) shows that cipher readers learn to read faster and more accurately than whole-word readers (Gough & Walsh, 1991; Stanovich, 1984, 1992; Vellutino & Scanlon, 1991). A recent study reported by Foorman and Francis (1994) found that all beginning readers move through the same response patterns when learning how to read and spell. The pattern progresses from non-phonetic to phonetic to correct response. However, the reading progress of children who receive more code-emphasis instruction is significantly faster than that of those who receive less of this type of instruction.

At-Risk Readers Overlooked

Another danger of the adoption of a variety of approaches is that it overlooks the at-risk reader where a mix of methods will not work. The children who do learn to read regardless of method are those that have reasonable levels of phonological awareness. The at-risk reader is one who, in spite of normal mental development, fails to read; these children have been found to be deficient or delayed in phonological awareness. They have great trouble identifying the separate sounds in spoken words. Without some level of rudimentary phonological skills, which promotes the learning of letter-sound correspondences, they have difficulty acquiring the necessary alphabetic insights. Calfee (1983) suggests, in fact, that the majority of children identified as dyslexic reflect an instructional dysfunction rather than a constitutional disability. Indeed, others point out that the primary cause of dyslexics' reading problems are due to the limits imposed by inadequate instruction, which usually provides only limited attention to the development of phonological awareness and spelling-to-sound knowledge (Ehri, 1989).

Importance of Sequence Ignored

A third danger of the mix-of-methods approach is that it obscures the need to address the issue of sequence, the possibility that certain instructional approaches need

emphasis at different stages of reading development. Reading achievement may be influenced not only by the type of mix, but also by the order of presentation or the emphasis given at different stages. Of interest in this context is a study conducted by Brown and Felton (1990) which avoids many of the shortcomings found in the studies concerned with disabled students. (Many studies suffer from small sample size, limited instructional time, cross-sectionality of design rather than a longitudinal design, and no control of the instruction already received.)

In this American study, two groups of 5-year-old children identified as at risk were taught for two years using one of two graded reading schemes. These children were selected from a larger population of children and identified as at risk on the basis of large discrepancies between their mental ability and scores on phonological awareness measures. One reading scheme was Houghton-Mifflin, a programme that emphasises meaning, context use, sight word learning and basic phonics elements. The other was Lippincott, a structured-phonics, code-emphasis programme. It is important to note that both programmes included phonics instruction.

Children were tested at the end of Year 1 and Year 2, with the code-emphasis or structured-phonics group earning higher scores on all measures in both years. Statistically significant differences in favour of the code-emphasis group were found on measures of word identification, spelling, and decoding of real and nonsense words. These results are striking because they show that crucial differences were not due to the presence or absence of phonics but to differences in how presentations were structured, in the attention paid to careful sequencing of material, and in the intensity or amount of code instruction given. This study and many others illustrate that for at-risk children early, well-structured, systematic teaching that explains how the writing system works should be the prime goal of beginning instruction if reading failure among those with poor phonological skills is to be overcome (Ball, 1993).

Other research has shown that among the practices of effective teachers are: (a) teaching in small, sequential steps, (b) maintaining a relatively fast teaching pace but avoiding large mental leaps, and (c) providing practice at graduated levels of difficulty in order to ensure relatively error-free experiences (Yates & Yates, 1993).

Why Phonics Has Something to Offer

To become a successful reader, the child must master the cipher (Gough et al., 1992). Because of the critical importance of decoding, phonics instruction may have something to offer all children at the beginning stages of learning to read. The most basic skill in learning to read is word identification. Experiments show that universally for all readers, including Chinese readers, skilled word identification is dependent on retrieving the phonological form of a word (Perfetti, 1995b). Fluent, fast, word recognition, which is not dependent on context or whole-word memorisation, is the foundation supporting skilful reading comprehension (Gough & Tunmer, 1986; Perfetti, 1985; Vellutino, 1991), spelling (Cunningham & Stanovich, 1993), and vocabulary acquisition (Aguiar & Brady, 1991; Stuart, 1995). Recent reading models now reflect this thinking as they are interactive, recognising the reciprocal relationships between decoding and comprehension), but with a heavy bottom-up, or decoding emphasis (Stanovich, 1991).

In order to be able to decode alphabetically, there are, as stated previously, two requirements: the child must be phonologically aware (be able to detect and identify separate sounds in spoken words), and the child must be able to make connections between these speech sounds and the letters used to represent them. Research suggests that phonological development is influenced by the type of instruction children receive (Foorman et al., 1991; Uhry & Shepherd, 1993). In addition, it also shows that phonics-taught children develop better phonological skills. Alegria et al. (1982) found that beginning readers who received instruction based on a phonics approach developed phonological awareness very rapidly over four months; the whole-word taught children, however, did not make any gains in phonological skills.

In fact, phonics instruction, itself, constitutes a form of phonological training (Tunmer & Rohl, 1991). By helping the reader attend to the sequences of letters and their correspondences to speech patterns (Adams & Bruck, 1993), it forces attention to the interior details of words. Phonics instruction focuses directly on the alphabetic code; that is, it makes explicit the sound/symbol correspondences (Ball, 1993). Both the requirements for promoting the grasp of the alphabetic principle, then, are components of phonics

instruction. It is perhaps not surprising, therefore, that explicit, systematic phonics teaching is the most efficient method to ensure that the beginning reader acquires the crucial decoding skills necessary to read (Lieberman & Lieberman, 1990).

Components of High Quality Phonics Instruction

A great deal of research has important implications for designing an effective programme of phonics instruction. The following topics have relevance here: (a) rudimentary phonological awareness; (b) more advanced phonological awareness; (c) onset and rime; (d) irrelevance of onset and rime; (e) training in letter-phoneme correspondences; (f) phonological and letter-sound training in combination; and (g) practice.

(a) Rudimentary Phonological Awareness

It has been found that children as young as 3 years of age can appreciate rhyme, and knowledge of nursery rhymes corresponds significantly with subsequent development of phonological awareness (Maclean et al., 1987). Of ten tests designed to test phonological awareness, the three tasks that involve rhyme are the easiest and produce the best performance (Stanovich, 1984; Yopp, 1988). Thus, instruction which develops an early appreciation of poetry and nursery rhymes, before formal school instruction, may constitute an early form of phonological awareness training.

(b) More Advanced Phonological Awareness

A more advanced form of phonological awareness, *phonemic awareness*, involving the sensitivity to the separate sounds in spoken words, is needed in learning how to read. Unlike the awareness of rhyme, which develops relatively easily (Maclean et al., 1987), the insight that words are composed of separate sounds *does not develop* in the absence of either explicit training of this knowledge, or code-emphasis reading instruction (Adams, 1990; Blachman, 1987; Bruck & Treiman, 1992; Byrne, 1991; Tunmer & Nesdale, 1985).

Without specific training in this area, children with weak phonological skills at the beginning of primary school will struggle with reading years later. In fact, it has been shown that those with poor phonological skills at the start of school are poor readers four years later, with decoding skills only as

good as those achieved by average to good readers almost three years earlier (Juel, 1988). It has been found that even when IQ, gender, school, and sight word knowledge are held constant, very small differences in initial phonological ability result in increasingly large differences in reading achievement (Jorm, Share, Maclean, & Matthews, 1984); this particular study found that after one year the group of children superior in phonological skills differed by four months in reading achievement, but by the end of a second year of schooling the difference had increased to nine months.

In one longitudinal study, it was found that the disparity between two groups of English children classified as either phonologically aware or unaware at age four, grew from a six-months' difference in reading age at the age of 5, to a difference of three years in reading age at age 11 (Stuart, 1995; Stuart & Masterson, 1992). Furthermore, as shown in Figure 1, an investigation of the reading attainment of these children at age 10 showed that it continued to be significantly correlated with the prereading phonological awareness scores obtained at age 4.

Finally, in another study, evaluating a phonological assessment battery, it was found that between the ages of 6 and 10, increasing differences in phonological awareness ability contributed to growing differences in reading ability. As shown in Figure 2, the gap between good and poor readers widened from a difference of just under twelve months at age six to a difference of more than two years at age 8, with finally, a difference of more than four years appearing at age 10 (Gallagher & Frederickson, 1995).

However, a number of studies have demonstrated the startling long-term effects of training in phonemic skills. Blachman and others (1994) found that eleven weeks of training in these skills to 5-year-old children (who did not differ from the control group in age, sex, race, socioeconomic status, phoneme awareness, letter/name knowledge, or letter/sound knowledge) resulted in significant reading achievement advantages which were still apparent after two years. Others have found that phonological training can have lasting and increasingly positive effects on reading achievement after one year (Lundberg et al., 1988), and even after 4 years (Bradley, 1987). Byrne & Fielding-Barnsley (1995) found that twelve weeks (one thirty minute lesson per

Figure 1: Effect of Either Good or Poor Pre-Reading Phonological Awareness Scores at Age 5 on Reading and Spelling Scores at Age 11

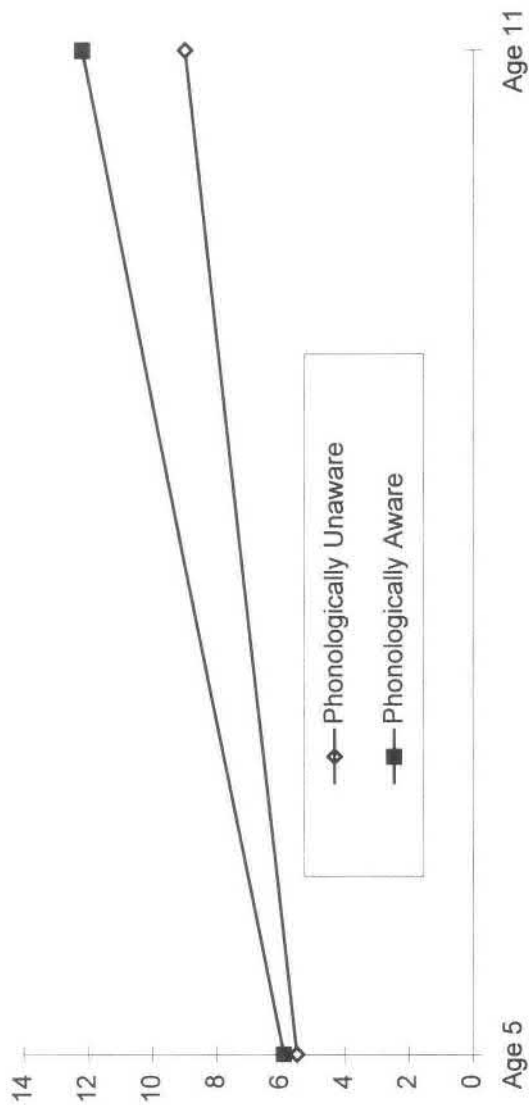
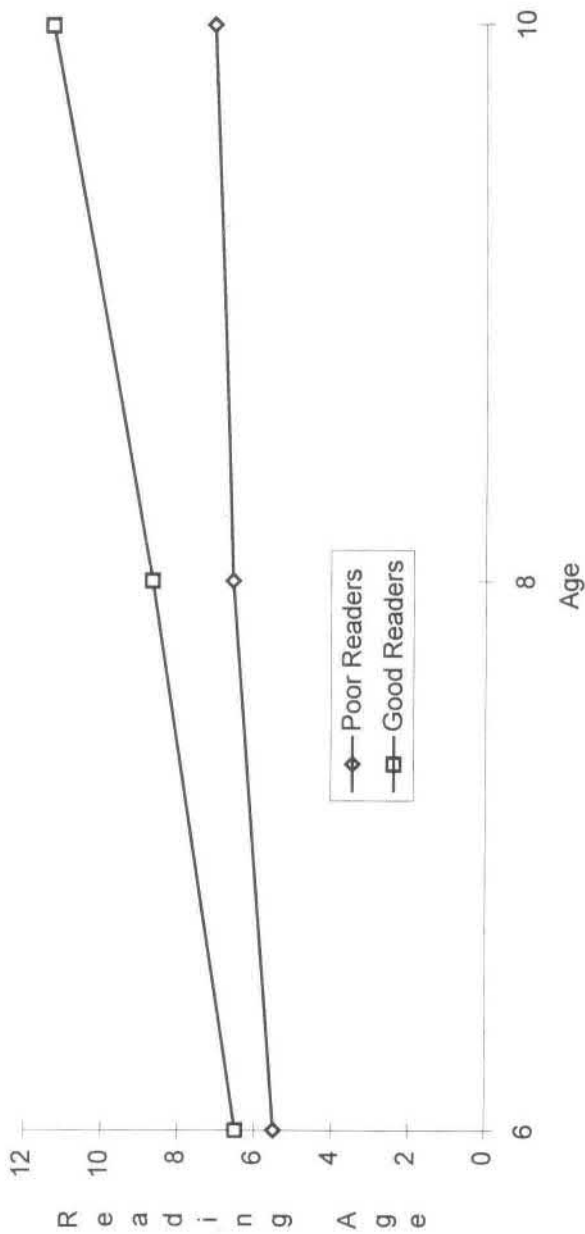


Figure 2: The Increasing Gap Between the Reading Ages of Good and Poor Readers Over Time



week) of experimental phoneme-identity instruction given to 5-year-olds resulted in significantly improved reading (of regular, irregular, and pseudo-words) and reading comprehension scores compared to a control group; significant differences were not only found at the end of the first year, but also at the end of the second and third year of schooling. These studies and other similar investigations (e.g. Hurfurd, Schauf, Bunce, Blaich, & Moore, 1994) reinforce the value of early screening of children's phonological skills in order to identify as early as possible those children who will require more intensive instruction.

There has been some dispute as to what constitutes the best training in this area. Some have found that segmentation training (isolating the separate sounds in words), or segmenting-plus-blending (isolating the separate sounds and then joining them together to make a word), and then naming are more effective than instruction in blending alone (Davidson & Jenkins, 1994; Torgesen et al., 1992), while Wagner and Torgesen (1987), and Perfetti and others (1987) have argued that being able to segment words is a consequence of learning to read, and only blending skills affect reading acquisition.

It has been suggested that a phonics programme that provides training in all three of the following areas will be of benefit to all children, while at-risk children should receive more intense and prolonged teaching of these skills (Blachman, 1994). (These tasks are all conducted orally.)

1. *Identification* – (identify sounds in words): Is there a /s/ sound in snake? or, which word does not sound the same? at the beginning? at the end?
2. *Blending* – (blend separate phonemes together): Here are some sounds: /f/, /i/, /n/; can you say them quickly?
3. *Segmentation* – (isolate or count sounds in words): What sounds are in this word? or, how many sounds do you hear in this word?

Is there one of these three phoneme skills which, when taught, will lead to more potent reading gains than the others? Pertinent to this particular issue, Byrne and Fielding-Barnsley conducted a number of experiments (1989, 1990, 1991, 1993) which led them to conclude that being able to

identify or recognise a single sound in a word is not only easier for children than breaking words down into all of their separate sounds (segmentation), but also 'provides a firmer foundation for discovering the alphabetic principle than (does) segmentation ability' (1991, p. 83). (Asking a child, 'Is there an /s/ sound in this word?' or, 'Do *cat* and *cow* start with the same sound?' is a task requiring phoneme *identity*, whereas asking; 'How many sounds do you hear in *bat*?' requires phoneme *segmentation* or *counting*.) These researchers found that only those children whose segmentation training had included phoneme identity succeeded in a decoding test; children who could successfully segment but who failed to notice phoneme identity failed in decoding (Byrne & Fielding-Barnsley, 1990).

A recent research study involving more than 1,500 beginning readers in Norway found results which strongly support the findings of Byrne and Fielding-Barnsley; among the three phoneme tasks of identifying, blending, or counting sounds in words, it was found that being able to identify sounds in spoken words was the most powerful predictor of reading ability (Høien, Lundberg, Stanovich and Bjaalid, 1995). In terms of designing effective reading instruction, these research findings taken together indicate that teaching children to hear and identify the individual sounds in spoken words is the type of phoneme instruction which will produce the most benefit.

(c) Onset and Rime

In addition to the finding that phoneme-related skills are important in predicting reading ability, Goswami and Bryant (1990) have found some evidence that a child's ability to perform rhyme-related tasks is associated with subsequent reading ability. Consistent with their findings are the results found in the large Norwegian study (Høien et al., 1995) mentioned above. Høien and others were able to isolate three separate phonological factors which each make independent contributions to learning to read: these were a syllable, a rhyme, and a phoneme factor. However, *by far the most important of these was the phoneme factor*. Their findings reveal that performance on phoneme identity tasks alone is twice as powerful in predicting reading ability as performance on rhyme tasks, while performance on combined phoneme tasks (identity, counting, and blending) is *four times more*

important than rhyme task performance. Performance on rhyme and syllable tasks were found to make only very small contributions in predicting subsequent reading ability.

In investigating the possible contribution rhyme knowledge makes towards learning to read, it has further been proposed that training in onset (initial letter) and rime (remaining phonogram), or in analogy (noticing that *book*, *cook*, and *hook* end in the same way as *look*) may have some value in beginning-reading instruction before attention to individual sounds and letters, and before children can read (Goswami, 1988; Goswami & Bryant, 1990). These researchers point out that it is difficult for children to break words down into individual phonemes. In much the same way that it is *easier* for children to recognise words as whole visual units, it is easier for children to break words into onset and rimes.

However, simply because it is easier for children to memorise whole words or parts of words, does it follow that instruction, therefore, should avoid focusing on single letters and phonemes?

The research of Ehri & Robbins (1992) sheds light on this question. They report that children are only able to use analogy if they have some letter-sound knowledge, phoneme segmentation ability, and blending skills. Without these skills, children are not able to perform the necessary requisite operations to read words by analogy. To further illustrate this, in another study, training in rhyme and alliteration over a two-year period did not result in statistical differences compared to a control group; another experimental group, however, in the same experiments, taught about letter-to-sound relationships *as well as* rhyme, outperformed all other groups (Bradley & Bryant, 1985). Goswami (1994a) is forced to conclude that analogy training is only of benefit if grapheme-phoneme training is included as well; in addition she admits that it is not an approach to reading that helps 'children to learn spelling-sound correspondences' (Goswami, 1995, p. 138).

In relation to the three stages of reading development proposed by Frith (1985) (logographic, alphabetic, and orthographic), or to the four stages proposed by Ehri (1991; 1992) (non-alphabetic, pre-alphabetic, full alphabetic, consolidated alphabetic) there are a number of possible explanations for the fact that analogy is only of use if a child

possesses some decoding skill. One possibility is that the development of onset and rime knowledge belongs to Frith's or Ehri's third or fourth stage of reading, the orthographic or consolidated alphabetic stage, where knowledge of spelling patterns is developed only after some alphabetic knowledge is gained, where readers begin to make use of multiletter units such as morphemes, syllables, or subsyllabic units such as onsets and rimes. The possibility that onset-rime use belongs to a pre-alphabetic stage where only partial connections are being made between some letters and sounds does not seem viable since children would not possess a sufficient amount of alphabetic knowledge to make use of onset and rimes beyond the level of initial letters (onsets). Information about rimes (phonograms) could not be retained and could not be made use of subsequently because pre-alphabetic children are unable to deduce the spelling-to-sound connections contained within rimes. Another possibility proposed is that logographic (whole-word) and alphabetic reading emerge in parallel, contributing independently to orthographic development (knowledge of spelling patterns) (Seymour, 1990; Seymour & Evans, 1994), in which case, alphabetic knowledge would still have to be sufficiently advanced to enable a child to capitalise on onset-rime training. Further evidence that rime is helpful only to older readers comes from a study which showed that 10-year-olds were able to read words faster that contained letter patterns shared by many other words, but this factor made little difference to 7-year-olds' reading speed (Juel, 1983).

Consistent with these explanations is the finding that onset and rime knowledge does not develop ahead of alphabetic reading (involving individual sounds and letters) or whole-word reading, *unless* the instructional setting explicitly emphasises this spelling-related knowledge. In comparing the reading strategies used by German and English children, Wimmer and Goswami (1994) acknowledge that it is the different instructional régimes in the two countries, phonics in Germany and whole-word in England, that account for differences.

(d) Irrelevance of Onset and Rime

Training in analogy or rimes during the *beginning* stages of reading instruction may have little if any practical use. It has been found that children fail to retain this information over

the long term. As little as one day after training, it was found that children trained in single letter-sound correspondences (vowels) were the only ones to show significant benefit compared to those trained in analogy or 'cv' (consonant + vowel) (Bruck & Treiman, 1992). This finding is similar to that of Wise et al., (1990) who found that significant effects disappeared only thirty minutes after training.

Contrary to Goswami's suggestion that a child is able to make use of onset and rime in order to read words before developing the ability to segment and identify individual phonemes, Seymour and Evans (1994) have recently found evidence that 5- and 6-year-old children demonstrate an earlier ability to separate words into individual sounds than to separate words into onset and rime. In contrast to Goswami's proposal that children learn to read by progressing from the recognition of larger chunks (whole words) to medium chunks (onset and rime) to smaller segments (individual letter sounds), Seymour and Evans have demonstrated that the opposite order of development is true. Over a period of two years of initial reading instruction (combining phonics and whole-word), the phonological awareness skills that developed in 5- and 6-year-old children favoured small-unit segmentation over larger unit segmentation; the sequence of development observed was: first, the ability to manipulate single units (phonemes), followed by the ability to make use of two units (consonant/vowel, vowel/consonant, or onset/rime), and finally, the ability to recognise and manipulate three units (initial consonant, vowel, final consonant). Thus, over a two-year period, children's ability to perform certain phonological tasks proceeds in the following order:

1. Ability to segment a word into individual phonemes;
2. Ability to segment words into two units, e.g., onset + rime;
3. Ability to segment words into three units, e.g., consonant(s) + vowel + consonant(s).

Furthermore, and significantly, it has been found that instruction in letter-sound correspondences promotes knowledge at the rhyme and syllable level, whereas instruction at the rhyme and syllable level fails to result in any alphabetic insights (Cary & Verhaeghe, 1994). This

research means that training in onset and rime as a way to develop letter-sound knowledge is misguided. It will not work. And, since such training would only create delay in gaining alphabetic knowledge, it is therefore irrelevant to the purpose of promoting early and efficient reading progress.

Evidence confirming that training to develop an awareness of syllables and rhyme does not induce or promote phoneme awareness has been found by Morais and Kolinsky (1994). These researchers have found that Chinese non-alphabetic readers and adult illiterates are able to manipulate syllables and appreciate rhyme, and (unlike adults taught to read later in life) they completely lack any awareness of individual phonemes. Their research, involving findings from brain imaging, reveals that there appears to be a unique region of the brain that deals with phoneme awareness tasks, separate from adjacent regions that deal with a number of other phonological tasks. Morais and Kolinsky conclude that there is a basic *discontinuity* between awareness of rhyme, or syllables, and the phoneme. The awareness of individual phonemes simply does not spontaneously arise from this other phonological knowledge related to larger units; a specific type of intervention – alphabetic intervention – is required. Some of this research is summarised in Table 1.

(e) Training in Letter/Phoneme Correspondences

A general finding is that explicit teaching of spelling-to-sound correspondences, a component of phonics teaching, facilitates reading acquisition (Anderson et al., 1985; Chall, 1983; Share & Jorm, 1987). Related to the positive effects that arise from the training of letter-sound associations, research also demonstrates the consistent finding that the skilful reader attends to every letter in each word in a left to right order (Just & Carpenter, 1987; Patterson & Coltheart, 1987; Perfetti, 1995a; 1995b). In one study, subjects read text while a computer masked one letter in the centre of their span of visual focus; the loss of this *single letter* reduced reading speed by 50% (Rayner & Bertera, 1979). During one eye fixation (a period of time between eye movements when the eyes are relatively still) the area of visual focus of adult skilled readers extends three to four letter spaces to the left of fixation to about fifteen letter spaces to the right of fixation (Rayner, 1995). However, in children of 6-7 years of age, the span extends to only about eleven letters (Rayner, 1993).

TABLE 1
Summary of Research Findings in Onset-Rime Training Studies

Author	Findings
Hoien et al. (1995)	ability on phoneme tasks, especially involving phoneme identity, are by far the most important predictors of reading achievement – 4 times more important than ability to perform rhyme or syllable tasks
Ehri & Robbins (1992)	children cannot make use of analogy to identify words without phonological recoding skills (letter-sound knowledge, segmentation, and blending)
Bradley & Bryant(1985)	rhyme and alliteration training over 2 years produced no effects compared to control group; only training to produce significantly better spelling and reading performance was rhyme PLUS letter-sound instruction
Bruck & Treiman (1992)	one day after, rime-based analogy training produced no positive effects compared to consonant-vowel and vowel training; only vowel training resulted in significant long-term effects on word reading
Seymour & Evans (1994)	over 2 years, the order of reading development found to emerge was: first, the ability to segment individual phonemes, then, 2 units (onset/rime), and finally, 3 units (initial consonants, vowel, terminal consonants)
Cary & Verhaeghe (1994)	phoneme instruction produced insights about rhyme and syllables, but instruction in rhyme and syllable produced no gains in phonemic awareness tasks
Morais & Kolinsky (1994)	brain imagery detected a unique area of the brain used for performing phoneme awareness tasks distinct from areas used in performing rhyme and syllable tasks; also, failure of illiterates is restricted to the phoneme

More recently, a team of researchers at Glasgow University have used an electronic eye-tracker which was developed for the US space programme. Their findings confirm that, far from skimming, readers fixate on a very narrow text window, focusing on the individual letters of one word and a few letters of the next (Glasgow University, 1994).

Further evidence that readers pay attention to individual letters, and to groups of letters, not to word shapes, comes from neuropsychological research (Bishop, 1993). Individual letters or groups of letters are attended to because of the speech sounds they represent. The results obtained from a study involving brain scans (using positron emission tomography) showed that the brain is almost instantly able to tell if a string of letters composes a word or not, but the different areas of the brain that are stimulated by the presentation of words and non-words shows that it is not the shapes of the letters or words that the brain pays attention to in reading, but the particular spelling patterns (those that can be translated into speech sounds) that the letters make.

In light of these findings it is not surprising that the best phonics instruction, producing significantly larger gains compared to many other methods including phonics-related methods, is that which teaches children about letters and phonemes (letter sounds), at first separately, and then blended together (large survey by Pflaum and others, 1980). Foorman and others (1991) compared two groups of 6-year-old children over a one-year period: both groups were taught using a graded reading scheme supplemented by either more, or less, letter-sound instruction. It is important to note that groups did not differ in IQ or in levels of phonological awareness. The group receiving less letter-sound instruction were taught phonics in context, in an incidental fashion, with the emphasis on meaning-oriented instruction. Results showed that the children who had received more letter-sound instruction improved in their ability to spell and read words correctly at a significantly faster rate than the group who had received less letter-sound instruction.

In fact, the amount of letter-sound instruction children receive in their first year at school will determine whether they attend to words in an alphabetic or a whole-word fashion. It has been found that children taught by whole-word methods, in their first year at school, use only whole-word

strategies while reading, whereas those taught by mixed methods, with some phonics, use both whole-word and phonological reading strategies (Sowden & Stevenson, 1994). At the same time, children who receive some phonics teaching develop phonological awareness earlier than those who are taught in strictly whole-word, 'real books' settings (Alegria et al., 1982).

(f) Phonological and letter-sound training in combination

Instruction which includes both phoneme awareness and letter/sound training has been shown to produce significant long-term effects on a variety of different reading-related measures (Ball & Blachman, 1988; Byrne, 1991; Hatcher, Hulme, & Ellis, 1994; Ellis, 1993; Foorman et al., 1991). Gersten & Keating (1987), for example, found that children given systematic instruction in phonological and cipher skills at age 6, still outperform their comparison group at age 17, not just in reading achievement but also on general measures of school success.

In a study conducted over five years (Bradley, 1987; Bradley & Bryant, 1983, 1985), just seven hours of training involving plastic letters and sounds given to 6-year-old children resulted in profound long-term effects: at age 8, the children trained with letters and sounds had reading levels six months better than another treatment group of children taught how to categorise sounds only, ten months better than a group of control children taught how to categorise words conceptually, and fourteen months better than another control group who received no training at all. (The group trained with letters *and* sounds, that is, letter-sound correspondences *and* phonemic awareness, was the *only* group to demonstrate significant effects.) By the age of 12 or 13, the control groups had still not made up the difference in their reading ability in spite of receiving extra remedial instruction. The fact that in this study the remedial instruction given later to the control groups did not enable them to catch up to the treatment groups in their reading performance highlights the crucial importance of early intervention.

(g) Practice

It has been found that even when children know that spoken words are composed of separate sounds and that those sounds are represented by letters of the alphabet, it does not

guarantee that they will make functional use of the alphabetic principle (Byrne & Fielding-Barnsley, 1991); a phonics programme needs to provide ample opportunity to practise the skills taught by relating these directly to reading experiences.

Children who have not been taught how to tackle text by breaking the spelling to sound code are likely to be exposed to much less text than their peers (Stanovich, 1981), since often the reading materials they encounter will be too difficult for them to read (Allington, 1983; Bristow, 1985; Forell, 1985). If a child, weak in alphabetic decoding skills, is faced with a difficult text and relies on whole-word (guess - by shape, by context, or by picture - strategies), the text will have to be 'read' and re-read many times before the child is able to recognise and remember all the words by this approach. Eventually, such unrewarding and frustrating reading experiences may result in a child avoiding reading practice altogether (Stanovich, 1992). Some studies have found that after five or six months of school the poorest readers will have had less than half the exposure to text than that of the average readers and only a fifth the exposure gained by the best readers (Biemiller, 1977-8). Others have estimated that average and good readers are exposed to as much as ten to a hundred times more words than poorer readers in the middle grades (Nagy & Anderson, 1984).

In contrast, those children who have grasped the alphabetic principle and learned to read will immediately begin to differ from struggling readers in the amount of practice they receive and begin to benefit from. This is where code-oriented methods, producing faster early reading progress, have a distinct advantage over whole-word, slower-progress methods.

Once a child can read independently, the growth of many other skills is promoted; demonstrated by many research studies, some of these include enriched vocabulary development (Hayes, 1988; Sternberg, 1985; Vellutino & Scanlon, 1987) growth of syntactic knowledge (Mann, 1986; Perfetti, 1985), increased general knowledge (Tunmer & Rohl, 1991), better verbal processing skills and improved working memory (Ellis, 1990a; Tunmer & Rohl, 1991), improved reading comprehension ability (Juel et al., 1986; Sawyer, 1992; Share & Silva, 1987), the development of more advanced phonological skills (Ehri, 1985; Ehri et al., 1987), and increased knowledge of spelling patterns (Ehri & Robbins, 1992; Foorman et al, 1991; Rohl & Tunmer, 1988). With

regard to spelling, Lennox and Siegel (1996) found that poor spellers were more likely than good spellers to use a whole-word rather than a phonological approach. Finally, skilled reading encourages more reading, and the act of reading itself, a form of self-tutoring, leads to a myriad of further gains.

Studies Which Support Effectiveness of Phonics

Despite the criticism levelled at studies comparing different methods of reading instruction, numerous reviews of this research firmly support the general conclusion that code-emphasis methods are more effective than meaning-emphasis programmes for beginning reading instruction (e.g. Adams & Bruck, 1993; Beck, 1981; Chall, 1967, 1979; Jorm & Share, 1983; Johnson & Baumann, 1984; Schickedanz, 1990; Vellutino, 1991; Williams, 1979).

Some research investigations showing the superior effects of code-oriented instruction compared to other methods are summarised in Table 2. It has been found that explicit, direct attention to phonics supports reading progress better than instruction in spelling with incidental attention to phonics while reading (Foorman et al., 1991). Phonics instruction results in better reading performance compared to a control group (Williams, 1980), and in spite of maths scores remaining the same (Wallach & Wallach, 1976). Tunmer and Hoover (1993) found that systematic phonics instruction is more effective than incidental phonics instruction, or a reliance on writing activities as the primary means of developing knowledge of the alphabetic code, while Stoner (1991) found that systematic, sequential teaching of phonics compared to teaching based on a meaning-oriented published reading scheme produced significantly better reading achievement. Finally, Brown and Felton (1990) studied children at risk for reading disability and found that systematic, structured phonics teaching compared to whole-word, context-oriented instruction, produced significantly better effects over two years on reading and spelling measures.

Schools that Use Phonics

Evidence from school practice shows that any shift of emphasis in the early years away from meaning and towards the mastery of the alphabetic code brings positive results. A

TABLE 2

Summary of Some Research Investigations Demonstrating Superior Effects of Code-Emphasis Approaches

Author	Comparison of	Age	N	Time-Span	Significant Effects On
Seymour & Elder, (1986)	whole-word (1) vs phonics-taught (2)	5-7	26	after 3 years	reading performance for group (2)
Foorman & Francis (1994)	some letter-sound (1) vs more letter-sound instruction (2)	6	40	6 months	reading achievement for group (2)
Brown & Felton (1990)	two reading schemes, one with less phonics (1), one with synthetic phonics (2)	6-7	48	over 2- year period	word reading, word attack, spelling, rdg. comprehension for group (2)
Evans & Carr (1985)	individualised language experience(1) vs code-oriented rdg. scheme (2)	6-8	500	one-year period	basic reading skill for group (2)
Defior & Tudela, (1994)	5 groups: conceptual training (1) or phoneme training (2) with (A) or without (B) manipulative materials, and a control group (C)	6	55	6 months	reading and writing achievement for group (2A) only
Stoner, (1991)	control (reading scheme) (1) vs systematic phonics group (2)	6, 7, 8	190	one year	word reading, reading comprehension, word study skills for group (2)

study undertaken for the Plowden Committee suggested that urban schools that used phonics, in a systematic and structured fashion, had better reading results than similar schools that did not (Bald, 1994). A similar observation by HMI (1990) of a 'clear link between higher standards and systematic phonics teaching' (p. 7), was confirmed in a report on Suffolk schools in 1991, which found that the ten most successful schools (based on standardised reading scores) all used systematic phonics. A school with a high proportion of second-language speakers, St Clare's School in Handsworth, won the Jerwood Award in 1992 for teaching reading effectively using systematic, explicit teaching of phonics (Bald, 1994).

Since discontinuing the 'real books method' and adopting early phonics teaching, the reading performance of children in Kensington and Chelsea has improved steadily since 1989, and by 1994 was above the average for inner London. Scores have continued to improve regardless of ethnic background and socioeconomic standards (Smith, 1994a).

In 1987, in Raglan School, South London, a third of 7-year-olds were found to be two years behind in reading achievement. Reading standards six years later in 1993 were approaching the best among state schools, since the head directed that children be 'almost indoctrinated' with phonics. The average reading age of 7-year-olds in 1993 was two years ahead with the top 10% reading at a level expected of a 10- or 11-year-old (Hymas, 1993).

The methods of teaching reading at Woods Loke Primary School were developed over seventeen years. Lloyd (1993) reported that two major innovations over this period resulted in dramatic improvements in age 7+ standardised reading scores, or reading quotients: first, after teaching letter-sound correspondences in the first few weeks of school, the average reading quotient improved from 102 to 108 (quotients or standard scores have a mean of 100, and a standard deviation of 15) and secondly, after training children to hear all the sounds in spoken words as a prerequisite to the other teaching, scores jumped even further to 110-116 (as one point of standard score is equivalent to roughly two months of reading development, this means that children were now reading at a level twenty to thirty months above their chronological ages). Whether these two changes are regarded

as phonics instruction or not, the two kinds of instruction given match exactly what hundreds of research studies have indicated as the most effective means of improving reading performance.

In Downham Montessori School in Norfolk, where phonics methods are used to teach reading, the average 7+ reading quotient is 125 (four years advanced from chronological age), and in Holland House School in Edgware, where phonics methods are also in use, the average 7+ reading quotient is a remarkable 135 (almost six years advanced). These scores are very high in comparison to a national average 7+ reading quotient of 100, and an inner London average reading quotient of 89 (almost one year behind) (Tizard, Blatchford, Burke, Farquhar, & Plewis, 1988).

Finally, on a larger scale, Scottish primary schools have remained more traditional and structured in their teaching methods. In Scotland, phonics methods are widely used to teach children how to read (Johnston, 1995; Scottish Education Department, Edinburgh, 1995; Scottish Education Department, Fife, 1995; Maxwell, 1977).

Results obtained on the standardised Edinburgh Reading Test for large samples of 7- to 9-year-old children drawn from England and Scotland show that in 1975 and, among 11-year-olds in 1992, Scottish children significantly outperform English children; very large differences of more than a year of reading age occurred between the countries (average reading quotient in Scotland of 107-108 versus 100 in England), and particularly large differences are apparent when comparing those children who are either poor or average in reading (University of Edinburgh, 1994).

Summary

There are a number of dangers in adopting a mixture-of-methods approach during early reading instruction. These include the danger that: what is in the 'mixture' will not be examined and that the quality of instruction will not be monitored carefully, at-risk readers will not receive the concentrated code-emphasis instruction they need in order to learn how to read, the reading progress of other readers will be considerably slowed if there is little phonics instruction in the mixture; and the reading progress of all readers will suffer if the emphasis is on delivering a mixed approach rather than

on scientifically sequencing instruction so that it produces the maximum reading gains. Both in research studies and in primary schools, code-emphasis or phonics instruction given at the beginning stages of learning to read has been shown to speed a child's grasp of the alphabetic principle and to result in superior reading progress compared to other forms of instruction. Training in onset and rime represents an unnecessary detour en route to developing the two necessary alphabetic requirements: phonological awareness and knowledge of letter-sound correspondences.

Part 2 Practice: A Recognition Problem

Contrary to the research which shows that, during the early stages of learning to read, children need code-emphasis instruction (instruction which will promote the acquisition of the alphabetic principle), in practice, this may not be the emphasis that is given by a large proportion of teachers. Since almost all teachers use published reading schemes, and almost 85% of teachers describe their approach to teaching reading as a mixture of methods, there may be a widespread lack of recognition that the phonics instruction that is given is not only minimal but lacks progression and systematic coverage.

What Does Phonics Instruction Consist Of?

Two surveys indicate that nearly all teachers teach phonics (HMI, 1991; Cato et al., 1992). The difficulty is in determining what 'teaching phonics' actually consists of. Are teachers teaching phonics when they: draw attention to phonic elements during a child's reading, conduct the phonics exercises suggested by the reading scheme in use, or supplement the core reading activities with phonics activities? Do inspectors conclude that phonics is being taught when, contrary to the research indicating that skilful readers attend to each letter of every word, they observe a teacher drawing a child's attention to initial letters of a word as a last-resort decoding strategy? Is there an early emphasis on teaching phonics, when as research indicates, this is exactly the time children could most benefit from systematic, intensive, phonics instruction?

Evidence suggests that phonics instruction is minimal during the early primary school years. According to the HMI survey conducted in 120 schools, *The Teaching and Learning of Reading in Primary Schools* (1990), 10% of teachers do not teach phonics. It is also stated that in two-thirds of classes the phonics teaching is satisfactory or good; that is, phonics teaching is poor or unsatisfactory in 33% of classrooms. The results of this survey are purported to be consistent with those of 3,000 recent inspection visits to primary schools. This means it is likely that almost half of teachers currently either do not teach phonics or do not teach it effectively (10% + 33% = 43%).

Government officials have stated that there should be a 'balance between real books and published teaching materials' (House of Commons, 1990-91a, p.xii), revealing the common failure to recognise that these two types of materials are very much the same in the sense that both are currently used in a similar fashion, encouraging children to read by memorising words as whole visual shapes. Also noted (HMI, 1990, p.7) was that some 'schools adopted popular published schemes for teaching phonic skills', further evidence of inadequate phonics instruction. Far from an emphasis on phonics instruction, or even a balance between phonics instruction and whole-word approaches, there is a clear imbalance.

Further evidence that phonics teaching may be quite minimal comes from a report from Suffolk (HMI, 1991). This report showed that as many as 18% of teachers thought children did not need phonics, and those that did use phonics concentrated on initial letters of words only. For those children who were, later on, non-readers, teachers may fail to teach them phonics even at this stage because of time constraints (Cato et al., 1992).

In contrast to the research which indicates that all children, particularly those at risk, benefit from explicit, structured, phonics teaching compared to incidental or opportunistic phonics instruction, inspectors view as appropriate the teaching of phonics merely as an adjunct to meaning-based instruction. Even though one report notes that 'the teaching of phonics was more prominent when children showed signs of reading failure', and that 'a concentration on phonics was seen as the last resort when all else had failed' (HMI, 1990, p. 7),

this same report also states with regard to phonics skills that: 'It was clear that these skills were best learned when they were embedded in activities that were relevant and enjoyable and, particularly, where children were helped to put them to use in writing and making sense of texts they wanted to read' (HMI, 1990, p. 7).

That phonics is not the approach given emphasis during beginning-reading instruction is evidenced by teachers reporting recently that what they used, instead, and, 'for beginning readers only', was look-and-say methods (Cato et al., 1992, p. 24). In the same survey, it was found that the amount of phonics instruction teachers gave varied widely: some teachers taught phonic points to children only as the need arose, others taught phonics to small groups experiencing problems, and others taught one sound a week to the whole class (Cato et al., 1992).

The recent inspectors' study of forty-five London primary schools drew a number of conclusions with regard to the amount of phonics teaching observed: (a) phonics teaching was 'relatively rare'; (b) if it occurred, it was usually limited to focusing on initial letter sounds; (c) there was no systematic teaching of phonic knowledge; phonics activities were 'often superficial and ill-planned'; (d) too often phonics teaching made its appearance as a last resort attempt to help children with reading difficulties; and (e) teachers lacked adequate training in how to teach phonics (Ofsted, 1996).

The lack of attention given to phonics teaching in schools may, indeed, be traced to the training teachers have received. A NFER survey in ninety-two teacher-training centres found that while tutors reported that they taught their students about the traditional phonic method, as well as real-books, apprenticeship, or paired-reading method, there was a contradiction between their claims and those of their former students (Brooks et al., 1992). More than half of the students said they had been taught little or nothing about phonics and would have liked more help in learning about the approach.

Phonics is Unpopular

In practice, phonics teaching is unpopular. One can sympathise with teachers who choose not to teach phonics, if they do not feel confident to teach it effectively. It is the so-called meaning-emphasis approaches, which require less

direct teaching, less structure, and less training, that are regarded with favour. Although the publication of the 'LINC materials' (1990) was banned by the government, these materials have nevertheless been distributed widely and have influenced practice. These materials are dismissive of phonics teaching and promote the anti-phonics, whole-word theories of Frank Smith and Kenneth Goodman.

The anti-phonics stance and the irrational prejudice against phonics that is displayed so strongly in some people, has been termed 'phonicsphobia' by Morris (1993). She offers a comprehensive list of explanations for the phenomenon: early personal trauma with phonics teaching that ignored the importance of phoneme awareness, the appeal of the progressive, child-centred, teacher-as-facilitator view, the lack of necessary knowledge about the English orthographic system, inadequacies of teacher training, experiencing failure after only teaching enough phonics to fit the accepted 'mix-of-methods' concept, ineffective teaching in general, resulting in withdrawal from phonics teaching since it is difficult to conduct in noisy, uncontrolled classrooms, and fear of reprisal if one publicly supports the teaching of phonics.

That 'phonicsphobia' is widespread is evidenced by the recent teacher reaction to the National Curriculum Proposals for Key Stage 1, English. As a result of vociferous teacher protests that there was too much phonics in the Order, the final draft has now been altered so that there is a watering down of the phonics element so that children must now only be taught to identify 'initial and final sounds in words' (SCAA, 1994a, p. 7). In spite of this, teacher trainers continue to protest against the orders that 'expectations...have been raised to an unrealistic degree, as children are expected to "use their knowledge of letters and sound-symbol relationships in order to read words..."' (Dombey, 1994a).

That phonics is unpopular is also reflected in the details of classroom observations (HMI, 1990) where the real books approach is much in evidence and described by inspectors in glowing terms as an approach that 'attempts to move away from published reading schemes in favour of motivating children to understand and take a strong interest in reading by teaching them from an early stage from attractively presented children's literature' (HMI, 1990, p. 6). The bulk of the reading activities observed by inspectors constitute either

look-and-say, language experience, or 'real books', *all* whole-word memory approaches, none of which are supported by research as effective ways to teach beginning reading.

The fact that currently available reading-schemes are all similar in nature also reflects teachers' disregard for phonics. Teachers' views have directly shaped publishers' views with the result that there are no reading schemes available at the moment which are capable of supporting early reading development. This is a very serious shortcoming, a state of affairs which has the potential to produce far-reaching deleterious effects.

Popularity of Onset and Rime

More recently, there has been a considerable amount of attention paid to Goswami and Bryant's work on rimes. University professors are prepared to assert that the 'onset-rime concept ... has revolutionised our understanding of children's phonological awareness' (Wray, 1994, p. 19). The idea is not new, however; in the past, teaching of phonograms (e.g. words ending in *ake*, *ight*, *ate*) has been used to enrich children's orthographic knowledge at later stages in a reading programme, but as research evidence shows, there is no justification for using phonograms or rimes as an initial reading approach. Although children can be *more easily trained* to break words into onset and rimes (perhaps accounting for the confusion in understanding this research) than to separate words into individual sounds, studies have shown that letter-sound knowledge is necessary in order to make effective use of onset/rime knowledge, and that training in single letter-sound correspondences is retained whereas training in analogy or rimes is not.

Furthermore, research shows that training in onset and rime does not give rise to an ability to detect individual phonemes in words, a skill which is necessary in learning how to read. Children must be taught to detect individual sounds in words; analogy or rhyme training will not help children to discover them. If, however, children are taught specific letter-sound correspondences and how to blend separate sounds together to form words, this ability to spell words (in effect) leads rapidly to the ability to read them (Calfée, 1995; Share & Stanovich, 1995a). Drawing attention to common spelling patterns at this point would help to enrich and consolidate developing awareness of these phenomena.

It should be stressed, however, that teaching children about onset and rime as a route to discovering individual phonemes is similar logic to thinking that a person can be taught how to read music by memorising chords on, say, a guitar or piano. Although it may be relatively easy for a person to learn the names of some musical chords and how to play them, there is little possibility that this knowledge will lead to the ability to read musical notation, to the ability to play individual notes on these instruments in response to the corresponding written symbols. (In the same way as skills in letter/phoneme translation are crucial to the child learning to read, skills in symbol/note translation are crucial to the person learning to read music.) Although it may be quite easy for a person to learn to play chords, is it logical to focus on such instruction with only the very remote possibility that the learner will discover how to read music as a result? Learning how to read music will simply be delayed and likely never accomplished unless the learner receives some direct instruction in symbol-to-sound translation.

Teaching children about onset and rime will simply not help them learn how to read. Yet the eagerness with which onset-rime research has been misinterpreted and seized upon as a route to discovering the individual phoneme is unfortunate and quite startling. Unfortunately, Goswami herself has confused the issue by advocating that in teaching children to read, onsets *and* rimes should be introduced before teaching children to identify single phonemes in spoken words, and before teaching children letter/sound correspondences systematically (Goswami, 1995), a recommendation which her research findings do not justify, and which is at variance with a great deal of other research demonstrating the common stages all children must inevitably pass through if they are to learn to read. So popular has the general concept become, however, that teaching about onset and rime is now sometimes referred to as 'the new phonics'.

Government officials have voiced their concern over alphabetic phonics in favour of a 'syllabic approach' (House of Commons, 1990-91b), and now such misconceptions have been duly incorporated not only within the 1995 National Curriculum Orders, but also within the national curriculum reading assessment procedures. Children at Key Stage 1 are to be given opportunities for: 'recognising... sound patterns

and rhyme, and relating these to patterns in letters', and for 'considering syllables' (National Curriculum Orders, SCAA, 1994a, p. 7). The procedures for the national curriculum assessment of reading instruct teachers to judge whether a child has reached Level 1 by, among other criteria, looking for evidence that 'the child is using knowledge of rhyme' (DfEE, 1996c, p. 13).

There is nothing wrong with developing this sort of knowledge in order to help children *consolidate* their alphabetic knowledge. But for the purposes of teaching a child to read in the beginning, these are procedures according to research that are not any more effective than teaching a child to recognise whole words by attending to their shapes or to their context within a sentence. Neither the ability to recognise whole words nor the ability to recognise chunks of words is helpful in gaining the reading prerequisite: the ability to identify single phonemes.

In contrast, that children should be (a) made aware of the separate sounds of spoken words, and (b) 'taught how symbols correspond to those sounds' are two concepts that clearly reflect experimental research findings. This first concept, however, never has appeared in the government's Curriculum Orders, and the second concept, embodied in the words quoted, was removed from the earlier Curriculum draft proposals and does not appear in the final 1994 draft Orders (SCAA, 1994a).

Summary

One of the reasons given against phonics teaching is that over-attention to it might marginalise other aspects of reading (Brooks et al., 1992). In practice, however, the opposite appears to be the case. Whole-word, context-emphasis methods predominate to the almost total exclusion of code-emphasis instruction. To examine further why this has happened, and why this trend should be of concern, it is necessary to look at the empirical evidence related to context-emphasis approaches, the subject of the next chapter.