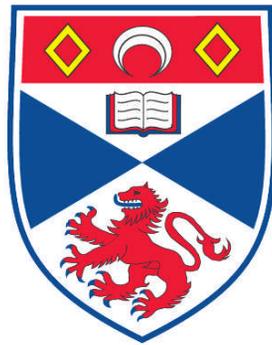


**AN INVESTIGATION OF THE EFFECTS OF PHONICS TEACHING  
ON CHILDREN'S PROGRESS IN READING AND SPELLING**

**Joyce E. Watson**

**A Thesis Submitted for the Degree of PhD  
at the  
University of St. Andrews**



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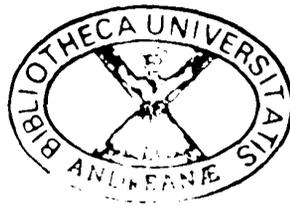
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**An investigation of the effects of phonics teaching  
on children's progress in reading and spelling**

**by**

**Joyce E. Watson, M.Ed.**

**Thesis submitted to the University of St. Andrews for the  
Degree of Doctor of Philosophy, July 1998.**

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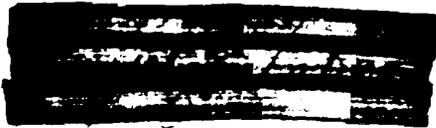


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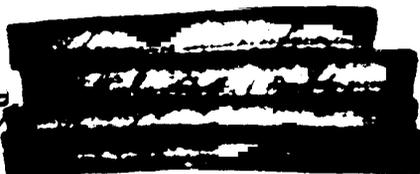


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## ABSTRACT

Progressive child-centred education has led to the ascendancy of look and say methods for children learning to read, perpetuating the use of a guessing strategy and promoting a dependency culture. Explicit synthetic phonics with direct teaching of the alphabetic principle has been replaced by gradual analytic phonics or no phonics, leaving children to discover spelling patterns for themselves.

This investigation was directed towards identifying the relationship between different teaching methods and children's progress in word reading, spelling and reading comprehension. Initially, such progress was monitored from 1993-1995 in 12 Primary classes. Analyses of the data collected indicated that (a) accelerated letter-sound knowledge and the ability to blend letter sounds had a significant effect on children's progress in reading, spelling and comprehension and (b) the degree to which blending had been explicitly taught had a significant positive effect on the proportion of spelling errors produced which encode orthographic information.

The effects of accelerating letter-sound knowledge and sounding and blending were then examined experimentally in Primary 1 children using two experimental groups and one control group. It was found that explicit synthetic phonics, which demonstrates how letters blend together to form words, (a) accelerated reading, spelling and phonemic awareness more rapidly than just learning the letter sounds at an accelerated pace and (b) produced a higher proportion of mature orthographic spelling errors than in the other conditions.

It was found that the strategies children use for decoding and encoding mirror the teaching methods they have experienced. Gradual analytic phonics teaching encourages phonetic cue reading, children only processing some of the

letters and sounds in words. Explicit synthetic phonics teaching encourages early cipher reading, children processing all of the letters and sounds in words. This method teaches children how to use their knowledge of the alphabetic code to decode unknown words, thus establishing an orthographic memory for such words.

## CHAPTER 1

### Models Of Reading Development Why Phonics?

(Adams, 1990, p. 29)

Over the years different models for the development of word reading in young children have been presented proposing that young children begin to read words as unanalyzed wholes (Marsh, Friedman Welch and Desberg, 1981; Frith, 1985; Ehri, 1992). This would conform to the Piagetian theory that young children are incapable of relating parts to wholes, as they have problems with decentralisation and are only able to concentrate on one aspect of something at a time. Recent criticisms of Piaget's developmental stages have argued that the language and demands of the tasks set were ambiguous (McGarrigle and Donaldson, 1975), that there are memory limitations and that children may have forgotten earlier knowledge (Bryant, 1975) and that different results are found when experimental situations are simplified (Donaldson, 1978). In many ways, the cognitive skills of the young child have been under-estimated. Nevertheless, Piagetian theory has been used to try to guide teachers in how to teach the initial stages of reading.

However, it has been shown that young children who cannot read normal print do not see print as an unanalysed whole, as environmental print reading is associated with knowledge of the alphabet (Johnston, Anderson and Holligan, 1995). Indeed, an alternative view has been proposed that young children can read phonologically from the very beginning (Stuart and Coltheart, 1988). Such issues are important because they affect one's outlook on whether beginning readers should start to read with sight words or by a phonics approach. It is hoped to provide evidence that an alphabetic approach to reading is critical in advancing reading skill.

Marsh et al (1981) put forward a four stage model of reading development.

Stage 1 At stage 1, young children will identify a familiar word from a small set of sight words by rote memory or will make a linguistic guess from the surrounding context. An unfamiliar word cannot be tackled in isolation at this stage, and a child who cannot respond may make a guess based on his small lexical store of whole words acquired by rote learning. This stage has been described as one of linguistic guessing.

Stage 2 At stage 2, young children can respond to unfamiliar words by recognizing a feature of visual similarity with a familiar word and guessing the pronunciation of the unfamiliar word. Schonell and Goodacre (1974) suggest that with print experience, once one or two letters in a word are recognized, a child *anticipates* the remainder of the word. This stage, described as one of discrimination net guessing, is concurrent with the Piagetian stage of 'centration' when a child can only concentrate on one aspect of something at a time. The familiar feature of graphic similarity being recognized which enables the child to guess the pronunciation of the unknown word is that of the initial letter. Stages 1 and 2 of Marsh et al's model (1981) are consistent with visual whole word processing and a rote-learning strategy. Stuart and Coltheart (1988) however, point out that this rote learning strategy is available at any of Marsh et al's four stages.

Stage 3 Stage 3 emerges from the increased rote-learning memory load arising from exposure to print vocabulary during stages 1 and 2. The young reader is now capable of developing what is described as a sequential decoding technique with left-to-right analysis of regular CVC words with short vowels, e.g. dog, top; an alphabetic approach to reading, which, in this model, coincides with the transition to the Piagetian concrete operational stage. Children are now able to concentrate on more than one aspect of something at a time and so can look

at the whole, and parts within the whole, at the same time. (Stuart and Coltheart, 1988).

**Stage 4** Stage 4 is described as a hierarchical decoding stage. Marsh et al suggest that children are now developing the ability to use analogy with known words as a decoding technique and are reading for meaning. Although Goswami (1994) proposes that young children use analogies spontaneously in reading much earlier than Marsh's stage 4, she also indicates that "some letter-sound knowledge is required to use analogies successfully" (Goswami, 1994, p. 24). This would tend to support the view that the use of analogy with known words as a decoding technique would not be appropriate in Marsh et al's Stages 1 and 2, as these stages are more consistent with whole word processing using rote memory or guesswork (Beech, 1987). Children are now capable of logical thinking and can learn and apply rules (Stuart and Coltheart, 1988). They can decode unfamiliar words by such application, e.g. when the letter g is followed by e i or y, the hard sound of the letter g /g/ changes to the soft sound of /j/ as in gem, magic, gypsy.

In the 1980's, the term 'emergent reading' replaced that of pre-reading (Riley, 1996, p. 7). For the young child, Frith (1985) saw this emergent reading stage as one of deducing meaning from environmental logos and pictures with no phonological influences. Perhaps this could be viewed as a sub-stage preceding Frith's three-stage model of reading development.

**Stage 1** At Frith's first stage, the young child becomes aware of words, visually recognizing familiar whole words by using a logographic visual technique. The child cannot tackle unfamiliar words presented in isolation as no letter-sound correspondences are involved in Frith's logographic stage. When presented with an unfamiliar word in connected text, children will make a guess at the pronunciation using visual and contextual clues. Frith's stage 1 has been

equated with the first two stages of Marsh et al's model. Stuart and Coltheart (1988) suggest that Frith's logographic strategy precedes the use of phonology for decoding purposes.

Frith's stages follow in strict sequential order simultaneously with the development of writing. The importance of early writing practice to promote the alphabetic principle, in particular the left to right sequence of letters in words, has been stressed by Schonell and Goodacre (1974) as it compels the child to attend to individual letter forms and to follow letters in words in the precise order in which they occur in words from left to right.

Stage 2 is described as the alphabetic stage, when the young child is acquiring knowledge of the alphabetic principle, can distinguish individual letters, apply rudimentary sound/symbol associations and the alphabetic principle to both spelling and reading. It has been put forward that Frith's alphabetic stage coincides with Marsh et al's sequential decoding stage with left-to-right analysis of regular CVC words with short vowels. Stuart and Coltheart (1988, p.143) however, dispute this. If one considers the word 'chain' and adopted the Marsh et al sequential decoding technique as used in CVC regular words, one would produce the sounds /k/ /h/ short /a/ short /i/ and /n/ which would not result in pronouncing the word 'chain'. The definition of a grapheme by Stuart and Coltheart (1988, p. 143) is "those letters which need to be taken together as a unit in order to map on to a single phoneme". If this definition is adopted, the alphabetic stage of Frith does not cover the same processes as in Marsh et al's sequential decoding stage but would appear to impinge upon Marsh et al's hierarchical decoding stage, Stage 4.

Stage 3 is known as Frith's orthographic stage which is characterised by the 'chunking' of letters and words into orthographic units using sight memory without recourse to phonological conversion (Riley, 1996). It is unclear how Frith's

orthographic stage, which is preceded by alphabetic phonological stage, differs from Frith's initial logographic stage. Stuart and Coltheart (1988) cite a review of 7 formal studies of early readers (Torrey, 1979) from which it appears that Frith's alphabetic stage was more influential than the logographic stage in producing successful readers. While Beech (1987) concedes that most children might be said to pass through Frith's sequential stages, individual differences would indicate that the processes would be more likely to overlap. Beech also points out that different instructional regimes would have an influence on the sequence of stages and queries the description of the first stage of reading as being logographic- it could perhaps just as easily be alphabetic (Stuart and Coltheart, 1988; Masterson et al, 1992). This is a critical point which will be investigated further in this chapter. Stuart and Coltheart (1988) refer to Frith's stages as phases in the development of reading, a nomenclature adopted also by Ehri (1995).

Ehri (1995) advocates that children are operating alphabetically much earlier than Marsh et al (1981) and Frith (1985) propose. She puts forward phases of word reading development, namely logographic, novice alphabetic, mature alphabetic and orthographic. These are described by Riley (1996) as becoming progressively more refined from prealphabetic, partial alphabetic, full alphabetic to consolidated alphabetic. Ehri herself outlines the following sequence of processes involved as children move from emergent reading to mature reading, describing ways of reading words in print which are both familiar and unfamiliar within each phase of word reading development (1995).

Logographic phase Children can read familiar words in print by sight using visual cue reading, lexical access routes use rote learning to connect salient visual cues to meanings with no association of letter identities or letter sounds. Ehri (1995) describes the characteristics of the sight word lexicon for familiar

words in the logographic phase as being context dependent, environmental print displaying inconsistent pronunciation, only a few isolated written words being recognized and text reading being unsupported. Unfamiliar words in print are read by guessing and pretend reading or by mistaken lexical access where a new word is misread as a sight word having the same visual cues, neither phonological or orthographic recoding being possible.

Novice alphabetic phase Children can read familiar words in print by sight using phonetic cue reading, lexical access routes use letter knowledge (names or sounds) to connect salient letters to easily detected sounds in pronunciation and spellings are partially connected. Ehri (1995) describes the characteristics of the sight word lexicon for familiar words in the novice alphabetic phase as being able to recognise and remember isolated written words using partial letter-based representations, where words which are similarly spelled are mistaken and where text reading is supported. Unfamiliar words in print are read by guessing and are constrained by the initial letter, or by mistaken lexical access where a new word is misread as a sight word having the same visual cues, neither phonological or orthographic recoding being possible.

Mature alphabetic phase Children can read familiar words in print by sight using amalgamated cipher reading, lexical access routes use grapheme-phoneme knowledge to amalgamate letters to phonemes in pronunciation and where spellings are fully connected. Ehri (1995) describes the characteristics of the sight word lexicon for familiar words in the mature alphabetic phase as being where letter-based representations are complete making swift *unitized* reading possible, where spellings may influence phonemic analysis and word reading in text appears effortless. Unfamiliar words in print are read by guessing, constrained by spelling, mistaken lexical access is less likely to occur, sequential

decoding of new words is used for phonological recoding and analogizing to specific words is used for orthographic recoding.

Orthographic Phase Children can read familiar words in print by sight using advanced amalgamated cipher reading, lexical access routes use “their phonemic segmentation and phonological recoding skill to form complex connections that secure the entire spelling of the word in memory as a visual symbol for phonemic units in the pronunciation” (Ehri, 1992, p.108) and spellings are fully connected. Ehri describes the characteristics of the sight word lexicon for familiar words in the orthographic phase as where children find it easier to store multi-syllabic words, where word morphology is represented and similarly spelled words are read easily. Unfamiliar words in print are read by guessing, constrained by spelling, mistaken lexical access is less likely to occur, sequential and hierarchical decoding is used for phonological recoding and analogizing to specific words, word families and orthographic *neighbourhoods* are adopted for orthographic recoding (1995).

This outline of stages of reading as described by Marsh et al (1981), Frith (1985) and Ehri (1992) leaves many questions unanswered. Firstly - What is logographic reading? The logographic process has been so-called because it is akin to how the Chinese read their logographs. In English, the written words are visually recognised as whole words without the support of letter-sound associations; they are read as logographs (Seymour and Evans, 1995). A study by Seymour and Elder (1986) has been cited as evidence in support of the process of logographic reading (Stuart and Coltheart, 1988; Ehri, 1992). Seymour and Elder (1986) studied a Primary 1 year group of Scottish children (age range between 4 years 6 months to 5 years 6 months) taught by a lexical whole-word method for the first year of schooling, and found that these children could only read familiar words which had previously been taught and could not

tackle reading unfamiliar words. Seymour and Elder (1986) (p.1) reported that the children appeared to “read without phonology” and “without the application of letter-sound (grapheme-phoneme) associations” and could be said to be logographic readers.

One point is perhaps worthy of note, however, Seymour and Elder (1986) do indicate that simultaneously with the children being taught using sight vocabulary, phonic concepts were introduced through instruction in letter-sound association for spelling and writing and that children who made progress with alphabetic spelling sometimes attempted a “sounding out” approach to reading. Perhaps, therefore, it might be argued that the children could have been using letter cues; that they could have been reading familiar words in print through a lexical access route by using their alphabetic knowledge gained from the spelling and writing exercises with phonic instruction to form partial connections between spellings and pronunciations (Stuart and Coltheart, 1988); Ehri (1992). It could also be argued that as the Seymour and Elder children could not read non-words, they may have been paying some attention to letter detail without understanding how the left to right sequence provided a guide to the pronunciation.

Frith (1985) proposed that alphabetic reading is preceded by alphabet writing when the phoneme-grapheme correspondence is carried out one letter at a time and working from left-to-right. Hardy et al (1972) studied the developmental trends in the mastery of grapheme-phoneme and phoneme-grapheme correspondences in young school children and whether grapheme-phoneme and phoneme-grapheme correspondences portrayed equal difficulty for the children. Generally, their results showed that associations from phoneme to grapheme appeared to be considerably easier than those from grapheme to phoneme which would appear to reflect Frith's view. Seymour and Elder (1986) suggest that *an asynchrony emerges* with the children being logographic readers and alphabetic

spellers, the *asynchrony* being a product of the instructional regime which emphasized learning via whole word sight vocabulary and letter-sound association in spelling. Stuart and Coltheart (1988) suggest that the superior learning exhibited by some of the Seymour and Elder readers may well be attributed to their levels of phonemic awareness.

Ehri (1995) refers to the logographic process as being one of visual cue reading. In a subsidiary experiment, Seymour and Elder (1986) displayed words on the screen in a normal and distorted zig-zag or vertical format and found that a large number of the distorted words were able to be read correctly. This would appear to provide evidence against a *gestalt* account of the word recognition process. Ehri (1995) refers to the logographic process as being one of visual cue reading and would perhaps argue that as the Seymour and Elder children could read such visually distorted words correctly, letter cues played a part in the word recognition process. Therefore, the children may not have been logographic readers but rather fell into Ehri's category of novice alphabetic readers.

Ehri's visual-cue reading phase is so-called because it is proposed that beginning readers appear to focus on one notable feature of a word, a visual cue, which is somehow related to the meaning of the word, rather than "holistic Gestalts" (Gough et al, 1992). One example of this witnessed by the writer was when young children were sorting word cards into two sets and the children were invited to explain why certain cards had been allocated to one of the sets. the response given was that these word cards each had a dirty finger mark on a corner. This example is similar to the one given in the Gough et al task (1992) when the children only recognised the word when a thumbprint was shown appearing to reflect the early Piagetian centration aspect of the pre-operational stage of development when the child can only concentrate on one aspect of something at a time. Indeed, Gough et al's children were 4/5 year olds. therefore

presumably emergent readers. Some of the difficulties experienced by visual cue readers are enumerated by Ehri e.g. visual cues selected by children are not unique to individual words (as in the thumbprint, dirty corner examples) resulting in visually similar words being mistaken for each other. Furthermore, as the visual cues remembered do not relate specifically to one particular pronunciation in memory, visual cue readers may produce semantic alternatives. Such logograph/visual cue readers have no strategy for tackling unknown words and may resort to context-based guessing to decoding unfamiliar words (Muter et al, 1994).

It has been suggested that differences in the type of instruction which children receive may influence their reading strategies (e.g. Barr, 1974; Elder, 1986; Johnston and Thompson, 1989, 1991; Connelly, 1995). Barr pointed out that different teaching environments could influence the sequence of stages through which the development of reading is thought to proceed (1974). Beech (1987) also points out that different instructional regimes would have an influence on the sequence of stages and as mentioned earlier queries the description of the first stage of reading as being logographic as it could just as easily be alphabetic (Stuart and Coltheart, 1988; Masterson et al, 1992). It is in the alphabetic stage that beginning readers learn to use letter-sound relationships to read unfamiliar words. Masterson et al (1992) point out that a teaching programme that involved a strong emphasis on phonics from the beginning of instruction could result in the children using this strategy from the start (Stuart and Coltheart, 1988). Is it therefore necessary for children to read via a rote memory approach for the whole word at the earliest stage of reading?

Seymour and Evans (1992) carried out a study which contrasts with that of Seymour and Elder (1986), where alphabetic learning was introduced in the first term of schooling. These children are reported as being able to tackle simple

novel non-words, supporting the previously stated view that a teaching programme involving a strong emphasis on phonics from the beginning of instruction would result in the children using this strategy from the outset rather than adopting a logographic technique (Stuart and Coltheart, 1988).

Another issue is what is alphabetic reading? Ehri (1995) points out there is some disagreement about the transition from the logographic stage to the alphabetic stage, when does one end and the other begin, presupposing that a logographic stage does exist. Does the transition depend upon previous knowledge? Does the transition depend upon letter knowledge? Ehri (1995, p. 21) suggests that emergent readers do not inadvertently progress into alphabetic reading without acquiring "knowledge about how the alphabetic system symbolizes speech" and learning how letters symbolize phonemes. Ehri and Wilce (1987) sub-divided the alphabetic stage into (a) a novice rudimentary alphabetic phase and (b) a mature alphabetic phase. In the novice rudimentary alphabetic phase, phonetic cue reading, children only process some of the letters and sounds in words. As was pointed out earlier, Frith proposed that alphabetic processing is established for spelling and writing before reading. Muter et al (1994) suggest that once children have acquired knowledge of phoneme to grapheme relationships (for spelling and writing) they move into the alphabetic stage when they can apply the rules of sequential grapheme to phoneme correspondence (for reading). Ehri (1995) provides a reason for the disagreement about the transition from the logographic to the alphabetic phase. It could be attributed to the difficulty in interpreting whether the beginning readers are processing letters as nonphonemic logographic cues or as alphabetic cues linked to sounds.

Ehri describes how phonetic cue readers must know letter sounds and have enough phonetic segmentation skill to identify some constituent sounds

within pronunciations. When children are taught to recognize for example, initial letters in alliterative words, a phonetic cue reader recognizes how this initial letter corresponds to its associated pronunciation. An access route is created into the lexical memory which enables storing and retrieval of the pronunciation when the letter is seen again. A similar process will take place when children are taught to recognize initial and final letters.

Ehri and Wilce (1985) suggest that phonetic cue readers differ from logographic readers in that they can utilise partial phonetic cues to read sight words, only processing some of the letters and sounds in words. Ehri and Wilce go on to suggest that perhaps by teaching decoding very systematically at the beginning of instruction, phonetic cue reading might be minimised, reflecting Beech's view (1987) that different instructional regimes would have an influence on the sequence of stages and disputing the first stage of reading as being logographic. Thus, as previously stated, it may not be necessary for children to read via a rote memory approach for the whole word in the early stages of reading.

Stuart and Coltheart (1988) submit that only children who are not phonologically skilled before learning to read might treat reading as a visual memory task. They propose that children who are "phonologically skilled before learning to read might use their phonological skills from the beginning" (p.149) Stuart and Coltheart pre-tested children's phonological skills before beginning to learn to read and followed their progress to compare the difference between phonologically skilled and phonologically unskilled children from the start of learning to read. The results of the Stuart and Coltheart (1988, p. 149) investigation support their view "that children will use whatever skills they have available from the very first as they learn to read". In particular, the results uphold the belief that phonological skills can be used from the outset and children

need to know about letter-sound relationships to be able to apply their phonological skills with effect. Stuart and Coltheart (1988, p. 164) submit that children who can do phonemic segmentation and who know letter-sounds “do not *begin* reading ‘logographically’”. However, children without phonological skills and knowledge, who cannot do phonemic segmentation, and who do not know letter-sounds “will have no option but to become ‘logographic’ readers” .

It is interesting to note that it is also not until Marsh et al's final stage, hierarchical decoding, that it is proposed children develop the ability to use analogy with known words as a decoding technique. Goswami (1994, p. 24) on the other hand, writes that her own research has shown that many young children use analogies spontaneously in reading, albeit that she does admit that “some letter-sound knowledge is required to use analogies successfully” . She goes on to indicate that teaching reading by analogy means teaching individual letter-sound correspondences but only when these are onsets. She also states that the teaching of individual phonemes within the rime should be delayed until some reading facility has been acquired. Ehri et al (1992) also infer that beginning readers need some decoding skill to read words by analogy. This is further supported by Muter et al (1994) ,who suggest that both a rudimentary reading vocabulary and possibly basic phonic decoding skills are required before children can read by analogy. This would also have implications on the instructional method used with beginning readers.

How does the transition from alphabetic to orthographic reading take place? In Ehri's mature alphabetic phase, children process all of the letters and sounds in words, i.e. they become cipher readers. “Cipher reading develops when children learn the alphabet, acquire phoneme-segmentation skill, internalize the orthographic rules of English, and thus understand how spellings systematically correspond to pronunciations” (Ehri and Wilce, 1987, p.3). Stuart

and Coltheart (1988, p. 172) propose that children with both good phonemic segmentation skills and good knowledge of letter sounds can begin to construct an orthographic lexicon before starting to read formally and support the need for a reciprocal relationship between phonological and orthographic analyses (Morais et al , 1979). However, Gough and Juel (1991, pp.51/52) argue that cipher reading is not taught, "it is internalized by a process we have called cryptanalysis". They propose four requirements for a child to be able to perform this cryptanalysis, the first three of which comprise the alphabetic principle

- "he must grasp that there is a system of correspondences to be mastered
- he must become aware of the letters that figure in these correspondences. He can no longer select from among the letters in words, he must register every letter in each word
- he must be equally aware of the other half of those correspondences; he must realize that each spoken word can be decomposed into phonemes
- he needs data, in the form of printed words paired with their spoken equivalents" .

Gough and Juel suggest that when children discover how letters correspond to the different phonemes they will recognize words in a different way and become cipher readers. Children who are still phonetic cue readers continue to recognize words through selective association of letters and sounds and have not grasped the alphabetic principle. They stress that children should learn to decode in the first grade, early mastery of the cipher being a critical step in reading acquisition. Ehri and Wilce (1987) point out that children lacking instruction which teaches phonemic awareness and experiencing only word-reading practice may not become cipher readers on their own.

One of the outcomes of this investigation may be to determine which method of teaching phonics with beginning readers might best encourage the

transition from phonetic cue to cipher reading where children have adequate knowledge of the alphabetic system to amalgamate spellings of specific words to their pronunciations in lexical memory.

What is orthographic reading? Frith's orthographic stage (1985) is characterised by the automaticity aspect of word recognition, is non-phonological and is achieved after children have first passed through the alphabetic phase (Stuart and Coltheart, 1988). Once the integration of stages has been completed and the child can use all of the processing skills, the "integration of strategies results in fluency" (Riley, 1996, pp 56/57).

An outline of orthographic development has been described by Seymour, the first stage of which includes the logographic and alphabetic foundation processes. Seymour (1990:1993, p.89) argues that " the alphabetic process provides a basis for the formation of a 'core' orthographic structure which is defined by simple initial consonants, short vowels and simple terminal consonants. The structure depends on the phonological insight that a syllable has a three-dimensional structure (initial consonant x vowel x terminal consonant)". Gradually more complex consonant groups and vowel structures are involved. It has been suggested that there may be some kind of interactive relationship between both the child's phonological and orthographic analyses (Stuart and Coltheart, 1988). Seymour cites Karmiloff-Smith (1986, p.89) when he describes that the start of reading development depends on,-

(a) " the internalization of a sample of words containing a variety of orthographic structures ( the logographic process)"

(b) " a grasp of the dominant letter-sound associations (the alphabetic process)"

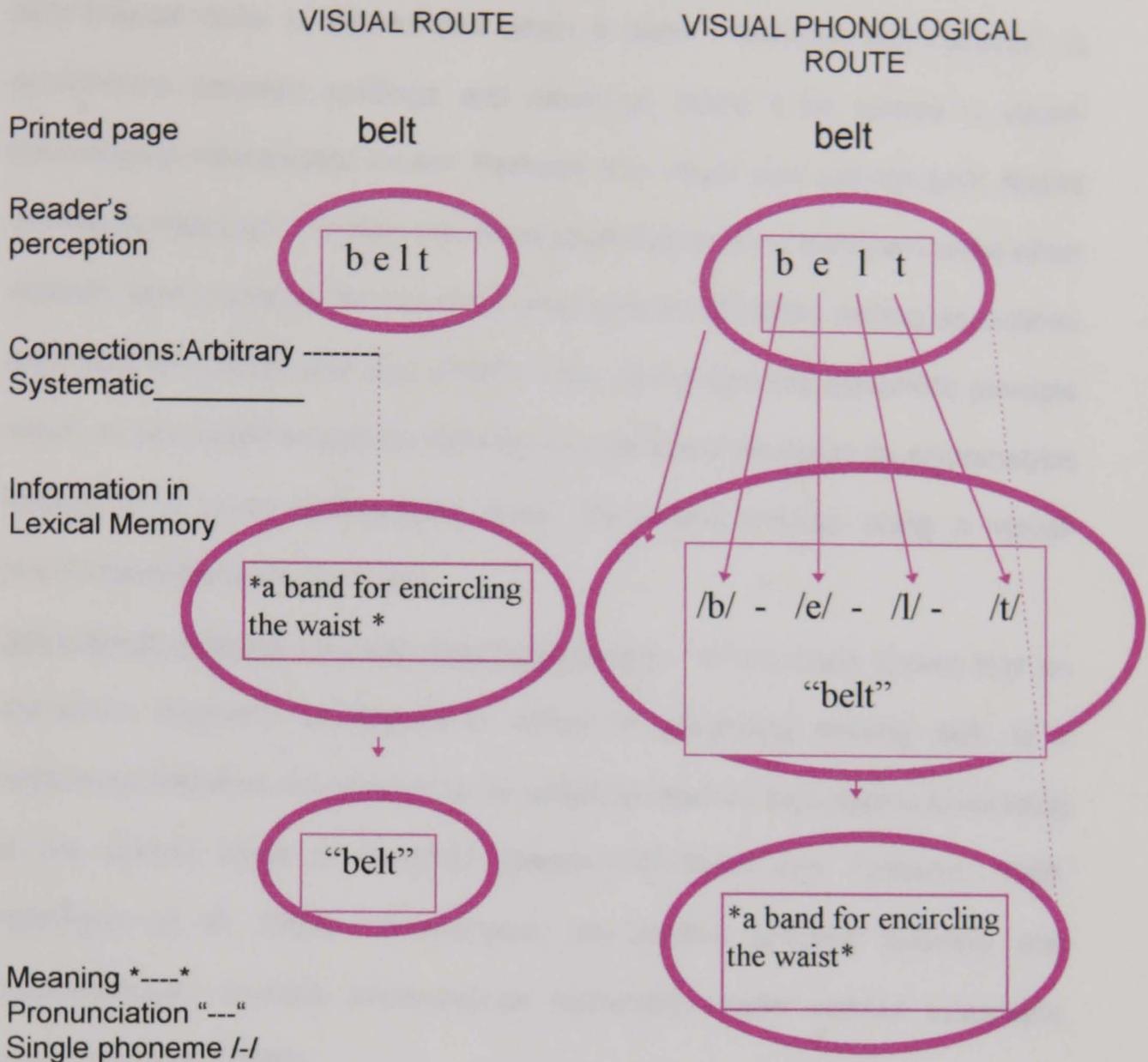
(c) " a 'phonological' process in which the hierarchical structure of the syllable is represented" and

(d) "the orthographic system can then be formed by an internal process of 'representational redescription' (Karmiloff-Smith (1986, p. 89).

In Ehri's orthographic phase (1992) the "amalgamated" cipher reading process described earlier continues to operate with more complex letter units and spellings, the whole process becoming fluent and automatic with reading practice. She suggests that orthographic patterns are acquired as readers become more practised at phonological decoding and as their lexicon of printed words increases. Muter et al (1994) suggest that in the orthographic phase children use their knowledge of the pronunciations of complex orthographic sequences together with higher order skills to develop a refined reading vocabulary. Ehri (1992, p.114) describes how such connections between letters and their pronunciations are formed from the children's knowledge of letter-sound relationships and "other orthographic regularities linking print to speech". Ehri (1992 p. 115) proposes the following model (see diagram 1) which portrays how the visual-phonological route is formed as a result of:

- previous recoding experiences connecting individual letters to individual phonemes within the word
- forming the connections from knowledge of letter-sound correspondences
- connecting individual letters to the whole pronunciation, each letter-phoneme connection forming an intrinsic part of the whole from its position within the word
- as the sequence of letters corresponds to the sequence of blended phonemes in the pronunciation the whole spelling forms a connection to the whole pronunciation.

Diagram 1



Ehri (1992) (p. 115).

Ehri also points out that reading by analogy at the level which involves knowledge of spelling patterns of multiple words rather than single words could emerge in this orthographic phase (1992). She goes on to describe how establishing a visual-phonological route leads "perhaps automatically" to connections between spellings and meanings. When children decipher the words they read, the visual-phonological connection which has been formed translates the pronunciation, the spelling into a *visual symbol*, and thus children can access both pronunciations and meanings directly when they learn to read words by means of a visual-phonological route (Ehri, 1992). Perhaps it could be argued

that there are actually two models encompassed within this. Initially a visual-phonological route is formed and when it leads “perhaps automatically” to connections between spellings and meanings might it be termed a visual-phonological-orthographic route? Perhaps the visual and orthographic routes overlap in meaning? Possibly the visual-phonological route may be formed when children have mastered the first three requirements of cipher reading as outlined previously by Gough and Juel (1991). This comprises the alphabetic principle which, in turn, might enable the children to internalize the cipher by cryptanalysis leading to a visual orthographic route, the whole process being a visual-phonological-orthographic route.

Instructional methods used with beginning readers It has been shown that an alphabetic approach to reading is critical in advancing reading skill. Is it necessary, therefore, for children to be taught to read via logographic processing at the earliest stage of reading? (Beech, 1987; Stuart and Coltheart, 1988; Masterson et al, 1992) Furthermore, do readers proceed naturally and spontaneously towards becoming an alphabetic reader without systematic instruction (Ehri, 1996)?

From an analysis of the Seymour and Elder study (1986) it has been shown that there is some doubt as to whether young children at the start of formal schooling can be true logographic readers. Perhaps it could be argued that the emergent reading stage of Frith (1985), where young children deduce meaning from environmental logos and pictures with no phonological influences, could be termed a logographic stage as it is not a product of any instructional process. However, Johnston, Anderson and Holligan (1996) presented four year old pre-reading children with the names of familiar wrappers having cut away any clues to the nature of the product. Many of the children who could not read the words ordinarily, could identify 'Kit Kat' and 'Smarties' etc. After measuring visual and

phonological skills, the *only* predictor of the wrapper names was knowledge of the alphabet. The response of these pre-readers was not the product of any instructional process. In which case, the question arises as to whether the look-and-say whole word instructional procedure adopted at the outset of formal schooling unnecessarily perpetuates a logographic process which distracts young beginning readers from advancing their reading skill via the alphabetic process.

Seymour and Evans (1992; 1995) examined classroom practice throughout the whole of the first school year, monitoring the development of three processes, logographic, alphabetic and phonological. For this first year of formal schooling, the teacher was using a 'dual foundation model' by developing the logographic process, through look-and-say whole word reading and the alphabetic process, through gradual phonics teaching, in parallel, rather than starting with the logographic process and moving on to the alphabetic process at a later date, as in the Seymour and Elder study (1986). Seymour and Evans (1995) describe the procedure whereby three types of whole word print vocabulary were presented to the children :

- (1) book vocabulary taken from the reading scheme which was taught by the teacher
- (2) print displayed around the room relating to colours, objects, toys etc. referred to as room vocabulary which was not taught by the teacher
- (3) print relating to the children's name written on their pictures, workbooks, trays and in the cloakroom.

It was predicted that if logographic reading was a natural process, children would learn all words equally effectively.

Children were asked to read words from all three categories and the results indicated that logographic reading is not a natural development. It is suggested that it reflects the teaching method used (Chew, 1997). Chew has

argued that German-speaking children do *not* start by reading words as wholes (1997). The children in the Seymour and Evans study (1995) had developed very little familiarity with room words for which no teaching was given, learning assumed to be incidental. It has been pointed out that such incidental learning cannot be assumed to be taking place for all children without explicit teaching (Stainthorp, 1995). As the opposite result was found for reading the name words, Seymour and Evans (1995) suggest that the familiarity with the name words could be attributed to their functional use and personal interest to the children. However, it could also be argued that name words would be well-learned as most parents and pre-school establishments concentrate on teaching children to recognise their own names before embarking on formal schooling. So far as the taught book words were concerned, all of the children became logographic readers during the year, supporting the view that logographic reading is not a natural process: it is the product of the instructional procedure adopted by the teacher, which then perpetuates a logographic process.

By the middle of Term 2, almost all of the children could identify and write all 26 letters of the alphabet which were taught by the teacher. To assess the development of the alphabetic process, two sets of non-words were constructed taken from the book words and the name words which had been available to the children. From the results, it was concluded that all of the children developed an alphabetic process during their first school year and could use this knowledge when attempting to read or write unfamiliar words. After the first school term, most of the children scored higher on non-word reading than on non-word writing.

A segmentation task was devised based entirely on spoken words and their component sounds to assess the capacity of the children to blend the speech segments and the capacity to segment speech. (Seymour and Evans, 1994a). The results indicated that the children developed a 'phonological

process' for segmentation and recombination of speech during their first year of schooling. However, it should be noted that the task which was constructed was a phonemic awareness task as no print was involved. As part of her literacy programme, the teacher presented activities to the children which involved dividing words into syllables and drawing the children's attention to rhyming words.

There appeared to be evidence that alphabetic reading emerged later than logographic reading because of the time needed to teach the children about the 26 letters of the alphabet and their sounds, even although this was started in Term 1 and lasted until the middle of Term 2. Ehri (1996) points out that in English there are over 40 different phonemes with over 70 different graphemes representing such phonemes. One conjectures whether accelerated teaching of the 40 phonemes and associated graphemes together with how to blend the sounds in the left to right horizontal direction of words (Ehri and Wilce, 1987) might have minimised the need to advance logographic reading. Such systematic instruction in the alphabetic process would encourage the children to process all of the letters and sounds in words and proceed to becoming cipher readers (Ehri, 1996). Seymour and Evans (1995) point out that although the children used the alphabetic process for unfamiliar words, they continued to adopt the logographic process for familiar words, the two foundation processes becoming established throughout the first two years of schooling to form a basis for internalization of the orthographic process (Seymour and Evans, 1995).

One of the reasons given by Turner (1990) to explain the perceived downward trend in reading attainment was that the phonics method of teaching reading had been dropped and replaced by more progressive, discovery approaches. In New Zealand, in support of child-centred progressive methods, beginning readers are taught to read text by systematically developing their whole

word knowledge through graded reading books without resorting to phonics teaching. (The procedure is described in more detail in Chapter 3). Children, who are taught the letter names, are expected to discover the letter-sound correspondences for themselves, discovery methods being a key concept of child-centred education. Johnston and Thompson (1989) compared the New Zealand children with Scottish children with whom the logographic process was developed through look-and-say whole word reading at the start of formal schooling, followed by the alphabetic process, through gradual phonics teaching later on in the year, both processes proceeding in parallel thereafter. Johnston and Thompson (1989) report that the Scottish children were ten months ahead in word reading ability although the New Zealand children were actually ahead on vocabulary knowledge. Connelly, Johnston and Thompson (1996) compared two groups of six year old children Scottish and New Zealand children, who were matched for word reading ability by testing the children for reading comprehension, speed and accuracy. Although both groups read text with equal accuracy, the Scottish children were 5.2 months ahead of the New Zealand children for reading comprehension.

By comparison, Wimmer and Goswami (1994) studied 7,8 and 9 year old Austrian and English children who were given three different continuous reading tasks, one of which was a nonsense word reading task being a measure of the children's ability to apply phonic decoding strategies to unfamiliar words out of context. The Austrian children were taught by developing the alphabetic process using a systematic phonics approach which included blending. The English children were taught by a dual approach of look-and-say whole word, developing the logographic process together with a very gradual phonics scheme to develop the alphabetic process which placed emphasis on individual grapheme-phoneme correspondences for single letters and blends, word patterns and families with the

same onset or rhyming sounds. The Austrian children displayed an advantage in reading nonsense words, confirming the view that the Austrian children applied a grapheme-phoneme decoding strategy to tackle unknown words. This finding supports Stuart and Coltheart's theory (1988, p. 149) that "children will use whatever skills they have available from the very first as they learn to read".

In response to Turner's claims (1990) that phonics teaching had been abandoned, Wray (1991) described a reported Department of Education and Science survey indicating that 89% of responding teachers were using a structured programme of phonics teaching. However, no indication is given of what constitutes such phonics teaching. Macmillan (1997, p. 77) invites us to consider,-

- "Are teachers teaching phonics when they draw attention to phonic elements during a child's reading?"
- "Are teachers teaching phonics when they conduct the phonics exercises suggested by the reading scheme in use?"
- "Are teachers teaching phonics when they supplement the core reading activities with phonics activities?"
- "Is phonics 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?"

Cato et al (1992) also reported a high level of unanimity among teachers combining both whole word look-and-say and phonics methods, both logographic and alphabetic processes. However no indication is given of whether the teachers were using a 'dual foundation model' by developing the logographic

process and the alphabetic process in parallel as in the Seymour and Evans study (1992; 1995) or starting with the logographic process and moving on to the alphabetic process at a later date, as in the Seymour and Elder study (1986). It is therefore proposed to examine exactly how and when phonics is taught in Primary 1 classrooms and if there is any relationship between developing the alphabetic process and the children's progress in reading.

As the teaching of reading takes place in the classroom, Seymour and Evans (1995, p. 84) hope that in the future "schools might call on researchers to assist their understanding of the cognitive effects of their teaching " rather than cognitive researchers requesting permission to use schools to "pursue studies which were mainly theoretical or academic in their impact" .

## CHAPTER 2

### The Impact Of Child-Centred Education On The Teaching Of Reading

*"We teach children, not subjects"*

Child-centred, progressive methods of education have been blamed for falling standards in learning to read and write (Entwistle, 1970). One of the fundamental beliefs of child-centred education is that we should consider the child as an individual. The Primary Memorandum in Scotland (1965) recognised that education had to begin with the needs and interests of the individual child. The Plowden Report (1967, p. 7) started from a child-centred position, and from the needs of a changing society, and states that "at the heart of the educational process lies the child". If it is the case that the primary ideology of primary education was clearly that of child-centredness what effect has this had on the teaching of reading? In an attempt to understand the current debate today about how to teach young children, it is proposed to review the historical background to infant education, the emergence of child-centred, progressive methods and their impact on the teaching of reading.

One of the first great educators to consider infant education was Comenius (1592-1670) and he, like Erasmus (1466-1536) thought a child should be under the care of his mother until the age of six or seven (Woodward, W.H., 1906). Nevertheless, Comenius provided a definite plan for supporting the mother in the instruction of the child, perhaps predicting the concept of parental involvement and home-school partnership. By the age of six, a child should have the sense of time (the basis of chronology), be able to recognise light, darkness, shade and know all the principal colours. The importance of expression in teaching was emphasized and Comenius warned against the dangers of inactivity in children believing that if a child discovers something for himself, it is

more a part of him than if he had been formally taught. Perhaps this was the forerunner of activity and discovery methods? Instruction was to be given “even as their tender age permits, that is, according to their capabilities” (Rusk, 1933, p. 16). Rusk points out that Comenius is anticipating the best modern infant-school practice by impressing upon parents the value of singing, music, play, and language instruction through natural “object lessons” and pictures. Suffice to say that perhaps Comenius set out some of the basic principles of infant education over 300 years ago.

Rousseau (1712-1778) was considered to be the creator of the child-centred school of thought, being a supporter of the rights of childhood. He based instruction on the emerging needs and interests of the child setting aside any notion of a pre-determined curriculum. His method was to surround the child with all the lessons you would have him learn “without awaking his suspicions”- a pre-arranged environment, individual methods of learning, the pupil progressing at his own rate. (Rusk, R.R. 1933, p. 24). Rousseau discarded the use of books and reading, preferring that experience be the child’s teacher and viewing education as a natural process developing steadily through experience and experiment (Morrish, 1970).

Another disciple of early education, Pestalozzi (1746-1827), considered that such direct experience (preferred by Rousseau) was only the foundation of knowledge, it was the beginning, not the end of instruction (Rusk, R.R., 1933). Instead of methods of instruction involving rote learning which did not utilise the pupils’ reasoning facilities, Pestalozzi adopted a method of teaching which was to exercise the mind, a forerunner perhaps of a metacognitive approach. No books were allowed, the teacher stood before a large board on which he wrote or drew, explaining, demonstrating and consolidating each element of the process of teaching by having the children “go through the steps themselves viva voce”

(Rusk R.R., 1933, p. 31) The child used the ideas placed before him to solve the problem, supporting Vygotsky's view that this process of 'talking through' a task is conducive to encouraging logical, internalised thinking (1962).

Pestalozzi believed that the teaching of reading should be preceded by training in speech and vocabulary and that drawing should precede the teaching of writing, anticipating the existence of a key stage of teaching before the traditional teaching of formal schooling, the forerunner of pre-school education perhaps? Speech is a key factor in a child's ability to control and make sense of his experiences, a child's vocabulary growing at a fast rate between the ages of two and five years. The special significance for the young child of early representation, drawing and mark-making is described by Matthews (1987, p. 171), where he writes that "drawing offers sensori-cognitive feedback of a particularly intense order, which aids the child in monitoring his or her own movements".

However, concurrent with the period of Pestalozzi, the Monitorial system of Bell and Lancaster prevailed in this country, a system which conducted schools through the medium of the scholars themselves. Rusk (1933) describes the monitorial system as being speedy and economical as all children simultaneously received the first necessary elements of instruction by a technique of commands to be carried out by all children with precision. More advanced pupils, monitors, directed and instructed their less advanced peers, "any boy who can read can teach" (Daniels M.V., 1947, p. 10). Children were taught by rote, reasoning facilities not being called into action, quite the antithesis of the Pestalozzi method e.g.

"Everything was done to a very strict drill. The day would start with a reading from the Bible. Then the monitors would call out commands:

- 'Recover'* (all boys put their hands on the string holding their slates)
- 'Slates'* (all boys bring their slates up)
- 'Lay down slates'* (everyone puts the slates down on their desks)
- 'Clean'* (the slates are wiped down)
- 'Hands'* (everyone stops cleaning their slate)
- 'Down!'* (hands down ready for dictation)"

(Manual of the System of Primary Instruction, 1831 in Ross, A. 1982, pp 23/24).

Millions of children were schooled through these mass methods without being educated (Rusk, 1933). However, about the same time in history, Robert Owen (1771-1858), who initially supported this monitorial system of Lancaster and Bell later considered such a mechanical, rote learning method to be inappropriate. When he opened his school for young children in New Lanark (1816) "the children were not to be annoyed with books", they were to be taught more interesting lessons including music, dance and visual aids to help children learn and they were allowed to play outside for half the day (Ross, 1982, p. 47). Owen provided preparatory facilities for children of 3 years of age where they stayed until the age of 6 years when they were transferred to school, staying till they were 10 years of age, learning to read, write and count with, in addition, the girls learning to sew. Thereafter the children were withdrawn from school for employment. Of the 444 children from 3 years to 10 years, 50% were under 7 years of age (Rusk, 1933). (The Chambers Dictionary definition for 'infant school' (1952, p. 543) is "a school for children up to about the age of 7"). It is reported that Robert Owen thought it was time enough to begin to teach a child to read when he was 7 years old. A number of infant schools based on the work of Robert Owen were opened in both England and Scotland e.g. by Samuel

Wilderspin, who became the first Superintendent of the London Infant School Society in 1824.

One of the most influential educators who contributed to our understanding of the education of the young child was Friedrich Froebel (1782-1852), who owed much to the thinking of Pestalozzi and spent his life observing and studying the development of children. Froebel divided the life of the child into 3 stages, namely Infancy (up to 2 years) Childhood (2-7/8 years) and Boyhood/Girlhood (8-12 years). Froebel is known mainly for his writings on the education of the young child (2-7/8 years) and his Kindergarten in which play was the process whereby growth and learning took place, although by this he means a curriculum including art, music, nature study and 'structured play'. "Play is the highest achievement of child development" (Rusk, 1933, p. 60). However, although a disciple of Pestalozzi, the methods practised by Froebel with young children were very different from those of Pestalozzi (Fletcher, SSF and Welton J., 1912). The central feature of Froebel's approach was systematic activity which for the young child was manifested through play. "Play at this period of life is not a trivial pursuit; it is a serious occupation and has deep significance" (Rusk, RR. 1933, p. 61).

Froebel designed 'Gifts', increasing in complexity, to satisfy the child's natural instincts. One of the first principles of the design was that each gift should implicitly contain the next, thereby making explicit what had been experienced earlier. (Fletcher and Welton, 1912). For example, the first Gift for children of up to eighteen months was a soft ball, difficult to grasp so put on string for the child to rotate. This is followed by 6 woollen balls in red, yellow, blue (the primary colours) orange, purple and green. These may be used as an aid to language and later on as lessons in colour, songs, games, number and form. The 6 balls are contained in a wooden box to be always put away in their proper order,

namely the order of the colours of the rainbow . In the second Kindergarten Gift the child is shown side by side the contrasted forms of the sphere and the cube, the one-sided and the many-sided, the curved and the straight, the moving and the stationary. The cylinder, which is both one-sided and many-sided, curved and straight, moving and stationary is then presented to connect the two opposites. Growth is viewed as a process of overcoming differences by finding a connection between things which are at first opposed, the two complementary laws of opposites and connections, teaching opposites e.g. heavy and light, black and white, hot and cold, tall and small.

Working through the progression of gifts, Froebel sought to lead the child gradually from the concrete to the abstract. The first 6 gifts were all solids, some divided, followed by the first plane surface, shape tablets from which flat pictures of objects are constructed. Children will observe, describe objects and their properties precisely, the relationships of objects in space and time as well as to one another, naming each object correctly. Stick-laying, described as a "kind of concrete drawing" follows the flat pictures made from the tablets, as children may not be able to draw lines with a pen or pencil. It is stated that "stick-laying should be connected with stories and with lessons on form and number" (Elliott, 1906, p. 26) e.g. the shape, material and length of one stick is talked about, placed in different positions, vertically and horizontally and it is pointed out that it expresses the letter 'I' and the number 'one'; with 2 sticks letters 'L' and 'T' can be made and so on. Rings for curved lines follow and large beads in primary and secondary colours for making patterns, a little story connecting the threading of the beads and making letters and numbers e.g. 'S' for Susie who had '2' sisters. The final task of the sequence reported in *Modern Kindergarten Methods* (Elliott, 1906, p. 58) is chalk-drawing, the first exercise to produce a free straight line combined with drawing e.g. a gate, a ladder. This is followed by drawing circular forms with

a continuous movement of the hand together with other objects such as the ball of wool, an orange etc. Some of the modern writing programmes are preceded by drawings to promote continuous hand movements.

Froebel also included gardening and the care of pets to promote sympathy with plants and animals, Froebel's games and songs are possibly the finest expression of the Kindergarten spirit as they dealt with all the things in which young children are interested.

In the third stage of boyhood/girlhood (8-12 years), education changed, feeling being replaced by thought, play by activity and instruction, teaching and instruction being connected with a need really felt by the child. In his study of language, Froebel refers to words being evolved as pictures of things and as expressions of ideas: "the sound-elements of words, represented in writing by the letters, are, therefore, not dead things, arbitrarily associated to make words, but indications of original and necessary primary ideas" (Fletcher and Welton 1912, p. 140). He relates the teaching of words with real observation of things to give children a clearer understanding of language. In outlining the study of the structure of words, Froebel first notes the number of syllables in the word.

*"Pupils imitate the teacher by speaking words of one syllable, then words of two and more syllables, carefully separating the syllables and marking each by a single clapping of the hands, and followed by utterance of the whole word by as many claps as it contains syllables. Clapping of the hands is important to make the length and articulation of the word spatially visible"* (Fletcher and Welton, 1912, p. 140).

Fletcher and Welton outline Froebel's next stage as being an analysis of vowels, simple and complex, as elements in syllables." *Monosyllables ending in a vowel should first be pronounced by teacher and pupils successively and after each word the vowel-sound should be uttered by itself. Then words that begin*

*with this sound, and afterwards, words that contain it, are found.*" Classes of consonants should be introduced and practised in a similar way (p. 141).

The next element of the programme to be considered is the writing skill whereby "audible momentary sounds are made visible and permanent" (Fletcher and Welton, 1912, p. 141). Such written symbols for the sounds of speech must always be the same, must be easily distinguishable and the constituent parts connected with each other so that they may recall the words and ideas they represent to the writer when he is reading. Teaching of the letters should be "in the order of the simplicity and resemblance of their constituent forms" (p.144) and after each new letter has been taught it should be written in as many permutations with letters already known to combine into real words. Froebel goes on to describe each stage of teaching writing until "the pupil can represent in written print all the things, actions, and thoughts, that enter into his life" (p. 145). Froebel perceives reading as the converse of writing and reading must follow writing. From the writing programme, pupils can already read what they have produced. All that remains is for them to interpret printed matter.

Froebel's teaching has had a considerable effect on the education of the young child in many countries but we must remember that the period of early childhood Froebel was considering stretched from birth till the age of seven or so. It would appear therefore that what has been described is a child-centred environment encouraging self-directed activity is perceived as being appropriate for the period of early childhood up to the age of 7/8 years, whereas the teaching of writing and reading is delayed until the later stage of 8-12 years. The key principle of Froebelian teaching, that of self-directed activity, is the one element which appears to have been retained in modern times coupled with varying degrees of teacher direction.

It is interesting to note how the age of 7/8 years appears to correlate with a change in the thinking powers and abilities of the child for all of these influential educators. Yet, children in modern Britain enter formal schooling from the age of 4 years 6 months/5 years in sharp contrast to the practice in any other country where schooling typically begins at 6 or 7 years of age.

One cannot consider the influential educators of children up to the age of 7 years without referring to Dr. Maria Montessori (1870-1952) her concern for handicapped children led to her interest in anthropological pedagogy (Morrish, 1970). The Montessori method was a development of work with children of low intellectual ability where processes must be analysed and simplified with an emphasis on sensory training and a postponement of verbal teaching (Rusk, 1933). It is reported that no one had ever dreamed of limiting the intervention of the teacher to the same extent. Although many had stressed that the spontaneity of the child was paramount "not one had ever had the courage to lay down the revolutionary principle that the teacher must not correct the little pupil, not even in the simplest mistakes - that instead of correcting, the lesson is to be left over till the next day" (Culverwell, 1913, p. 133). "The more fully the child can learn from his own experience without any telling from the teacher, the more fully is his knowledge his own" (Kilpatrick, 1915, pp 48/49). This may be compared with the activity/discovery method referred to previously where the teacher's art is not only recognising when to intervene but rather the opposite, when to refrain from intervention. If an activity results in a child making a personal discovery this influences the probability of effective transfer of learning (Plowden Report, 1967, para.549). Montessori furthered the development of the child by providing an environment which would promote the means of what is referred to as "auto-education". However, this is not a random process. To make it one of self-education the stimulus should not only encourage activity, it must

also direct, thus the material, not the teacher, prescribes the task or game, to which there is one method of solution. (Rusk, R.R., 1933). One could argue that if the prescription is too firm it is almost inappropriate to call the child's activity play or a game as it is goal-oriented. Children are not encouraged to be inventive and the process would promote convergent rather than divergent thinking.

Like Froebel, Montessori believed that writing, involving the child mainly in muscular activity, ought to precede reading, which required not only muscular movement of the eyes, but also some interpretation of the signs perceived and the handling of the voice. In writing, Montessori "sought to provide facility and skill in letter production without involving the child's mind initially in meaning" (Culverwell, 1913, p153). The child would reach the stage whereby he could produce writing which expressed ideas and could write from dictation through phonetic analysis of the spoken word. Like Froebel, reading was already being prepared for in the process of writing. Culverwell (1913, pp 132-135) describes the teaching of writing and reading by Montessori using the motor memory where the fingers are trained to remember the movements needed to form the letters.

*"A writing alphabet was manufactured, the letters being 8 cm high with the larger ones in proportion. Children who had already learned by touch to remember the shapes of geometrical figures, triangles, squares, circles etc. were now put to learn the letters of the alphabet by touching them all the way round, first with the index finger, and then, when skilled in that with the index and middle finger, and finally with a stick held like a pencil. As the child's fingers, when guided only by the eyes, were liable to slip off the pattern letter, she substituted a furrow for the wooden letters. Due to the expense, letters cut out of sandpaper and pasted on cardboard were substituted for the wooden letters, the feel of which enabled the pupil to control the movement of the fingers without requiring any guidance by the*

eye. It is noted that one very necessary precaution is to teach the pupil to move the finger or stick forward along the letter from its beginning to its end".

"At the same time that the pupil is learning the shapes of the letters, he is taught their names, not the alphabetical names but the sound values. In order to emphasize the contrast between vowels and consonants, the vowels were cut out of yellow sandpaper mounted on dark cards, and the consonants of black emery paper mounted on light cards. The vowels were taught first, two at a time e.g. /a/ and /o/. 'This is /a /' getting the pupil to touch it round with the finger as before. 'This is /o/' and so on. In the second stage the teacher asks the pupil to 'Give me /a/' or 'Give me /o/'. Any error is not revealed to the child. The lesson is merely repeated another day. (It is noted that these young children are au fait with the method of not revealing an error, they did not assume that because it was not revealed their response had been correct). If the child chooses the correct letter, the teacher proceeds to the third stage 'what is this?' and the child should answer /a/ or /o/ as the case may be".

"In teaching the consonants, the sound value is first given by itself and then it is joined with different vowels and the process of the above 3 stages is repeated. The next step is to compose words with the ready made letters. In the Montessori apparatus, a box is provided with four complete alphabets in the script or writing form in which the pupil has learned them. The letters are all sorted, so as to be easily found. As soon as the pupil knows some of the letters, the teacher pronounces a word very distinctly a number of times. Next she lays stress on the separate sounds e.g. after repeating 'ma' ' ma' two or three times, she should bring out very distinctly the m sound in the first syllable, not now laying stress on the vowel. Then the child will generally pick out an m and place it on the table: next the teacher should repeat the syllable, laying the stress on the vowel this

*time. The child will pick out an a. Then the teacher repeats the word so as to call attention to the fact that there are two syllables, the child will repeat the syllables and thus compose the word 'mama'. The teacher urges the child to read and re-read the word with the teacher if necessary. An Italian teacher has only to pronounce any suitable word and the child will compose it".*

*"The full meaning of the child's own power is revealed to him when other children read the word he has made".*

As Culverwell (p. 141) points out Montessori is here violating her own "principle of spontaneity" because she actually *teaches* reading. In the next stage, the teacher produces a number of cards each containing a familiar word representing a well-known object, a toy. The teacher does not say the word but waits while the child reads the component sounds but recognition usually only comes " when the component sounds are said one after the other so quickly that they are fused into one compound sound" a process of coarticulation (Liberman and Liberman, 1990, p. 60). It is also noted that "the physiological argument for teaching the letters in the first instance by touch, sight, and sound, all together, as in Dr. Montessori's technique, is overwhelming" (Culverwell, 1913, p. 158).

The learning by doing principle was the dominant feature of the philosophy of John Dewey (1859-1952), a pragmatist who thought in terms of disciplined activity rather than acquired knowledge, a process rather than an end-product. In practical terms this correlated with the "child-initiated problem or project situation ", "the paradigm of the self-activated learning situation" (Entwistle, 1970, p. 142/143), the one key principle of the Froebelian method which has been maintained, that of self-directed activity. Dewey viewed his own philosophy as a basis for progressive education, the function of which has been likened to inquiry, acting as a process of reconciliation of opposites( Morrish, 1970), which can perhaps be likened to Froebel, who viewed growth as a process

of overcoming differences by finding a connection between things which are at first opposed, the two complementary laws of opposites and connections.

Dewey proposes three types of growth (1) from 4 - 8 years of age, a time for play, where the child's horizons broaden out from the first contacts of home to the social world beyond and where reading and writing can begin, (2) from 8-12 years, when the child can investigate and solve problems, when special studies can be introduced into the curriculum, and (3) from 12 years onwards, a period of "reflective attention" when the child is able to raise problems and search for solutions. He outlines general features of reflective experience for solving a problem, stages in the thinking process which he applied to the educational process (Morrish 1970 p. 228).

Dewey did not approve of a subject-based curriculum and developed his "pedocentric view of education and the curriculum", "the child is the starting-point; he is the centre, and he is the end; his development and growth are, in fact, the only 'ideal' that Dewey will allow" (Morrish, 1970, p. 229). Through projects the formal subjects such as reading, writing and counting are acquired incidentally. It has been said that incidental learning has the significant value of being appropriate to the child's immediate needs (Rusk, 1933). However, Rusk also points out that incidental teaching can be accidental teaching overlooking basic facts. If projects are to be educative, the method demands considerable pedagogical acumen and instructive skill. Project management is not a haphazard process and activity, in itself, does not constitute a project. The educational justification for any activity depends upon whether what has been learned in one context can be transferred to other situations (Entwistle, 1970). It is reported that Dewey viewed his own philosophy as being a basis for a progressive form of education in which the teacher sought to understand individual pupils with a view to offering the right suggestion at the right time (Morrish, 1970).

The Plowden Report (1967) refers to this oldest of methods, the project (Kilpatrick, 1918) as being originally associated with the infant school, a variation of which "the centre of interest" being more suitable for older children. The Primary Memorandum (1965) refers to a curriculum with meaning and purpose which will inevitably include centres of interest and projects of various kinds cutting across subject barriers, in other words, the integration of experiences for the child,- a child-centred approach. The Hadow Report (1931) included the 'activity and experience' phrase of Dewey (Blyth, A.1990, p. 16) and supported the concept of child-centred education. It is a fundamental assumption of child-centred educationists that learning should have *meaning* for the child and education should be child-centred in that the learner comes to possess what he knows. (Entwistle H. 1970).

In the 20<sup>th</sup> Century, psychology as a science and the study and observation of the child was beginning to emerge, e.g. Arnold Gesell published his first work on Infant Behaviour in 1934, the importance of the early childhood environment was being emphasised and studies of linguistic and perceptual development had raised the nature-nurture debate. Jean Piaget , the Swiss psychologist born at the end of the last century, began to publish about 1920. Piaget, originally a biologist, owing much to Rousseau, describes how a child assimilates, accommodates and adapts his experiences of the world around him into a schematic framework, a structure. When assimilation and accommodation are appropriately balanced, equilibration results; we are told that adaptation is seen by Piaget as an interaction of the 2 complementary processes, assimilation and accommodation (Berlyne, D.E., 1957). Piaget is famous for his studies of the development of children's thinking processes as being qualitatively distinct from those of the adult.

It is interesting to recall Froebel's division of the child's life into 3 stages i.e. infancy (up to 2 years) childhood (2-7/8 years) and boyhood/girlhood (8-12 years) and compare these with Piaget's stages of cognitive development, sensori-motor (up to 18months/2 years) pre-operations (2-7/8 years) concrete-operational (7/8 years - 11/12 years) and formal operational (12 years onwards). The second stage, that of the pre-operational, is sometimes divided into (a) a pre-conceptual stage (2-4 years approx.) and (b) an intuitive stage (4-7/8 years approx.) The intuitive stage, similar to Dewey's first period previously noted, is appropriate to infant classes where play and a rich material environment are good ways of leading children along the pre-operational route towards developing new insights. These main stages of cognitive development mean that the reflexes and instincts present at birth are built on by experience, generalised, integrated and co-ordinated one with another to become what Piaget calls operations of intelligence, such operations allowing the child to retrace his steps mentally to where he had started, the concept of reversibility of thought. The acquisition of these operations was the central focus of the child's intellectual growth and enabled the child to progress from one stage of development to the next, a gradual process. Labinowicz (1980) describes how a child's intellectual development is influenced by a combination of the factors of (a) maturation, which is gradual, (b) physical experience i.e. the experiencing of objects from the beginning of sensory-motor discoveries and (c) social interaction, personal development through play, progressing through the sequence of solitary play, parallel play, associative play to co-operative play. A fourth factor is that of equilibration which co-ordinates the other three factors.

In promoting a constructivist viewpoint, Piaget stresses that actions must first be carried out physically before being later constructed in thought and expressed verbally. If all thought is internalised action, infant teachers must give

children the opportunity to do and be active and they must provide a curriculum arranged for discovery on the part of the child. Thus by preparing activities for the children with physical materials e.g. sand and water play, the teacher can free herself to observe individual children and small groups of children. Labinowisz (1980) points out that Piaget's framework honours the culture of observation, of observing children for guidelines to enable the teachers to design a programme for each child, adjusted to his present stage of conceptual development. Piaget has not spoken about the teaching of reading but his work has made teachers aware of the need to develop the perceptual and logical abilities of the children (Labinowisz, 1980) and to tailor reading/writing 'instruction' to the individual child's maturity level and learning rate.

Play and imitation form an integral part of Piaget's theory of cognitive development. "Play is the highest achievement of child development" (Rusk, 1933, p. 60). What is understood by the term 'play'? There must be some kind of child-centred involvement in the activity, directly emanating from the child so that it is worthy to be called 'play'. The observed behaviour of a child at play could be exactly the same for exploratory activity as for play. What the child's intentions are in the activity would determine whether or not it was play. A child cannot play with materials until he has explored what he can do with the materials. The first exploratory activity is to find out about the materials; the nature of the materials is what is important. Thereafter he will be able to use the materials for specific self-chosen purposes promoting inventiveness and divergent thinking. This would appear to contrast with the self-education concept of Montessori referred to earlier where the material itself prescribes the task or game to which there is only one method of solution, arguing that it is inappropriate to call the child's activity play as the activity is goal-oriented.

The difficulties many teachers had in evaluating the role of play in the infant classroom with particular reference to providing the children with skills such as reading, resulted in a Schools Council Project whose aim was to examine the role of play in the education of children between the ages of four and seven (Manning and Sharp, 1977). The project aimed to demonstrate the relevance of play in the classroom and to provide materials to structure the play to facilitate learning and development. Manning and Sharp point out that children do not “pick up” the skills of reading, writing and numeracy by chance in their play and that these need to be taught by the teacher (1977). One is reminded that Montessori “violated her own principle of spontaneity” in the interests of teaching writing and reading (Culverwell, 1913 p. 141). Manning and Sharp also stress that children should not be left alone to play as play will become repetitive. The teacher needs to point the children’s inquiry, observe and provide new materials, stimulate discussion, take cues from the children. In other words structure the play environment. This can be compared with the view of Dewey, referred to earlier, who considered his pragmatic philosophy as being a basis for a progressive form of education in which the teacher sought to understand individual pupils to enable her to offer the right suggestion at the right time (Morrish, 1970).

One is perhaps reminded of a revolt against structure citing the William Tyndale School experiment (1971-1977) where freedom was the order of the day with no structured lessons, no teaching of skills. It was reported in the Press that at 10 years of age, children could not read or write (1975). Indeed, Terry Ellis, the Head Teacher actually closed down the remedial reading facilities. Eventually, after an Inquiry, six teachers were removed from their posts including Terry Ellis and Brian Hadow, the Depute Head. This example would appear to demonstrate an extreme view of child-centred education demonstrating a major misunderstanding about the concept of ‘child-centredness’ i.e. the assumption

that it implies "non-interference, non-interventionism, a standing-back to avoid interfering in natural growth, a literal interpretation of Rousseau's advice" (Blenkin and Kelly, 1987, p. 12)

Together with providing maximum opportunity for child/child and child/adult interaction for social learning (Plowden Report 1967, paras. 738-739), the child-centred approach emphasises the growth concept i.e. understanding the child's stage of development, knowing the complete child (Plowden Report, 1967 ch. 2). The Primary Memorandum (1965, Ch.1) stresses the importance of certain aspects of growth and development which have important implications for education, e.g. the sequences which growth and development follow are fairly similar for all children, and there are many attainments and skills which children achieve spontaneously and many things which they discover for themselves at stages in their development. The key ideas of child-centred education place the child's own development, needs and interests at the centre of the curriculum, learning by discovery, by experience and by problem-solving through the medium of play (Watt J. 1990). Furthermore, children vary in the rate at which they develop and in the attainments achieved and such individual differences should be recognised and catered for to allow each child to progress at an appropriate pace and at his own level (Blyth, 1990). It is reported that in spite of observable examples of good practice, there appeared to be little real success in catering for individual differences across the whole ability range (Primary Education in the Eighties. C.O.P.E. 1983). So far as learning to read is concerned, catering for individual differences highlights the concept of readiness, reading readiness in particular, remembering that in most western countries formal education starts at 6 years of age (7 years of age in the Scandinavian countries whereas in this country we can accept children into formal education from 4 years and 6 months.

What is reading-readiness? Downing and Thackray (1971, p. 1) define it as "a stage in development when either through maturation or through previous learning or both the individual child can learn to read easily and profitably". Readiness refers to (a) when the child can learn easily and without emotional strain (b) when the child can learn profitably with satisfying results and (c) when new learning can be based on prior learning. This last category reminds us of one of the first principles of the design of the Froebelian Gifts that new means of education must be founded upon that which precedes it (Fletcher and Welton, 1912). It has also been pointed out, however, that how reading readiness is viewed depends upon how one views the teaching of reading itself. In essence, if learning to read is synonymous with phonic skills, reading readiness can be defined as being ready to benefit from phonics instruction. However, if learning to read is synonymous with the reading for meaning approach all children can take part providing reading materials are stimulating and meaningful, some children making faster progress than others (Hunter-Grundin, 1981, pp 304-306). Downing and Thackray (1971) consider that key factors to be taken into account in reading readiness are physiological, environmental, emotional, motivational, personality and intellectual. The Thackray Reading Readiness Profiles were designed to provide a measure of the most important reading readiness factors of general intellectual ability, vocabulary and concept development, auditory discrimination, visual discrimination, the ability to pay attention and follow directions and left-to-right orientation (1974). It is not suggested that the teacher must await the reading-readiness stage but must "actively bring each child to this stage by developing in him the necessary skills and abilities". It is for the teacher "not only to fit the child for reading but also to fit the reading for the child" (Thackray and Thackray, 1971, p. 1). Dare one ask whether in actively providing a programme of pre-reading activities to "bring each child to this stage by

developing in him the necessary skills and abilities,” epitomizes the philosophy of child-centred education? The Plowden Report (1967), which started from a child-centred position, does point out that the concept of readiness has sometimes been thought of in too negative a way and that children can be led to want to read, provided they are sufficiently mature (para.534).

Another aspect of child-centred education is the concept of integration. In the words of the Primary Memorandum(1965), the curriculum is not to be thought of as a number of discrete subjects, how the child learns is educationally no less important than what he learns. It could be argued that integration in toto requires a knowledge of the separate discrete entities and that the two are not curricular alternatives (Entwistle, 1970). Both a laissez-faire approach, where “all is tolerated so all is ignored” and a rote-learning approach “effectively remove the purpose and *meaning* which drive children toward skill acquisition” (Matthews J., 1987, p. 171). As stated earlier, it is a basic assumption of child-centred educationists that learning should have *meaning* for the child (Entwistle, 1970) and reading is viewed as being learned incidentally within the context of other activities conveying purpose and meaning to the child. As Entwistle points out, a curriculum devised in terms of the interests and needs of the children surely reflects the teacher’s assumptions about what she considers to be the interests and needs of her children. An integrated curriculum would not necessarily guarantee that the value judgments made by the teacher for what is provided match the needs, interests and abilities of the children in her classroom anymore than would the content of a curriculum based upon discrete subjects.

The William Tyndale experiment has already been mentioned as an example of a major misunderstanding about the concept of ‘child-centredness’ i.e. the assumption that it implies “non-interference, non-interventionism, a standing-back to avoid interfering in natural growth, a literal interpretation of Rousseau’s

advice" (Blenkin and Kelly, 1987, p. 12). Indeed, the role of the educator is to intervene appropriately to encourage and advance continued educational growth and development. Certainly, the role of the adult is highly significant in the learning process "all educators operate within the context of their own values, beliefs and attitudes, recognising that these may differ from those of the children they are educating" (Rumbold Report, 1991). While there is a distinct intention that the child be at the centre of the educational process, Boyd (1984) alludes to the fact that child-centredness is not borne out fully in practice and that, particularly in Scotland, teachers have continued in more traditional ways viewing both processes of instruction and activity as necessary elements if knowledge is to be conveyed to the child. Indeed Entwistle (1970) points out that evidence of how far schools are child-centred is almost impossible to come by. He also asks one to consider that if the child is the agent of his own education, the key to learning being pupil self-activity, and if all teaching is self-teaching, are we witnessing an abdication of the teacher's role in the educational process? The COPE Position Paper (1983, p. 24, A.5.1) however, argues that as all teaching begins from where the learner is "it is difficult to conceive of any teaching that is not child-centred".

For a number of years now there has been some concern expressed about child-centred policies by the Government itself (Blenkin and Kelly, 1987). As a result of perceived falling standards and inadequate curriculum development from the late 1970s, coinciding with the growth of the whole language approach to reading, the basis of a "core curriculum" for all schools and all children from five years of age was put under the control of Central Government (1987). The first National Curriculum was produced in 1988, while in Scotland, National Curriculum Guidelines for 5-14 year olds was first produced in 1990. The challenge now facing advocates of the child-centred philosophy is how to marry

the child-centred principles with the implementation of the core curriculum requirements. Janet Moyles (1989) is concerned that the educational climate with a subject-based core curriculum may well relegate the vital issue of play to the lower echelon of educational priority.

The growth of child-centredness resulted in changes in attitudes towards teaching and learning, which coincided with the ascendancy of look and say methods, the growth of language experience approaches and a perceived decline in phonics teaching (Southgate and Roberts, 1970) (Cope Position Paper, 1983) (Turner, M. 1990). This will be outlined in the next chapter. Supporters of incidental learning which is associated with the child-centred philosophy, view reading as conveying meaning and being learned within the context of and integrated with other activities. Children will discover for themselves the relationship between letters and letter-sounds, learning by discovery being a key concept of child-centred education (Watt, 1990). Supporters of systematic teaching associated with the teacher/subject-centred philosophy, view reading as being of such importance in all areas of learning as to warrant teaching the child as soon and as efficiently as possible (Goddard, 1974). The debate about reading instruction and the polarisation of views continues throughout the world (Adams, 1990) ( Liberman and Liberman, 1990). No doubt, the educational pendulum between child-centred and subject-centred philosophies will continue to oscillate between the two until a compromise can be achieved where both subject and child receive equal consideration by the teacher (Entwistle, 1970).

## CHAPTER 3

### Pedagogical Changes In The Teaching Of Reading

*“Every parent expects that one of the first thing his child is going to do when he starts school, is to learn to read. Whatever new methods may have come to the infant classroom, the teaching of reading is still seen as the central classroom activity”.*  
*(Thompson, 1970, p. 9)*

The influence of the child-centred movement on the philosophy of learning and reflective teaching can be seen very clearly in changes in the teaching of reading with the concurrent ascendancy of look-and-say and whole language methods (Newman and Church, 1990) and a simultaneous perceived decline in phonics teaching (Turner, 1990). A survey of teaching methods can be found in Matthews (1966) with a more recent survey in Auckerman (1984). From the previous chapter two broad approaches to the teaching of reading have been identified as systematic teaching associated with a formal subject-centred classroom routine (Southgate, 1972) (Morris, 1978) and incidental learning associated with informal child-centred classroom situations. Chall (1967) refers to these as the ‘code emphasis approach’ and the ‘meaning emphasis approach’. More recently, they have been referred to as ‘bottom-up’ and ‘top-down’ (e.g. Chapman J. 1987, Oakhill J. 1993). In the ‘bottom-up’ approach, children use perceptual information to identify words (Oakhill, J. 1993) and the reading process is seen as a set of code-breaking skills where children start with letters and words and proceed to phrases, sentences and books (Gaines, K. 1993). Gaines describes the ‘top-down approach’ as contextual whereby the reading process starts with children gaining knowledge and experience of the characteristics and application of print through stories using context to help identify words followed by word recognition and word building. Indeed, one of the myths that phonics is not taught within a whole language approach has been disputed by Newman and Church (1990, p. 21),- “whole language teachers do

teach phonics but not as something separate from actual reading and writing”, pupils are helped to use grapho-phonetic cues for reading and writing. It has been pointed out that both the perceptual (bottom-up) and contextual (top-down) approaches interact (Stanovich, K. 1980) and most of our schools adopt a mixture of both approaches. The following outline of the main methods adopted over the years starts with ‘bottom-up’ alphabetic processing and proceeds to ‘top-down’ whole language processing.

### Alphabetic Spelling Method

Definition. The alphabetic method is defined by Moyle (1978, p. 50) as being a method “universally employed from ancient times until well into the present century” and “was the standard teaching method for alphabetic orthographies for at least 3000 years until the nineteenth century”. (Thompson, 1996, p. 2). As the basic method of teaching in the Middle Ages started with Latin letters, it was considered that learning to read words was preceded by learning to read individual letters. The pronunciation of individual letters gave each one a consistent sound which ensured that the Latin texts of the scripture were chanted in church correctly. It must also be noted that at this time special books for teaching children to read did not exist, the medieval ‘primer’ was a basic prayer book with the alphabet displayed at the beginning (Clanchy, 1984). Homer (1984) provides an outline of the development of reading books in which he points out that as early published ‘Spelling Books’ were synonymous with reading books, the title is really an indication of the method of teaching reading i.e. alphabetic-spelling. Not until the latter half of the 19<sup>th</sup> Century were stories specifically written and published for children (Homer, 1984).

### Description.

The steps for using the alphabetic method are described by Feitelson (1988,p.11) as follows:

- (i) learning and reciting the names of the letters in the correct order
- (ii) associating each letter name with the corresponding graphic symbol automatically and being able to pick out each occurrence of same in text
- (iii) combining consonants with vowels or vowels with consonants through rote drill e.g. "ba, be, bi, bo, bu: ab, eb, ib, ob, ub"
- (iv) learning rules about reading, memorising and reciting these e.g. "when 2 vowels go walking, the first one does the talking"
- (v) being introduced to words, 1 syllable, 2 syllable and so on.

Disadvantages Feitelson (1988) points out that learning to read by this method was a "long and laborious task" taking in many cases years rather than months. Another disadvantage with this method emerges with step (ii) above; as the pupils were taught letter names they have to abstract the sound values from the letter names of each combination and transform these into the correct pronunciation of the required syllable or word.

Over the years a number of alternative approaches have been suggested but for the present purpose phonic methods, word and whole language methods will be outlined.

### Phonics Methods

A phonics method is where the sounds of the letters rather than the letter names, are used to correspond with the visual form of the letter. A phonics approach to reading was used in Germany in the early sixteenth century. In Britain, however, the alphabetic-spelling method retained its popularity until the latter years of the nineteenth century (Morris, 1984). In the previous chapter, the Montessori method for teaching reading was described where children were taught by using the shapes and the sound values of the letters. Diack (1966) describes many examples of phonics methods teaching during the 19<sup>th</sup> Century and Morris (1984, p. 65) quotes from the first influential reading primer in Britain

entitled *Reading without Tears* (Bevan 1857) “ *let the consonants be called by their sounds, /B / /D/ not Be D*” . This primer is said to have laid the foundations for subsequent developments in phonics (Morris, 1984). Thompson (1996) refers to publication of a book on teaching method published by Farnie (1895) setting out three alternatives to the alphabetic method, one alternative being called the ‘Phonics’ method.

Definition There are various definitions of ‘phonics’. The Open University Reading Development Course Team (1977, p. 170) defines phonics as “any method of teaching which draws attention to the relationship between phonemes and graphemes. This would include the practice of encouraging children to sound words letter by letter, in phonic units, or in blends”. The definition by Moyle (1978, p. 164) is that it is a “way of teaching reading in which children are taught relationships of symbols to sounds”. Feitelson (1988, p. 15) refers to this method as “phonetics teaching” where children learn to “associate sounds with the symbol or symbols representing them” i.e. phoneme-grapheme relationships. Adams (1990, p. 50) defines phonics as “a system of teaching reading that builds on the alphabetic principle, a system of which a central component is the teaching of correspondences between letters or groups of letters and their pronunciations”. The Council for the Accreditation of Teacher Education (1992, p. 41) defines phonics as “an approach to the teaching of initial reading which emphasises the relationships of speech sounds to the letters and letter combinations which represent them”.

Description It is reported that the *Syllabic Reading Book*, first published in 1869, directs teachers to:

*First point to a picture and let the children name it, then point to the letter below the picture and give its sound as nearly as possible. Proceed with all the*

*pictures in the same way letting the children repeat after you thus:- Box b'; cart c'; shell sh'; child ch' etc. (Homer,1984, pp 81/82).*

In a " Scheme of Work for 43 weeks of A Year in the Infant School" (Bloomer M., 1911, p.9) describes instructions for teaching phonics e.g.

*Part 1. Breathing Exercise. (a) Exercises for obtaining the correct position of the body during a phonics lesson, position of heels, arms, hands, chest and rib muscles when carrying out (b) Breathing exercises with the teacher checking posture and correct procedure.*

*Part 2 (c) Relating breathing exercise to a steam engine when the driver lets off steam asking the children how this sounds. Children to fill lungs so that they can let off steam. The class says 's....', teacher points to the letter 's' and asks the children how they make the sound. Children identify closed front teeth, tongue held clear to allow breath to pass through the teeth. (d) The teacher speaks about the train taking a child into the country where he watches the bees and listens to their song. Asking the class what is the song of the bee? Children breathe and sing 'zzzz'. Teacher shows the drawing of a hive and bees with 'buzz' printed in the corner. She discusses with the class how 'zzzz' is made, the same way as 'ssss' but feeling their throats, the children identify the difference between 's' and 'z' and (e) As they progress through the sound/symbol relationships, examples are given on the board, children make words and use words in sentences.*

More recent descriptions indicate that there are two main approaches to teaching phonics, with the symbol/sound relationship being presented either synthetically or analytically (Harris & Smith, 1976) (Gunning, 1996).

Synthetic method Morris (1984, p. 67) reminds us of the importance of 1922 in the history of British reading instruction with the importation of American reading schemes such as The Beacon Readers which "made use of the most highly systematised methods of phonics hitherto devised". The Teachers' Manual

apparently stresses that children should be well prepared with phonic training and look-say sight words before tackling the readers. Harris & Smith (1976) describe the synthetic method as one which advocates the teaching of letters and their sounds in an intensive manner before reading has begun. Sounds are then combined into words. The target sound, e.g. /s/, is presented explicitly in initial, final and internal positions e.g. sun, spots, nest. The teacher demonstrates how words are combined sound by sound using "coarticulation", a process which produces one single sound, e.g. cat, from three discrete successive phonemes /c/ /a/ /t/ (Liberman and Liberman, 1990, pp 59/60). Children practise the process. Once children know enough letter-sounds to read consonant-vowel-consonant (CVC) words, they are encouraged to pronounce the sound for each letter sequentially, using the practised coarticulation skills to blend them into words independently until the process becomes automatic. The blending process has been singled out by researchers, e.g. Feitelson (1988), as being of paramount importance in learning to read. These methods of explicit direct training and modelling are referred to by Nisbet and Shucksmith (1984) as teaching approaches which might improve the capacity of children to think and work strategically provided they transfer the strategy practised by applying the procedures in new situations.

With this process, not only the 26 letters of the alphabet can be introduced but also the 44 phonetic sounds of the English language can be taught. When the children have mastered the word building process and can transfer the practised strategy to generate a response to an unknown word independently, graded reading schemes are introduced. In parallel with this, children can be introduced to digraphs, increased use of structural analysis involving prefixes, suffixes, syllabication, spelling patterns and using alphabet skills and dictionaries

as an aid to word pronunciation. Irregular words are presented using a look-and-say method as they cannot be taught through phonics e.g. once, was, said.

Analytic method, sometimes known as intrinsic phonics, is the teaching of letter sounds and blending *after reading has already begun*. In the progression outlined by Harris & Smith (1976, p. 181) sight words sharing a common initial letter-sound (i.e. alliterative words) are presented e.g. *milk, man* and *mother*. Children are asked if they see anything about the 3 words which is the same. Having identified the letter 'm', the words are then read. Attention is drawn to the sound heard at the beginning of each word and children are informed that when they see this letter 'm' in a word they will hear the sound at the beginning of *milk, man* and *mother*. Children are asked to think of other words with the same beginning as *milk, man* and *mother*. Harris & Smith (1976, p. 181) go on to state that "proponents of the analytic method contend that it keeps decoding as part of the reading act, since the sounds are never isolated but are always taught within the context of the word and perhaps the sentence." Elizabeth Goodacre (1978) refers to this phonics method as intrinsic, incidental or inductive, the sight words used for comparison for similarities being usually personally meaningful enabling the pupils to make generalisations about the letter sounds or letter groupings. The Council for the Accreditation of Teacher Education (1992) defines analytic methods as beginning with whole units of language, e.g. look and say and language experience, before breaking up the units. Gunning (1996) also refers to the analytic or implicit approach as involving the study of sounds within the context of the whole word e.g. /b/ is the sound heard at the beginning of *ball* and *boy*. When the sight words sharing a common initial element are presented in print to the children, Thompson (1996) writes that the words e.g. *sun, saw, sat* are pronounced by the teacher with prolongation of the common initial sound.

Using the gradual analytic approach it can take up to three years to complete a programme which includes teaching initial letter-sound correspondences followed by finer precision in the use of vowel and consonant sounds, blends, 3 and 4 letter words, digraphs and increased use of structural analysis involving prefixes, suffixes, syllabication, spelling patterns and using alphabet skills and dictionaries as an aid in word pronunciation. An important part of the method is teaching word families e.g. cake, bake, lake etc. Irregular high frequency words are presented through a look and say method.

### Alternative phonics methods

Goodacre (1978) suggests an initial method whereby children are introduced to pictures of items starting with the short vowel sounds e.g. *apple*, *elephant*. The phonic clue provided by these key pictures provides information about the sound of the initial letter, not the name (reminiscent of the 1869 method previously mentioned). The next step is to introduce pictures to illustrate the sounds of consonants. This is followed by blending consonant sounds together, then consonant/vowel sounds together into syllables e.g. "su, so, si, se, sa" and then into words e.g. "sun, sob, sit, set, sat". This process initially concentrates on parts of words which are later combined into whole words, referred to by Goodacre as a synthetic process (1978).

Word Building is a strategic approach to the teaching of phonics based on the natural tendency of pupils to seek out pronounceable word parts (Gunning, 1995). It includes both techniques for teaching phonic elements and strategies pupils can use to decode difficult words through analogy and pronounceable word parts and includes the concept of onset and rime, onset being the initial consonant or consonant cluster of a word, rime being the vowel or vowel plus consonant element. Starting with the core of a word pattern, the teacher and the class build a series of words by adding onsets to rimes, rimes being presented as

one unit, e.g. -at, -ig . This is followed by presenting the onset and asking pupils to provide the rime. The next stage is to choose a model word, common to the child's listening vocabulary, using the word, e.g. car, to help them decipher the unknown -ar word by comparing it to the known model word car. Gunning describes how word building can be used to present multisyllabic as well as single-syllable patterns. Goswami is the editor and author of *Rhyme, Analogy and Story Rhymes* (1996), which concentrates on the letters of the alphabet and their sounds, developing an awareness of onset and rime and shared, rhyming spelling patterns that pupils can learn to recognise and use in their reading and spelling.

Disadvantages Disadvantages put forward for phonics teaching include the lack of meaning for young children, lists of phonic words not being related to text, in many cases words in the lists were not applied and used, training in word-building sometimes hindered reading for pleasure. (Moyle, 1968) points out the danger of emphasis upon letter and word recognition at the expense of reading for meaning. Skill in the mechanics of reading can be gained at the expense of meaning.

Feitelson (1988) who describes a similar approach as the one suggested by Goodacre (1978) whereby children have to infer initial sounds of words from accompanying illustrations, points out that not only do children require to be familiar with and be able to identify the object depicted in the illustration, they must also be able to recall the name of the object and be able to segment the initial sound of that name and compare the sound with that represented by the target letter being learned.

One of the disadvantages of the onset/rime method could be that some pre- knowledge of letter sound associations is required before the word-building stage. Gunning himself (1995) describes a drawback in using the analogy strategy as being less direct than the pronounceable word strategy and that

before attacking the unknown word, the pupil must locate an analogous word with which to compare the unknown word. Furthermore, to use a word as the basis for decoding another word by analogy, the children must be able to split the known word into onset-rime. Thus this method is heavily dependent on phonological awareness. The onset, rime and analogy approach is still in its infancy and more information is needed before its success or otherwise can be compared with other programmes, although in a very recent study it is reported that beginning non-readers learned trained words faster in onset/rime conditions than in the whole word condition (Levy and Lysynchuk, 1997).

Another reported disadvantage is the fact that the English language is full of inconsistencies, the same letter or group of letters being open to different pronunciation in different words and the spelling of the same sound can vary for different words. (Moyle, 1968). To counteract these disadvantages, a medium known as the initial teaching alphabet was devised by Pitman (1959) and defined as being *"an augmented version of the roman alphabet, consisting of forty-four letters, which is used in some schools for beginning readers. It contains a separate symbol for each phoneme. It does not include any capital letters but uses a larger version of the same letter instead (O.U. 1977, p. 167)* The Initial Teaching Alphabet is only employed in the initial stages of learning to read and write, one of the disadvantages being the lack of published materials printed in i.t.a. (Bromley, J. 1975). Most of the reading schemes published were printed in t.o. (traditional orthography) and were predominately look-and-say although phonics figured to a greater extent in schemes devised for backward readers (Morris, 1984).

Chall (1967) concludes that a code-emphasis method using intensive synthetic coding produces better results than a meaning-emphasis method using gradual analytic coding but the code versus meaning controversy in reading

instruction is still being debated around the world (Adams, 1990) (Liberman and Liberman, 1990).

Phonics declined in popularity in the twenty years before the Education Act of 1944 due to the increasing influence of the ideas of Froebel and Dewey fostering the concept of the child being central to all our considerations, and due to the 'wholeness' theory of Gestalt psychologists, which suggested that when learning to read children perceived word shapes as wholes. This influenced the change to whole word methods. (Morris, 1984; Vernon, 1984 ).

### Look and Say: whole word, sentence and story methods

#### Look and say whole word

Phonics methods predominated during the second half of the 19<sup>th</sup> Century and it was not until well into this century, the 20<sup>th</sup> Century, that its influence was in jeopardy (Diack, 1965).

Although early whole-word methods were discussed during the 17<sup>th</sup>, 18<sup>th</sup> and the early 19<sup>th</sup> century (Michael, 1984), Southgate and Roberts (1970) report that look and say methods did not begin to be widely used until the 1940's and that by 1945 conditions in schools had changed considerably from when phonic methods had been "in the ascendancy" . The growth of new progressive ideas in primary education resulted in changes in procedures e.g. learning began to replace teaching: learning in small groups and individually began to replace class teaching. Words such as motivation, initiative, discovery and activity came to the fore (Southgate and Roberts, 1970).

Definition It has been said that the look and say method is based on the assumption that children see words as 'wholes' and that when these words are put into meaningful sentences children will find enjoyment and be motivated to go on reading (Homer, 1972). Goodacre (1978) defines the whole word or look and say method of teaching as stressing the whole word and not the letter name or

letter-sound and has been introduced as a way of trying to make the reading process more meaningful to children. Goodacre distinguishes between whole word and look and say methods.

Description Using the whole word method, it is possible to associate the pictorial representation of the word and the word for which it stands so that "the child is conditioned to accept that the image and the symbol of the word are related". When pictorial representation cannot be used for words, such as verbs and adverbs, the look and say method is adopted, whereby the teacher tells the child what the word is. The teacher introduces words gradually to the children through the use of flash cards perhaps drawing attention to the configuration of the word and its length. An initial sight vocabulary is built up combining words from the first topic of the reading scheme, words in the classroom environment, and high interest words (Goodacre 1978).

Disadvantages Immense demands are made on the child's memory (Homer, 1972). Goodacre points out that if the pictorial representation provides no clue to the child, he is dependent on someone telling him the word if he is to proceed. Furthermore, Solman (1986) carried out research questioning the value of pictures in teaching sight-words and found that the presentation of pictures does not facilitate the learning of visually presented words. It is also noteworthy that this method of telling the child the word is contrary to the Froebelian philosophy that one should only tell the child what he cannot find out for himself, finding out for himself being more valuable and stimulating for the child (Lilley, 1967).

Goodacre also points out that the emphasis upon meaning and the importance of word forms is at the expense of the recognition of the importance of letters. The child has no technique for deciphering new words, very little generalisation is likely. Confusion can arise between words sharing a similar pattern, e.g. fine and fire, as the child lacks such fine discrimination of the letters.

Looking for distinctive configuration cues can lead to the acquisition of a small sight vocabulary but it becomes increasingly difficult to continue using this strategy as distinctive cues have to be found for each new word (Gough & Hillinger 1980).

### Look and Say Sentence Method

**Definition** Although the look and say sentence method is seen as an extension of the whole word method, emphasizing the importance of comprehension, it is difficult to define a sentence. The method makes use of "a group of printed words that make sense, not single words" (Goodacre 1978, p.116). Context is used as an aid to recognition and reading material is based on children's interests and spoken vocabulary.

**Description** Children are encouraged to recognise at a single glance a short phrase or group of words which makes sense. Teachers often use both whole word and sentence methods and Goodacre (1978, p. 116) describes a progression of matching activities as follows:

- (a) matching 2 pictures of an object
- (b) observing the picture with the appropriate word label
- (c) matching separate picture and word cards
- (d) matching word and word - no pictorial clue
- (e) repeating stages (b) to (d) using a short phrase or group of words in place of a single word label.

**Disadvantage** As previously mentioned, critics of these methods point out that look and say word and sentence methods leave children too dependent on the teacher for knowing what the print represents (Beard, 1988).

## Look and Say Story Method

Story-telling is a way of expanding vocabulary and understanding, it demonstrates the differences between written and spoken language, it conveys the simple message that reading is important. Listening to stories can stimulate both cognitive skills, a sense of cause and effect, problem-solving, testing hypotheses and affective skills, promoting awareness of a wide range of human emotions and ways of responding to them (Egan, 1988). The Story Method emphasises the interaction of the reader with the text building upon the experience of listening to stories.

Definition Moyle (1976) defines the story method as consisting of children listening to a story then reading a summary version which carefully selects the major elements of that story.

Description The crucial factor in using the story method is that the story line should be clear and events fast moving. Materials should be grouped for controlled introduction of new vocabulary with reasonable repetition of words, phrases and sentences (Moyle 1978, p. 130). Initially, "learning will be through the association of spoken and written language and memorisation ". He also points out that it is helpful if summaries to be read by the children are guided by clear illustrations and if a group of children work together to memorise the story through discussion and dramatisation. Moyle goes on to suggest that as the words are met in a familiar context, meaning gives a key to identification of the words by encouraging the use of contextual cues.

Disadvantages The story method appears to encourage children to use strategies such as memory for the text and picture cues rather than provide them with a technique for deciphering unknown words. Children are unable to apply rules for "mapping the printed word to its spoken form" (Nicholson, 1986). Another disadvantage noted by Moyle is the lack of appropriate texts to promote

the story method. Most of the reading schemes published did not lend themselves to such a method.

### Book Experience

The Book Experience approach practised in New Zealand emphasizes story text from the beginning. Explicit teaching of phonics is not included in the approach. The National Department of Education published a core reading series for the first three years of schooling called Ready to Read (a handbook for the initial series being published in this country in 1964).

Description The series consists of separate small books, one story per book, with a mixture of 40 single titles and seven small collections. A range of genre is covered, fiction, non-fiction, poems, fables and plays, all texts being amply illustrated. Books are given separate grade levels for each of the three types of story method which run concurrently, namely,-

1. Shared book experience. The story is read to the class, the children following the text as the teacher reads from a copy of the book OR the teacher reads from a book of greatly enlarged size which the children watch as the teacher points to the text being read. The teacher may discuss the story, predictions about events and words and, where appropriate, make comments on conventions of print.
2. Guided reading Using the same story, the teacher introduces the text with a child or group of children encouraging them to make predictions about what will happen in the story. From the responses of the child/children, the teacher will assist the children in learning the conventions of print including directional aspects and matching spoken words to print words. Children will be encouraged to predict words from context. If this is unsuccessful, the child is directed to the initial letter of the unknown word encouraging him to listen to other known print words which start with the same letter. Children are listening for sounds of words not pronunciation of components.

3. Independent reading Children always have another book at an easier grade level than that being used under the guidance of the teacher. With the assistance of the teacher each child selects a book for independent reading from titles covering a wide range of graded levels available in the classroom. Independent reading is carried out silently.

Disadvantages From this more systematic story experience method, children appear to be learning by reading aloud, still memorising words and attempting to predict unfamiliar words from context, the only help given being in directing the attention of the children to the initial letter name of the unknown word. As before, children are unable to apply any definite rule for mapping the printed word to the spoken word (Nicholson, 1986). From a personal interview with an exchange teacher, this chosen method is compatible with child-centred philosophy, namely that children will discover the letter-sound relationships for themselves, discovery being a key principle of that philosophy (Watt, J. 1990). In a recent investigation carried out by Johnston and Thompson (1989) evidence was produced that 8 year old children in Scotland (with analytic phonics teaching in Primaries 1-3) had better word recognition skills than children of the same age in New Zealand (with no phonics teaching). One possibility for this could be that specific teaching of a systematic phonics programme was more successful than leaving children to deduce spelling patterns for themselves. It is suggested that the Scottish children were more able to "decode sequences of letters in order to read unfamiliar items" (p. 141).

#### Language-Experience Approach

During the 1970's, interest in the connections between language and reading developed rapidly (Hunter-Grundin, E. and H. 1981) leading to language experience approaches, where the emphasis was on the communicative and expressive functions of written language (Adams, 1990).

**Definition** The language experience approach proceeds from the egocentric stage of the child's cognitive development to growing interest in other people (Goodacre, 1978). Language experience approaches promote the interrelationship of all four language processes (reading, writing, speaking and listening) (Stahl and Miller, 1989).

**Description** Lawrence W. Carrillo (1975, pp 150/151) outlines four basic steps in the language-experience method, namely:

1. **Experience** - The first essential is the first hand experience of a child or group of children which can be discussed and shared with other children.
2. **Awareness** - The teacher leads the children in a discussion of the experience writing the children's phrases and sentences on the blackboard.
3. **Composition** - The children, with teacher guidance, decide on the sentences and the order of the sentences to tell the story which the teacher writes on the board for the children to read.
4. **Permanence** - Depending upon the nature of the story, it may be given greater permanence by converting it to large book form, on an experience chart or newsprint sheet. It can then be referred to for reading, review or discussion at a later date.

Goodacre (1978) and Moyle (1978) add that the discussion can be initiated by the teacher encouraging children to talk about what they are doing. Moyle outlines a method whereby the teacher begins by asking the child about a picture he has drawn or a model he has made. The title/description is written under the picture by the teacher, the child traces over the writing and reads the phrase, caption or sentence back to the teacher. Over a period of time, the child begins to write his own phrases or sentences and later his own little 'reading books'. Where reading and writing emerging from the child form the basic context and materials, a spontaneous approach is adopted whereby the teacher

intervenes to develop sub-skills needed to complete any task successfully, skills remain constant and have to be mastered (Moyle, 1978). Each child is taught the skills he needs, when he needs them, reading at his own pace and reading materials of his own choice (Goodacre, 1978). Beard (1988) refers to this approach as being one of the most enlightened in recent years.

Disadvantages The teacher bears the responsibility for ensuring that each child is building up a vocabulary of words and that each child is mastering "the art of reading" (Moyle, 1978, p. 134). Furthermore, Moyle points out that it can be a long time before the vocabulary of words mastered by each child matches the vocabulary found in books.

Breakthrough to Literacy (Mackay, Thompson and Schaub, 1970) was produced to provide a structure and direction to the Language Experience approach, used by a graded interjection of new words and spelling patterns (Moyle, 1978). The philosophy behind Breakthrough to Literacy was that reading and writing are complementary aspects of literacy and therefore should be nurtured together (Francis, H. 1982). To circumvent the lack of mastery of the skills of handwriting and spelling, sentence makers, stands and printed words were produced, both for the teacher and each child. The purpose of this enables the children to make sentences with printed words, the words selected to make the sentence being placed in the special stand. (Homer, 1972).

Description The Manual supplied by the authors of Breakthrough to Literacy (Mackay, Thompson and Shaub, 1970) stresses one aspect of the learning process applying to each stage of the work i.e. the need for children to talk and think about what they are doing. The seven stages referred to in the Manual are:

1. Nursery Rhyme cards and record. Singing and reading.
2. Books. Daily reading and discussion of picture story books, introducing Breakthrough readers, children's own books.

3. Magnet Board. Children are making up stories, labelling and carrying out matching activities
4. Teacher Sentence Maker and Stand. Activities involving words and sentences, recording sentences on wall charts for children to read.
5. Child Sentence Maker and Stand. Conventions of print, starting and forming own sentences using printed vocabulary.
6. Word Maker. Identification of initial consonant symbols and sounds in words: comparison of symbols in words: adding -s and -ing using word maker. (Bound morphemes appear as separate units).
7. Miscellaneous. Talking to children about handwriting, starting patterns, introducing detailed handwriting work with small groups. Keep introducing new notices in the classroom environment.

The manual contains instructions for handwriting, a complete section on letters, symbols and sounds and sections on spelling rules and how they should be taught. It has been pointed out that the Word Maker (no. 6 above) is an unexpected phonic component in a programme for initial literacy.

Disadvantages In an independent evaluation of Breakthrough to Literacy, Reid (1974) writes of the children's interest flagging when they had to 'queue' to see the teacher when a new word was needed, when a sentence had to be checked or when a sentence had to be written out by the teacher. Problems of operating the scheme were expressed by a large number of the teachers interviewed. Reid speaks of the teacher's role as being an exacting one, especially at the earliest stages and when children were waiting to see the teacher.

In Reid's interviews with teachers (1974) the most notable omission was any references to actual progress in reading. The 26 Breakthrough Books published for use with the scheme are not graded in any traditional manner although there are two groups, one easier than the other. Teachers felt the

books were not sufficiently connected with core vocabulary and had poor type. Moyle (1978) points out that teachers prefer materials which promote a pre-defined growth structure which they (the teachers) do not have to work out for themselves. It was also reported that teachers felt the scheme made children dependent, enthusiasm waned in the second year and it was not good for individual work.

Reid also reports that the word maker was not used in the way the authors intended. This supports the writer's own personal knowledge and observations in schools where Breakthrough ideas were adapted for use in Primary 1 in conjunction with the teachers' selected graded reading scheme and phonics programme.

#### Whole language approach

Definition Stahl and Miller (1989) outline the important differences between the previously mentioned language experience approaches and the whole language approach.

1. In the language experience approach, experience charts (previously referred to by Carrillo (1975) which were generated by children's dictation formed the major part of the instruction process. In whole language, more emphasis is placed on the reading of books.

2. In the language experience approach it is recommended that writing is delayed until children had mastered a core of sight words. In whole language programmes, emphasis is placed on children's own writing using invented spelling. Children are encouraged to write even before they can read words.

Bryant (1993) refers to the 'whole language or 'real books' approach. This label of 'real books' can be misleading as it implies that any book which is written with the underlying purpose of helping children to read is not real (Perera, 1993). Perera points out that teachers no longer require to choose either graded

reading schemes or real books. Current schemes now recognise the role of meaning in the reading process, the importance of story structure and natural-sounding language that allows for reading and re-reading with pleasure. Donaldson (1993) refers to the negative definition of a 'real book' as being one that does not form part of a set of books systematically planned with the primary aim of helping children to learn to read. The Council for the Accreditation of Teacher Education (1992) defines 'real books' as referring to an approach which avoids reading schemes or kits, preferring to use quality reading books which have not been simplified in any way.

Description Supporters of the Whole Language Approach usually advocate that the teacher encourages the child to give priority to predictions from the meaning provided by the context of the reading text. The emphasis is on using children's own language through their own writing using invented spelling. Lessons are child-centred rather than teacher-centred, assuming that the development of children's competence will emerge from the need to use language as a method of communication. The emphasis is on 'real books' rather than traditional reading scheme books. Lessons in decoding are given as the need arises in the context of reading whole text (Stahl and Miller, 1989).

Disadvantage Learning is inclined to be incidental, pupils being expected to learn about decoding through exposure to print and through the invented spelling experience.

#### Psycholinguistic whole language model

Definition The term 'psycholinguistic' is derived from the terms psychology and linguistics. In the context of reading, the psychology element provides the view that as children try to make meaning of what they encounter in their world, this is a strong motivating factor in attempting to understand written language. The linguistic element suggests that familiarity with the rhythms and patterns of

language helps in the identification of an unfamiliar word or the prediction of an alternative which makes sense by using the context of more familiar words (Grundin, E. and H. 1981). As meaning is constructed from print, the psycholinguistic model is so-called because of the interaction taking place between language and thought (Goodman, Goodman & Burke, 1977).

Description Three important beliefs are proposed to accompany this model (Goodman, Goodman & Burke, 1977, p. 12):

1. Readers are active contributors to the reading process. The one overriding psycholinguistic prerequisite to reading is experience. Reading is an exchange of meanings with an author.
2. Readers have to be allowed to make, and to recover from, their own miscues. Reading, like all language, is not exempted from the hypothesizing and testing which is the basis for all other forms of intellectual interaction.
3. The proficient use of reading strategies develops out of reading experiences. Reading strategies do not have to be developed as the prerequisite to learning to read.

The concept that children learn to read by reading (McKenzie, 1977) forms the main instructional implication of the analysis by Frank Smith in his book 'Understanding Reading: A Psycholinguistic Analysis of Reading and Learning to Read' (2<sup>nd</sup> Edition, 1978) in which he indicates that the seven years since the first edition of his book have only served to consolidate his analysis that from an instructional point of view: children learn to read by reading.

Disadvantages This concept that children learn to read by reading poses the question of how children can learn to read by reading before they have learned to read? Smith's response is that at the beginning the reading has to be done for the child and as his ability expands all that is needed is help. Smith concludes that the primary function of reading teachers is to provide a model, ensure that

children have adequate opportunity to read and see that they are helped (Smith, 1978). Children are encouraged to guess at the meaning by using syntactic cues, semantic cues, forward and backward acting cues, cues from within a sentence and across sentences and their own world knowledge (Liberman and Liberman, 1990). Nicholson and Hill (1985) replicated Goodman's study which suggested that reading was a "sophisticated guessing game" and reported that guessing from context could not possibly be a major reading strategy. Indeed, it is suggested that poor readers are those most likely to guess, not good readers. Poor readers are less able to decode and as a result have to rely on context clues to assist them (Nicholson, 1986).

#### Eclectic methods

Moyle (1977) considers that eclectic methods merely refer to approaches to reading where the teacher and/or the materials employ a variety of strategies for teaching word recognition. Basically, the combination is one of whole word and phonics but increasingly language experience and whole story methods have been added. Moyle points out that the problem for the teacher is deciding which methods to use and the balance of the combination at any point in time. It can be confusing for the child as it may not be clear when he is expected to read from memory and when he is expected to use the spelling pattern.

Writing about the use of children's literature to teach beginning reading (i.e. the whole story method) Trachtenberg (1990, p.648) notes the strong support for "early, intensive instruction in phonic analysis" to assist pupils in achieving independence in word recognition. In this connection, Trachtenberg indicates that one does not necessarily preclude the other. She proposes a method which integrates phonics instruction with quality children's literature (p. 652)

"1. Read, comprehend and enjoy a whole quality literature selection.

2. Provide instruction in a high utility phonic element by drawing from or extending the preceding literature selection.
3. Apply the new phonic skill when reading another whole, high quality literature selection”.

This whole-part-whole model connects learning to pronounce words with real reading, a combination of both top-down and bottom-up processing. The Bullock Report (1975, 6.1) suggests that a model which incorporates both code and meaning would perhaps hold the key to effective teaching.

Letterland is a teaching model which is designed to blend a structured phonics approach with whole language teaching (Wendon, 1993). This model arose from working with children with reading difficulties resulting in using a pictogram mnemonic technique (Wendon, 1990). The alliterative, animated letters for Clever Cat, Sammy Snake etc. permit the children to immediately say the letter's character name correctly as they start with the relevant sound. Following the introduction of the influential animated letters, the children dramatise at being the letters and learning how to group themselves as *letters* into words, “creating a natural extension of the story metaphors”. It is a multi-sensory experience, each piece of new information emerging from information already learnt. For example, the letter *h* produces in turn, patterns *ha-t*, *h-at*, the word *hat*, the phrase *Harry, the Hat Man*, the sentence *Harry, the Hat Man has a green, hairy hat* and finally the whole context *Harry lives in Letterland, hates noise, always whispers, sells hats, has a horse, likes hang-gliding and so on.*

Disadvantage From the writer's own experience in schools, the Letterland scheme was not used as it was intended. To implement the progression described from the letter through to the whole context could be very time-consuming and teachers tended to adopt the procedure for letter, patterns, word and phrase. Time was at a premium to make optimum use of the dramatisation of

the characters. Furthermore, teachers were anxious to accelerate the transfer from Letterland reading to ordinary print in other printed materials and books.

As has previously been stated, the 'real books' /whole language approach coincided with the transition from subject-centred teaching to child-centred learning, the definition of a 'real book' being one that does not form part of a set of books systematically planned with the primary aim of helping children learn to read (Donaldson, 1993). Stahl and Miller (1989) suggest that while whole language/language experience approaches might be effective for teaching functional aspects of reading, such as the conventions of print, more direct approaches might be more effective for helping pupils learn word recognition skills as a means to effective comprehension. In the previous chapter, it was pointed out that the core curriculum requirements laid down by the Government of today challenge the discovery-learning principles of the advocates of child-centred education. While the programme of study for reading in the National Guidelines for Scotland (1991) stresses the importance of reading having a recognisable purpose clear to both teacher and pupil, it also states that one of the objectives at the Primary 1 stage is for pupils to learn the basic skills of reading through a systematic and progressive programme, which should incorporate an initial sight vocabulary and develop phonic skills and word attack skills.

It appeared, therefore, that this would be an opportune time to investigate how today's teachers do teach reading and in particular how teachers develop phonic, blending and word attack skills in a Primary 1 classroom.

## CHAPTER 4

### How Is Analytic Phonics Teaching Implemented In A Primary One Classroom?

*Rousseau, "the founder of the child-centred school" "dismisses reading as the curse of childhood"*  
Rusk, R.R. (1933, p. 23).

*"...children cannot be taught to read. A teacher's responsibility is not to teach children to read but to make it possible for them to learn to read"*  
Smith, F. (1978, p. 8)

*"No one can read without taking into account the graphophonemic cues of written language".*  
Newman JM and Church SM (1990, p.20)

## INTRODUCTION

How is phonics teaching implemented in a Primary One Classroom? Is there any evidence to support the assumption contained in this title that phonics teaching is indeed implemented in a Primary One Classroom? In the Bullock Report (1975) reference was made to the expressed opinions that "the majority of infant teachers had abandoned the teaching of phonics" (p. 78). However, the results of the survey undertaken for the Bullock Report indicated that this was not the case. 97% of the teachers surveyed used look and say methods, 97% used phonics ( letter sounds, digraphs and diphthongs), 78% used phonics (syllables) and 51% used a sentence method. Twenty years later, it is suggested that methods of teaching reading using phonics and reading schemes have been discarded in favour of what is called the 'real books' approach resulting in a perceived decline in reading attainment at seven or eight years of age (Turner, 1990). Wray (1991) responded to Turner's claims by providing evidence from an HMI Report (1990) that 95% of classes surveyed used graded reading schemes, only 6% operated a 'real books' policy and 89% were using a structured programme of phonics teaching.

The Department of Education and Science published a Report in 1991 (p. viii, 12) on the teaching and learning of reading in primary schools in England and Wales, concluding that "the claim that reading standards have fallen in recent years has not been proved beyond reasonable doubt". However, HMI reported finding "a clear link between higher standards and systematic phonic teaching"(p. xii.31) confirmed in a report on Suffolk schools (1991) described by Macmillan (1997) that the 10 most successful schools all used systematic phonics.

In a survey of the Teaching of Initial Literacy in England and Wales carried out between April 1990 and December 1991, the range of methods and approaches used by teachers in teaching reading and writing was investigated (Cato et al, 1992). Only 5% of the class teachers used 'real books' exclusively, 83% used a combination of reading schemes and 'real books'. Almost all of the teachers reported using a phonic approach with nine out of ten teachers using a look-and-say method for beginning readers. 12% of the teachers used other methods e.g. Breakthrough to Literacy and Letterland with very few (3%) using these predominately. The reported procedures for teaching phonics were (a) to individual children as the need arose (b) to small groups of children who were experiencing the same problem and (c) a "sound per week" to the whole class, possibly in the form of a game. A number of teachers used all three phonic procedures together with the "judicious use of Look and Say, apparently guided very much by intuition rather than any set of formalised procedures" (Cato et al, 1992, p. 24).

### Study 1

### Method

As the above figures related to England and Wales, it was decided to carry out a small scale survey in 12 Scottish schools located in two different geographical Regions. From the writer's personal knowledge, Regional

Guidelines are in existence providing a gradual analytic phonics programme for Primaries 1,2 and 3. Therefore, teachers working in Primaries 1, 2 and 3 were asked to respond to:

1. Methods of teaching reading
2. Core readers being used in the teaching of reading
3. Broadcasts and other resources being used
4. Classroom organisation for the teaching of reading
5. Management of time to implement the teaching of reading.

Results The results of the small survey indicated below show how the schools in each Region approached the teaching of reading.

	<u>6 schools in Region 1</u>	<u>6 schools in Region 2</u>
<b>1. <u>Methods of teaching reading</u></b>	<u>schools using method given</u>	<u>schools using method given</u>
pre-reading activities	5 schools	2 schools
look and say whole word	6 schools	5 schools
look and say sentence	4 schools	2 schools
look and say whole story	None of the schools	1 school
phonics - letter sounds	5 schools	3 schools
phonics - syllables	3 schools	3 schools
language experience	2 schools	None of the schools
alphabetic - letter names	None of the schools	None of the schools
<b>2. <u>Core readers being used</u></b>	<u>6 schools in Region 1</u>	<u>6 schools in Region 2</u>
Link up		
Ginn 360	2 schools	3 schools
Oxford Reading Tree	2 schools	3 schools

3. <u>Broadcast and other resources</u>	2 schools	
Computer programs	4 schools	2 schools
Television, words and pictures	4 schools	2 schools
Letterland	2 schools	
4. <u>Classroom organisation</u>		
whole class teaching	2 schools	
group teaching	6 schools	6 schools
individual teaching	5 schools	3 schools
5. <u>Management strategies</u>		
all children every day	3 schools	4 schools
different group each day	2 schools	
alternate day approach	2 schools	2 schools
a.m.	6 schools	4 schools
p.m.		2 schools
throughout the day		

### Discussion

From this small scale survey it would appear that methods of teaching reading using phonics and graded reading schemes had not been abandoned (Turner, 1990) nor was there any evidence to substantiate the use of a 'real books' approach to the teaching of reading. All 12 schools used core graded reading schemes. Indeed, from the writer's own knowledge it was not possible to find one school in either catchment area which did not subscribe to the use of one or more graded reading schemes. All schools were adopting an eclectic

approach to the teaching of reading using both look and say methods and phonics teaching, suggesting that pupils were not left to discover for themselves the relationship between letters and letter-sounds. This would appear to suggest that child-centredness is not borne out fully in practice, child-centred methods having been blamed for falling standards in reading and writing (Entwistle, 1970). This would appear to particularly relate to Scotland where teachers have continued in more traditional ways. All schools taught reading to groups of children and where it is indicated that an individual approach was used, this was reserved for children who were experiencing problems. Such a managerial model requires the teacher to identify common elements in curricular activities which can take place in a group or class. This enables her to get the majority of pupils started and releases her to work with individuals. The whole class approach was only used occasionally. Reading sessions were carried out in the forenoon in all but 2 schools; the latter were operating an integrated day type of organisational model with the teachers organising reading sessions throughout the day. It has been pointed out by Pollard and Tann (1987) that the practical implementation of the integrated day is often carried out by organising a number of different tasks to occur simultaneously. However, the existence of such multiple, simultaneous activities does not necessarily mean that an integrated day is operating in the sense that it enables children to have more control over their learning.

## Study 2

Although the surveys referred to so far all provide evidence that phonics teaching is used in Scottish schools, certain questions posed by Adams (1990) remain unanswered, namely: What is effective phonics instruction? What teaching activities are most valuable? How much and what kinds of phonic instruction are beneficial? This second study set out to examine classroom

practice in Scottish schools to investigate how phonics was actually implemented by the teachers and how it was co-ordinated with other aspects of teaching reading. Schools were studied in one of five new towns which were developed in Scotland after 1946, with one whole intake of Primary 1 classes being monitored through to Primary 3. Three routes were chosen for collecting information, namely

- (1) an extension of the survey carried out in study 1 to find out what happens in Primary 1 classes
- (2) taping children reading aloud to the teacher to analyse teacher support for children attempting to identify unknown words, and
- (3) examining forward plans and materials prepared by the teachers in accordance with Regional and schools policy requirements where these related to the teaching of reading and phonics teaching. It was hoped to find answers to the following questions:

Was phonics taught in a systematic explicit way or were the children expected to deduce letter-sound associations for themselves (Johnston and Thompson, 1989, pp 134/135)?

If letter-sound associations were taught, what was the sequence in which they were introduced?

When did the children start reading connected text and was the application of phonics skills integrated with the reading process?

### Background Information

Socio-Economic Structure of Schools Selected The schools for the catchment area for the study were all located in one of five new towns which were developed in Scotland after 1946. With the growth of the new town, factories, shops, offices, houses, community buildings, play facilities and roads were developed. The percentage of rented houses (Corporation, Local Authority and others) was 38.94 %:the percentage of privately owned houses (including ex-rental stock) was

61.06%. (Source: Regional Council, March, 1993). Table 1 shows a higher than average proportion of skilled and semi-skilled manual workers. 25% of the total unemployed had been out of work for more than one year. (Source: Regional Council, 1994).

Table 1 Proportion of professional, skilled and unskilled workers in the catchment area for the study (population, 38,650 (Source) 1991 10% Census Report for New Towns)

Category of worker	Percentage in catchment area	Percentage in Scotland
Employers/managers	19.3	23.6
Professional	4.48	6.61
Non-manual	22.39	24.4
Skilled manual	28.14	22.14
Semi-skilled manual	19.19	14.55
Unskilled manual	5.22	5.85
Others employed	1.28	1.14

### Education

Primary responsibility for the administration of school education in Scotland rests with Education Authorities (1972). Primary education in Scotland covers 7 years, from 5-12 years and is usually provided in schools which cater for the whole of this age range. There is only one entry date for Primary 1 (in mid-August) for children who are 5 years old up to and including the end of February of the following year. In essence, the range of pupils entering Primary 1 in any one year can vary from 4 years 6 months to 5 years 6 months. Since 1945, there has been a statutory duty on Education Authorities in Scotland to make adequate

provision for nursery education without charge to children whose parents wish them to benefit from it.

At the start of the planning for the investigation in August 1992, the following data was provided by the Regional Council (Table 2):

Table 2 Nursery schools, primary and secondary schools provided by the Education Authority for the study catchment area together with numbers of pupils attending

(August 1992)

Type of school	no. in catchment area	no. of pupils attending
Nursery schools	3	318
Nursery classes	10	658
Primary schools	13	4,415
Special schools	2	43
High schools	3	3,318

### Teachers and Classrooms

All 13 schools referred to in Table 2 were selected for participation in the investigation after approaching the then Director of Education for permission to carry out the proposed study. However, to avoid uncontrolled factors, it was decided to exclude those schools operating a composite class organisational model in Primary 1 i.e. where two year groups are taught in the one classroom. Ten schools remained, providing 12 Primary 1 classes with 299 pupils. Head Teachers of the schools concerned sought the requisite permission from the parents of the Primary 1 pupils. As one parent preferred that her child did not take part in the study, 298 pupils remained.

To accommodate a child-centred environment, there is a deliberate policy in all classes of encouraging group teaching. This is defined in an Extract from the Report of the Secretary of State for Scotland on Education in Scotland (1957)

as denoting a number of pupils engaged on a particular task, while other pupils in the same classroom are employed in a significantly different way, e.g. they may be at one of the play areas around the room, they may be carrying out the same task as others but at an appropriate level or they may be carrying out another type of task altogether. Three types of grouping are distinguished,-

1. Grouping on the basis of chronological age as for example in a composite class
2. Grouping on the basis of ability taking account of differences of ability within a single class of pupils, more properly referred to as attainment groups (Dunne & Bennett, 1990, p. 10)
3. Grouping for activities such as painting, friendship grouping or interest grouping which may include pupils of all levels of ability (Dunne & Bennett, 1990, p. 10). Such groupings offer scope for aptitudes and interest and also have a social value. They are sometimes referred to as social groupings.

Dunne & Bennett point out that grouping is an organisational device rather than a means of promoting effective learning. It might also be appropriate to mention one other group, an ephemeral group, in that it is known as a 'needs' group, where a specific need is identified by the teacher for one or two children, a 'needs' group is formed to cater for that immediate need.

A Report by HM Inspector of Schools (1989) finds that one of the elements of effective teaching practice is where teachers recognise the need for good classroom organisation, including the organisation of resources. The recommended policy of group teaching permeating through the classes can result in a resource-based organisational model requiring a plethora of commercial and teacher-devised materials to support the management of such a model. Although the Report goes on to state that time will be required for direct teaching with the whole class, groups or individuals, supporting the view that

class and group teaching are not mutually exclusive alternatives, the policy of resource-based learning and its impact on phonics teaching will be examined.

Regional Policy for the teaching of Language Arts. The Education Authority for the Region where the study was carried out had produced Language Arts Guidelines for the first 3 years of schooling. These Guidelines included a summary of the language skills which should be covered over the first three years of schooling and provided separate sections on talking, listening, reading, writing and phonics teaching. The separate phonics section identified points to be considered by the Schools Management Team in formulating a phonics programme over at least 3 years, listing resources to match each aspect of the programme (commercial and teacher-devised), ongoing checklist headings, and informal checking and assessment procedures. The suggested order of presentation in the Guidelines (pp 7-16) is as follows:

1. Early pre-reading auditory and visual discrimination skills.
2. Initial letter sounds s, m, l, z, n, v, h, f, r, w, y (sustained easily vocally)  
a, e, o, u, i (vowels) t, g, b, j, p, k, d, c, q (not so easily sustained vocally)  
Final letter sounds s, m, r, l, n, b, d, g, k, ck, p, t, x.
3. Completing cvc words with picture clues, worksheet activity (a) consonant and vowel given, final letter missing (b) vowel and consonant given, initial letter missing (c) initial consonant given, middle vowel missing, final consonant given e.g. (a) ca - (b) - at (c) b - s
4. Double consonant endings (a) ff, ll, ss (b) ck
5. Making 4 letter words from 3 letter words, given car - add 's', given tar - add 't', given for - add 'k'.
6. Digraphs, vowel and consonant ee, oo, sh, ch, wh, th, tch.
7. Initial consonant blends bl, cl, fl, gl, pl, sl, br, cr, fr, gr, pr, tr. sw, st, sn, sm, sp  
final consonant blends nt, nd, nk, ng, st

8. Endings a-e, e-e, l-e, o-e, u-e, y, le
9. More difficult digraphs ou/ow, ai/ay, ie, oi/oy, oe/oa, ea, au/aw, ue/ew
10. Long vowels as families a-e, ay, ai, a, e-e, ea, ee, e, i-e, ie, y, igh, i, o-e, oe, oa, o, ow, u-e, ue, ui, u, ew.
11. More difficult combinations all, wa, ph, soft 'c', soft 'g', dge
12. Silent consonants knee, half, lamb, wren, whistle, gnome
13. Other ways of representing long vowel sounds ie field, ea pear, ea bread, ui biscuit, ou your, ou country, o glove, o prove.
14. Endings, suffixes and prefixes ing, ed, tion, sion, ious, ous un, dis, re, pre.
15. Syllables - two syllable words as in comic pedal: as word attack aid as in remember canister.
16. Access skills - an awareness of alphabetic order through Word Banks.
17. Alphabetic Order taught by means of (a) ordering of individual letters and placing in the correct position to the alphabet matching lower case letters to upper case letters (b) ordering words by the first letter only (c) ordering words by the first two letters and (d) ordering words by the first 3 letters, and
18. Dictionary Skills taught by means of ordering by the first letter, by the first two letters and by the first three letters.

**PROCEDURE** As previously stated, the three routes chosen for collecting information were (1) the survey used in study 1 was extended to invite Primary 1 class teachers to respond to questions about policy and practice for teaching reading, the use of reading schemes and other books, the amount of time spent on reading and phonics teaching and assessment and record-keeping. Thus the survey aimed to find out what happens in Primary 1 classes. (2) Interactions of children's oral reading to the teacher would be taped and analysed to find out if teacher support for tackling unknown words encouraged the application of phonic skills and (3) An examination of the forward plans and materials prepared by the

teachers in keeping with school policy requirements to identify the elements relating to the teaching of reading and phonics and the sequence of introduction to the pupils.

The investigation started in March 1993 after the children had been in Primary 1 for six months.

(1) The Survey

The Survey was loosely based upon the one described in Part 9 of the Bullock Report (1975), construction being such as to try to avoid questions which were complex, negative or open-ended. Answers to all questions were carried out by completing the boxes on the right-hand side of each page, entering the appropriate response as required. Prior to distribution to the schools concerned, the questionnaire was used in a small scale pilot survey to identify any changes which might be required, e.g. it was decided that questions should be sub-numbered 1.1, 1.2 etc. to indicate grouping together those relating to specific sub-topics (Cohen & Manion, 1980). Covering letters were posted to the Head Teachers of each school requesting that the questionnaires be circulated to the relevant teachers. Certain aspects were stressed, namely that the information given about the school, teachers and pupils would be treated confidentially. The teachers completed the questionnaires in March of Session 1992/93 and were asked to read through the questionnaire before answering and ensure that every box or set of boxes was completed as requested.

Questions asked in the Survey are displayed together with the number of teacher responses given (where appropriate) or separate Tables are given to indicate responses from each individual class. In some cases where teachers selected more than one response, the total responses exceed twelve.

1. Section relating to the class

1.1 no. of children on the class register on the first day of school	mean pupil:teacher ratio was calculated at 26.75
1.2 reading ability range within the class and the number of pupils in each category	by March 1993 pupils had been assigned to reading ability categories of well-above average (WAA) above average (AA) average (A) below average (BA) or well-below average (WBA) See Table 3 for summary of teacher responses

Table 3 No. of pupils in each reading ability group within each P1 class

		Class											
category	1	2	3	4	5	6	7	8	9	10	11	12	
WAA		1		3			5	1	1	1	1		
AA	8	7	8	7			13	6	7	8	9	2	
A	12	10	12	10			9	6	16	15	10	16	
BA	5	7	7	5			5	6	5	3	8	6	
WBA								5	2	1	1		

1.3 on what basis were pupils allocated to the categories above (a) teacher opinion (b) Primary 1 screening test (c) both (a) and (b)?	5 teachers selected (a) their own opinion No teacher selected only (b) screening test 5 teachers selected both (a) and (b). 2 teachers did not respond
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## 2. Section relating to the teacher

<p>2.1 For how long have you been teaching?</p> <p>2.2 For how long have you taught Primaries 1-3?</p> <p>2.3 For how long have you taught Primary 1</p>	<p>Table 4 shows how long teachers had been in the profession (TP), how many years they had been teaching in Primaries 1-3 (T1-3) and how many years they had been teaching in Primary 1 (TP1).</p>
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Table 4 Primary 1 teachers: Length and type of teaching service

	Class											
	1	2	3	4	5	6	7	8	9	10	11	12
TP	11	9	26	10	10	1	21	8	19	24	6	15
T1-3	3	9	19	9	5	1	7	3	7	14	6	12
TP1	2	3	19	9	5	1	7	3	5	8	2	8

## 3. Section relating to ways of teaching reading

<p>3.1 Do you use one or more of the following methods?</p> <p>Pre-reading activities</p> <p>Look and say whole word</p> <p>Look and say sentence</p> <p>Look and say whole story</p> <p>Systematic phonics - letter sounds</p> <p>Systematic phonics - syllables</p>	<p>12 teachers used pre-reading activities</p> <p>12 teachers used look and say whole word</p> <p>9 teachers used look and say sentence</p> <p>4 teachers used look and say whole story</p> <p>12 teachers used phonics (letter sounds)</p> <p>8 teachers used phonics (syllables,)</p>
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Language experience	5 teachers used language experience and
Alphabetic analysis using letter names	1 teacher (Class 4) included letter names combined with other methods
3.2 When do you introduce phonics and letter recognition?	
before sight vocabulary	None of the teachers subscribe to this
in conjunction with sight vocabulary	5 teachers
after sight vocabulary	7 teachers
to the class	2 teachers
to groups	2 teachers
to individuals	None of the teachers introduce to individuals
to class and groups	3 teachers
to groups and individuals	3 teachers
to class, groups and individuals	2 teachers

3.3 To what do you attribute your present approach to the teaching of reading, one or more of the following reasons?	
Initial teacher-training course	1 teacher (newly graduated)
In-service courses	None of the teachers selected this category
Advice from professional colleagues	6 teachers
Teaching Manuals with Reading Schemes	7 teachers
Personal teaching experience	10 teachers
Regional Language Guidelines	6 teachers
5-14 National Curriculum Guidelines	4 teachers

<p>3.4 How often do the children in the different ability reading groups normally read aloud to you?</p>	<p>Table 5 indicates the no. of teachers who hear reading groups reading aloud either daily or at other stated times during each week</p>
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Table 5 No. of Primary 1 teachers who hear different categories of reading groups at regular times during each week.

Reading groups	daily	4 times	3 times	twice	once
well-above average	0	1	2	3	2
above average	1	1	4	4	1
average	1	1	5	3	1
below average	2	1	7	0	1
well-below average	2	1	2	0	0

<p>3.5 How much time approximately (in minutes) is devoted each day to hearing children reading and to phonics instruction?</p>	<p>The daily time spent by teachers for hearing reading and/or for teaching phonics is shown in Table 6 The percentage time spent on phonics teaching has been calculated from the total time given for hearing reading where possible.</p>
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Table 6 Daily time (mins.) spent on hearing reading and phonics teaching in Primary 1 classes

Activity	Class											
	1	2	3	4	5	6	7	8	9	10	11	12
hearing reading	60			90					60	90	60	60
phonics	15			30					12	30	45	15
both		60	60			90		70				
% phonics time	20			25					17	25	43	20

N.B. teachers in classes 5 and 7 did not respond to this section.

3.6 When do you normally prefer to teach reading?	Nos. of teachers responding:
before the morning interval	5 teachers
after the morning interval	None of the teachers selected this time
before and after the morning interval	4 teachers
in the afternoon	None of the teachers selected this time
throughout the day	3 teachers
3.7 Is there a direct link between your work with children and any referral to Learning Support?	4 teachers indicated a direct link with referral to a Learning Support teacher.

4. Section relating to resources used for teaching reading

4.1 Does reading practice rely on one or more of the following: (a) one single commercially-produced graded reading scheme	None of the teachers subscribed to (a)
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<p>(b) a mixture of books arranged in order by the school drawing from more than one commercially produced scheme</p> <p>(c) using (a) supplemented by (b)</p> <p>(d) using (b) combined with other books not in set schemes</p> <p>(e) books and materials none of which are arranged in order of difficulty either by publisher or school</p>	<p>5 teachers subscribed to (b)</p> <p>2 teachers subscribed to (c)</p> <p>5 teachers subscribed to (d)</p> <p>None of the teachers subscribed to (e)</p>
<p>4.2 Are the above reading resources selected by the school, by the teacher, by both the school and the teacher?</p>	<p>6 of the schools selected the resources</p> <p>6 selections were made by the school in consultation with the teacher</p> <p>None of the teachers selected the resources independently</p>
<p>4.3 Are the above reading resources used by following the prescribed sequence, selecting to match identified needs and/or interests?</p>	<p>10 teachers followed the prescribed sequence</p> <p>4 selected to match identified needs</p> <p>7 selected to match children's interests</p> <p>One teacher did not respond to this question</p>

<p>4.4 When are parents expected to hear children read from the books identified in 4.1 above?</p>	<p>3 teachers expected parents to hear children read on a daily basis</p> <p>9 teachers expected parents to hear children read when each book was finished</p>
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<p>4.5 Is a paired reading scheme adopted with children/with parents?</p>	<p>1 teacher did not operate any type of paired reading scheme (Class 4 teacher)</p> <p>5 adopted a scheme where older children were paired with Primary 1 children</p> <p>6 adopted a paired reading scheme with parents</p>
<p>4.6 When moving from stage to stage, whether the books are graded or not, are the children usually tested before moving on to another book?</p> <p>Do poor readers ever have to repeat a book?</p> <p>Is phonic practice given to overcome individual weaknesses detected when listening to children reading?</p>	<p>7 of the teachers indicated that children were tested before moving on to another book</p> <p>Only one teacher indicated using this practice</p> <p>7 of the teachers indicated using this strategy</p>
<p>4.7 Resources other than books - are any of the following resources used:</p> <p>television programmes related to reading</p> <p>computer programs related to reading</p> <p>commercially-designed computer programs</p> <p>teacher-designed programs</p>	<p>11 of the teachers use television programmes related to reading</p> <p>all 12 of the teachers use computer programmes with commercially-designed programs</p> <p>5 of the teachers design programs using words from the graded reading scheme and</p>

<p>reading games, commercially-produced reading games and/or teacher-devised</p>	<p>pictures and letters from the phonics programme</p> <p>all 12 of the teachers use reading games both commercially produced and teacher-devised</p>
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The importance of record-keeping and assessing the children's progress is stressed in the Bullock Report (p. 379) so it was thought expedient to include a section on this aspect.

#### 5. Section relating to record-keeping and assessment

<p>5.1 Are records kept of (a) books read by each child and (b) when each child has read to the teacher?</p>	<p>All 12 of the teachers kept (a) and (b) type records</p>
<p>5.2 Are 5.1 records kept on a regular basis?</p>	<p>5 teachers kept (a) (b) type records on a daily basis</p> <p>6 teachers on a weekly basis and</p> <p>1 teacher on a monthly basis</p>
<p>5.3 Are diagnostic records of persistent individual weaknesses kept on a regular basis?</p>	<p>3 teachers kept diagnostic records on a daily basis</p> <p>4 kept such records on a weekly basis</p> <p>2 on a monthly basis and</p> <p>6 on a termly basis</p>
<p>5.4 Are individual records kept of the development of phonic skills?</p>	<p>1 teacher kept individual phonic records on a daily basis</p> <p>1 teacher on a weekly basis</p> <p>4 teachers on a monthly basis and</p>

<p>5.5 Is any form of testing children's ability used?</p>	<p>6 teachers on a termly basis</p> <p>Only 2 teachers indicated this to be the case which is surprising as in question 4.6, 7 of the teachers responded that children were tested before moving on to another book.</p>
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6. Section relating to the children

<p>6.1 How much time would a child of average ability spend daily on reading and reading-related activities (a) with the teacher (b) working independently?</p>	<p>(a) 4 teachers indicated 10-15 minutes and 4 teachers indicated 15-25 minutes</p> <p>(b) 2 teachers indicated 10-15minutes, 3 teachers indicated 25-35 minutes and 3 teachers indicated 35-60 minutes.</p> <p>4 teachers did not respond to this question</p>
<p>6.2 Do the children use picture and word dictionaries and word banks?</p>	<p>In only class 4 did children use both picture and word dictionaries and word banks.</p> <p>Children in 2 classes used class word banks</p> <p>Children in 4 classes used individual word banks</p>
<p>6.3 Are print displays used for matching activities, for reference, for information?</p>	<p>In 9 classes displays used for word matching</p> <p>In 8 classes displays used for reference</p> <p>In 10 classes displays used for information</p>

6.4 Do the children have time for recreational reading every day?	Teachers replied that children were given time for recreational reading during either 'choosing time' or 'when their work is finished'
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The results of the Survey and how they related to the implementation of phonics teaching in the classes will be explored further in the Discussion section of the chapter after reporting on the findings from the taped reading analysis and examination of forward plans (which reflect school policies).

(2)                     Taped Reading Sessions

One of the practices adopted in infant classes is to hear children reading aloud. However, as the Council for the Accreditation of Teachers points out merely making time to "hear children read" and having a repertoire of "approaches to the teaching of reading" are not enough (1992, p. 17). Helen Arnold (1982) writes that the purpose of hearing children read should be to show children how to use all the cueing systems available to them, the main emphasis being on "cognitive learning". In this connection, Primary 1 teachers were supplied with a cassette tape to record interactions during reading-aloud sessions, the purpose being to investigate if teacher support encouraged children how to use all the cueing systems available to them through positive reinforcement ( Arnold, 1982) or whether when a child failed to recognise a word, he was prompted immediately without any discussion of decoding difficulties (Southgate et al, 1981). Taped reading sessions were carried out between April and May 1993.

Campbell (1981) describes an approach for analysing verbal moves in hearing children read, dividing his interactions into a number of 'pedagogical moves'. Campbell's suggested approach has been adapted for the purpose of reporting the interchanges recorded between teachers and pupils. Transcripts were analysed to find out if teacher support for tackling unknown words encouraged the use of a phonics technique, pictorial and/or contextual cues and the order in which the particular use was encouraged.

From the 658 teacher prompts which were analysed it was found that none of the teachers allowed the children to proceed without correction nor did any of them use the technique of masking part of an unknown word to encourage syllabication. Each of the 658 teacher prompts was assigned to one of the pedagogical moves described in Table 7 and a percentage score calculated.

Table 7 Classification of pedagogical moves and percentage prompts during sessions of hearing children read

<u>Description of classification</u>	<u>% prompts</u>
<u>Giving directions indicating method of procedure</u>	
encouraging correct procedures e.g. drawing attention to the title, the page to be read etc.	27%
encouraging the use of pictorial cues	26%
encouraging the use of context cues	2%
encouraging the use of the child's personal knowledge	15%
stopping the child if he is wrong and requesting correct response	7%
<u>Providing words</u>	
providing the word as initial starting clue and for miscued word	9%
inviting another child to provide the correct word	1%
<u>Encouraging child to recognise the miscued word</u>	3%

<u>Directing phonic analysis</u>	
asking the child what the first letter says	7% class 4
asking the child to sound out the word	1% class 4
<u>Asking comprehension questions</u>	
about individual words read	1% class 4
about the whole text read	1% class 4

The percentage prompt scores for the pedagogical moves indicate a predominance of directional prompts and pictorial cues. These scores will be compared with the forward planning analysis to identify if there is any relationship between the prompts used and the stage of the phonics programme being introduced at the time of recording.

(3) Forward Plans prepared by teachers which reflect school policy documents

The HMI Report (1989) refers to schools setting out their educational policies in a series of detailed documents covering the curricular areas. These documents attempt to identify the nature and scope of the curriculum and the preferred approaches of schools to learning and teaching e.g. in interpreting the Regional Guidelines for Language Arts Primaries 1-3 referred to earlier. In these Guidelines (p. 7) the initial stage in the teaching of reading is described as “early pre-reading auditory and visual skills”. Listening and speech games are suggested.

Quoting from the Regional Guidelines, the aims for the development of auditory discrimination i.e. phonemic awareness, are listed as :

- a) to discriminate between noises heard or made
- b) to appreciate rhyme

c) to discriminate between words

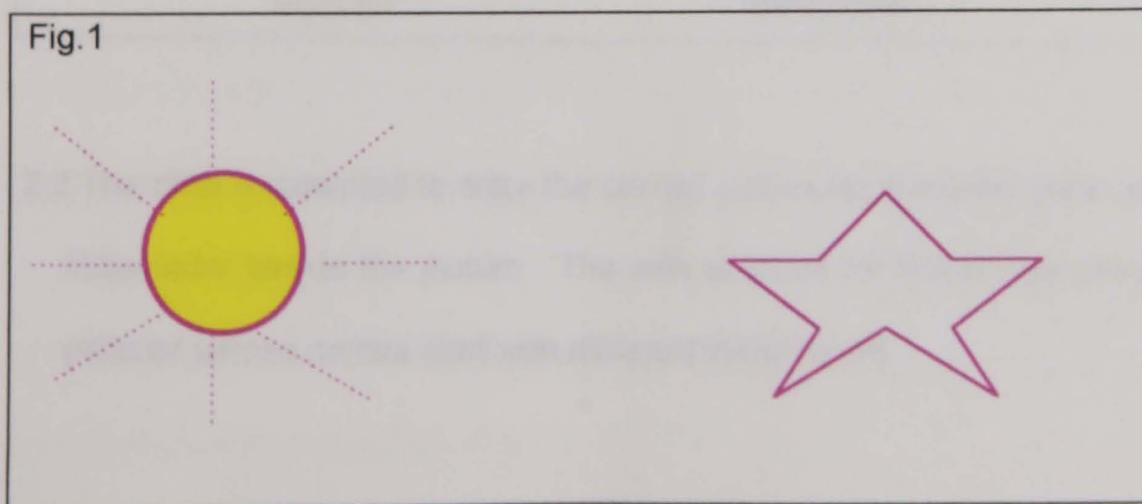
d) to discriminate between sounds within words.

Suggestions for visual discrimination, visual memory and sequencing activities are given e.g. looking and observing patterns, similarities and differences, matching shapes, picture matching and mapping, pictorial recall, symbolic recall, producing patterns using cubes and beads, copying and continuing sequential patterns.

In the first element of the phonics programme, the introduction to phonic work is described as 'hearing the initial sounds of words', a phonemic awareness task. Using class or group lessons, a series of alliterative pictures can be presented, the children name the pictures, the teacher emphasises the initial sound to draw the children's attention to it e.g. sssseat, ssssock etc. It is stressed that no words or letters should be written at this stage. Fig 1 provides an example of such a series of alliterative pictures given as an example. Children may be asked to supply words beginning with the same sound and the teacher draws pictures of the given words on the blackboard. For individual work, children can be given worksheets with pictures, some of which begin with the same sound, and children draw a circle round the pictures which begin with the same sound.

#### Hearing the initial sounds of words

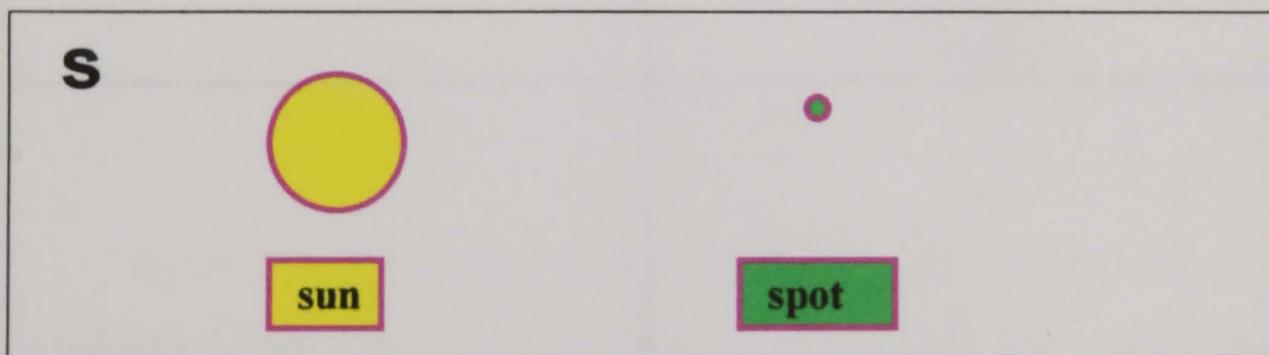
Fig.1



The second element of the programme is 'learning the symbols for the sounds'. Using class or group lessons, initial letter sounds can be introduced through groups of alliterative pictures with the children providing the name as before, the teacher now writing the word for the picture. While the teacher indicates and pronounces the word stressing the initial sound, the class can repeat the word and stress the initial sound. A circle is drawn round the initial letter although it has been said that this practice can detract from the holistic nature of the word. For individual work, sets of cards can be designed and introduced following a systematic sequence given (Figs. 2.1, 2.2, 2.3, 2.4, 2.5 and 2.6).

#### Learning the symbols for the sounds

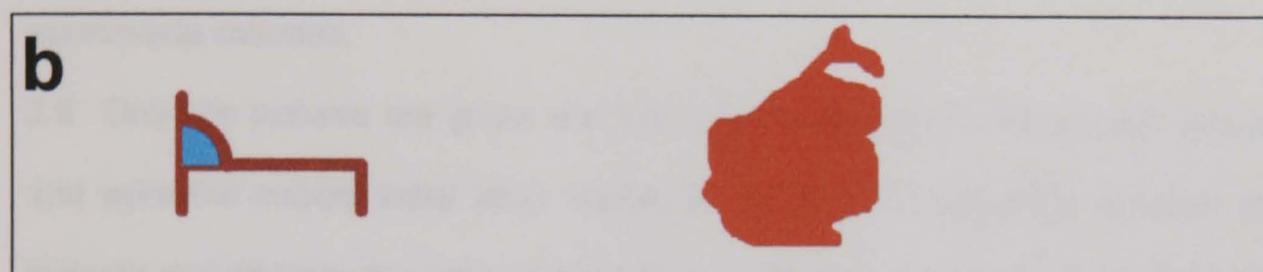
2.1 The child is expected to copy the alliterative pictures and words into his jotter drawing a circle round each initial letter. There may be several cards for each letter being introduced, one or two for each day of the week.



2.2 The child is expected to draw the correct picture for the letter given writing the initial letter beside the picture. The sets of cards for this activity should have pictures whose names start with different initial letters.



2.3 This task is the same as for 2.2. but the sets of cards should have pictures with different initial sounds but rhyme or present some other appropriate difficulty.



2.4 Pictures are sorted according to initial letters given and placed in the appropriate initial letter column. The child is then expected to copy the letters and draw the pictures in lists under the letters.

<b>m</b>	<b>c</b>

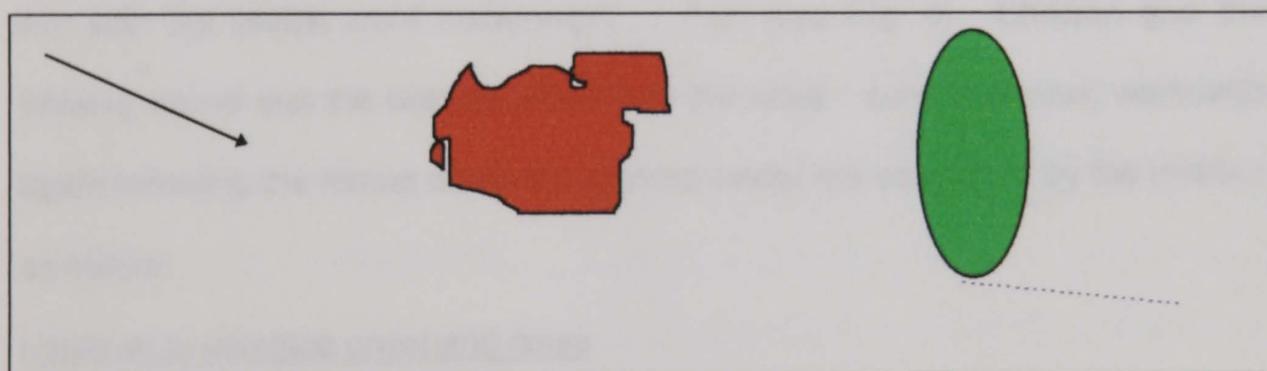
Selection of pictures for sorting according to initial letters and pasting into appropriate columns.

2.5 This is the same as for 2.4 with the differentiation between initial sounds liable to cause confusion e.g. b-p, d-g

<b>b</b>	<b>d</b>

Selection of pictures for sorting according to initial letters and pasting into appropriate columns.

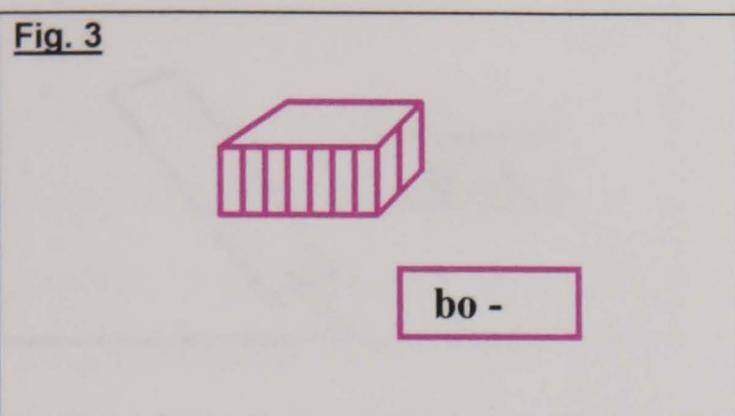
2.6 Only the pictures are given and the child is expected to copy each picture and write the correct initial letter beside it. In the first sequence of cards all pictures should have the same initial letter. In the second sequence of cards all the pictures should have different initial sounds.



The third element of the phonics programme, final letter sounds, are introduced through class or group lessons using pictures with partial words underneath portraying the initial consonant and vowel for the picture name e.g. the picture of a box, the partial word given being bo - , children provide the missing final sound and the teacher writes the letter in the word box . (see fig. 3). Individual workcards following the format of the blackboard model are copied into jotters and completed by the children. Pictures and partial words are

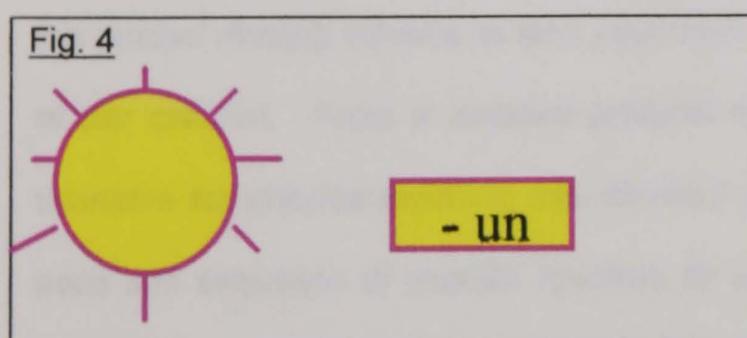
designed to include initial consonants and all vowel combinations e.g. ba-, be-, bi-, bo-, bu- etc.

#### Learning the final sounds



The fourth element of the programme combines initial letter sounds with the rime part of each word. As above, pictures are presented with partial words underneath portraying the rime part for each picture name e.g. the picture of a sun with the partial word underneath - un (see Fig. 4). Children give the missing sound and the teacher writes it in the word sun. Individual workcards again following the format of the blackboard model are completed by the children as before.

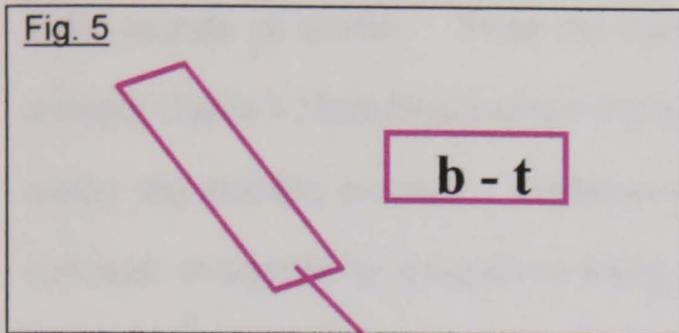
#### Learning to combine onset and rimes



The fifth element of the phonics programme follows a similar format as for the third and fourth elements with the partial words consisting of the initial and final letters with the middle vowel missing e.g. b - t. Children give the missing

middle sound and the teacher writes it in the word bat. As before, individual work cards following this format are completed by the children.

Learning about middle vowel sounds



Within such a Regional framework, class teachers prepare detailed forward plans for their work to a format agreed with the school management team, either termly or monthly and weekly and daily. The HMI Report states that the quality and extent of such plans, which reflect school policy, are of critical importance (1989). These policies and plans were analysed with a view to identifying how they related to the teaching of reading and phonics. As has been ascertained in the Survey section, all schools subscribed to using one or more graded reading schemes with a systematic phonics programme based on the Regional Guidelines. The class 4 teacher adapted the prescribed sequence of the graded reading scheme to take account of the identified needs and interests of her children. From a detailed analysis of the termly and monthly plans a timetable for phonics teaching was devised (see Table 8) which indicates the pace and sequence of phonics teaching as introduced in each class. Figs. 3,4 and 5 referred to in the table relate to the elements of the phonics programme previously referred to, namely fig. 3 learning the final sounds, fig. 4 learning to combine onset and rime and fig. 5 learning about vowel sounds.

In Table 8, the pace and sequence of class 4 is noteworthy, as it can be seen that letter-sound training begins at the outset of the school year in parallel

with the Foundations of Writing programme (1987) using the sequence of letters given for this programme. The word building process is therefore accelerated and an introduction is made to digraphs in the first year. It would also appear that the class 4 teacher does not include the phonemic awareness element of hearing the initial sounds of words. From the classification of pedagogical moves and prompts (Table 7) blending is beginning to be encouraged by the class 4 teacher during the reading process. Furthermore, one extra word-building activity is included. In addition to the children being given the initial and final consonants of a word and being asked to write in the vowel, class 4 pupils are also given the picture of a 3-letter word with a partial clue consisting of only the vowel, children being asked to write in the initial and final consonants e.g. the picture of a 'sun' with - u - underneath (see Fig 6).

Learning about words by combining middle vowel sounds with initial and final consonants

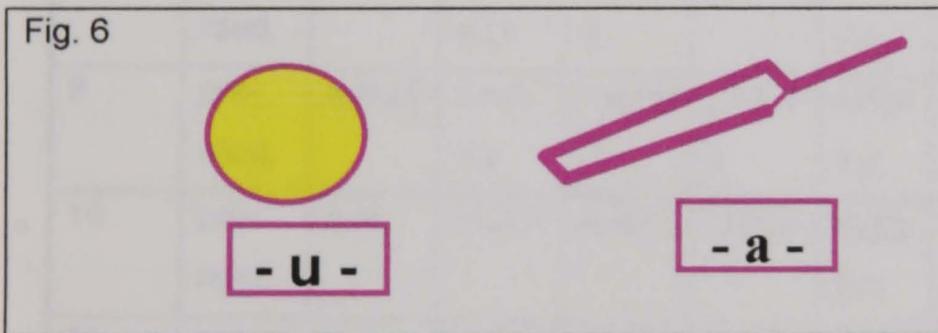


Table 8 Pace and sequence of initial phonics programme in each Primary 1 class/

Table 8 Pace and sequence of initial phonics programme in each Primary 1 class

months in school session

Class	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1	pre-read.	t, d, g, s, m		e, f, h, j n,	k, l, p, i	b, r, c u, qu	a, v, w x, z, o	figs. (3) (4) (5)		
2	pre-read.	s, m	r, f, h, n	a, e, i	l, t, b, c	d, g, j k, o	p, u, v w, x	y, z	figs. (3) (4) (5)	
3	pre-read.	c, a, o d	t, r, s, m	n, e, l, ij	h, y, b, uf	p, k, q(u)	u, g, w	x, z	figs. (3) (4) (5)	
4 *	c, a, o, d, g	s, h, mt n, p	b, t, l, i f, j	k, e, u, y	v, w, x z, qu	figs. (3) (4) (5) and (6)		digraphs sh, th, oo, ee, ch		
5	pre-read.	s, m, r l	a, f, h, e	z, n, v, o	t, g, b, ji	p, c, k u	d, y, w , q, x	figs. (3) (4) (5)		
6	pre-reading		c, o, a,	d, g, u	e, b, s, f, l, t, r, k, n, m, h, i		j, p, q, v, w	x, y, z	figs. (3) (4) (5)	
7	pre-reading			s, m, l, z, n	v, h, f, r w.	a, e, o u, i	t, g, b, j p, k	d, c, x, q, y	figs. (3) (4) (5)	
8	pre-read.	s, m, rf	h, n, a, e, l, t	b, c, d g	j, k, o, p	v, w, u, i	x, y, z q	figs. (3) (4) (5)		
9	pre-read.	s, m, l, f	z, n, h, v, y	r, w, t, g , b	j, p, k, d c	q(u)c k, x	a, e, o, u, i	figs. (3) (4) (5)		
10	pre-read.	s, m	r, f, h, n	a, e, i	l, t, b, c	d, g, j, k, o	p, u, v, w, x	y, z	figs. (3) (4) (5)	
11	pre-reading		c, o, a, g, d	m, n, r h, b, p	k, l, t, j, y, i	f, s, u q(u)	w, v, x z, e	figs. (3) (4) (5)		
12	pre-read.	t, d, g, s, m		e, f, h, j n	k, l, p, i	b, r, c u, qu	a, v, w x, z, o	figs. (3) (4) (5)		

From an analysis of the weekly plans, teachers plan a differentiated curriculum for reading, writing and phonics, the phonics programme being seen as a separate programme in its own right and, except for Class 4, divorced from the reading process.

Teachers adopt an integrated day type of organisation, classrooms reflecting the group ethos advocated by the Regional Curriculum Development Officer, having designated areas around the edges of the classroom or class area with clusters of tables in the middle for set tasks enabling each child to have his own chair and space. Each class has a teaching area or bay to which all the children, a group of children or an individual child might come to the teacher. Pupils are allocated to ability groups (normally four) for language/reading and it should therefore be explained that not all of the children in each class would complete the sequence displayed in Table 8 by the end of Primary 1. Some of the children might require more revision and reinforcement than others, some children were slower than others, some children lacked concentration to remain on task, some children might require learning support. At this early stage, the Assistant Head Teacher, Early Years might provide such learning support although in special circumstances a Learning Support Teacher might be made available for designated times. Pupil records for progression through the elements of the phonics programme are completed at the end of Primary 1 for transferring to the Primary 2 teacher.

Furthermore, as hearing children read aloud from the reading scheme is carried out on a one-to-one basis in the teaching area, a management model is necessary whereby the remainder of the children are occupied independently either directed to one of the clearly-designated areas providing a variety of learning situations or to a specified task at the group table using a resource-based learning approach or there may be an element of choice once the specified tasks have been completed e.g. for recreational reading. The different learning situations around the classrooms are planned according to school policy with the teacher catering for the social, emotional, cognitive, physical and creative development of the children.

## DISCUSSION

All of the teachers in the qualitative study had been trained after 1965 and were likely to subscribe to a child-centred philosophy (Todman and Farquharson 1983) of learning by discovery, experience and problem-solving (Watt, J. 1990). However, it was found that teachers planned out in advance what had to be taught, subscribing to graded reading schemes, schemes of work and a systematic, though gradual phonics programme, defined by the COPE Position Paper Primary Education in the Eighties as teacher-centred (1983). This supports Boyd's contention that, particularly in Scotland, many of the traditional ways had been maintained. One could argue that such a model is an attempt to reconcile some aspects of child-centred education with the accountability aspect of the National Curriculum Guidelines e.g. the resource-based learning of steps (3) (4) and (5) of the phonics programme were so designed that children would become aware of and discover how to build up words through carrying out the written tasks of filling in the initial consonant, the final consonant, the middle vowel and with Class 4 the initial and final consonants. However, the child-centred, discovery approach to learning to read has been subject to recent scrutiny. An article by Ryan and Openshaw (1996, p.61) describes how New Zealand reading instruction "not only fails to provide alternative strategies for successful reading but has also fostered a reluctance to critically examine the impact of the dominant pedagogy". One particular difficulty is the lack of focus on letter-sound knowledge and manipulating sound segments.

The teachers in the present study adopted an eclectic approach, with the primary focus being on a look-and say whole word method, building up a sight vocabulary of words connected with the graded reading scheme, which was introduced from the outset. A phonics programme was presented at the outset by the class 4 teacher and at some point during Term 1 by the other eleven

teachers being gradual, analytic, implicit but systematic. One important factor to be taken into account is that the survey found that the phonics programme was detached from the actual reading process (except for Class 4). Children considered 'phonics' to be one of the designated worksheet tasks which had to be carried out every day, divorced from the time spent reading aloud from the graded reading scheme book when the teacher support offered predominantly used pictorial and directional clues (as was seen in the taped analysis of oral reading, Table 7).

This type of resource-based-learning, while drawing the child's attention to letter-sounds in different positions and emphasizing the left to right ordered horizontal sequence does not allow for introducing the coarticulation process i.e. blending a series of discrete phonemes into one single unit to form a word (Liberman and Liberman, 1990). In essence, while these children have followed a systematic programme for single letter-sound correspondences, they are expected to deduce the blending process for themselves. Haddock (1976,p. 826) makes this very point, i.e. that "in actual practice, blending instruction is often not attempted at all. Instead, children are taught sound-letter correspondences and are expected to acquire the blending concept on their own". The reported study by Haddock(1976, p. 830) concludes that "explicit training in blending whether by an auditory or an auditory-visual method, results in superior blending ability than does training which consists of practice only on sound-letter correspondences. The results further indicate that an auditory-visual method of blending instruction is significantly more effective than an auditory method". The phonics programme of the class 4 teacher was accelerated, systematic and analytic/synthetic in application and it included an explicit element for introducing the coarticulation process (Liberman and Liberman, 1990) . Evidence for this practice was shown from the prompts identified from the taped reading sessions, only class 4 using

phonic prompts to encourage a child to tackle an unknown word, thereby adopting an auditory-visual process of blending (Haddock, 1976).

The predominant prompt (other than directional) was the use of pictorial clues and, as has been pointed out previously, the use of pictures does not facilitate the learning of visually presented words (Solman, 1986). Another identified disadvantage of using illustrations is that for children to infer the initial sounds of related words they require to be able to recall the name of the object and to be able to segment the initial sound of that name to compare the sound with that represented by the initial letter concerned (Feitelson 1988). Only 2% of the prompts encouraged the use of forward and backward acting context cues as advocated in the previously described psycholinguistic approach (Smith, 1978). In this approach children are encouraged to read using syntactic and semantic context cues and discover how to apply grapho-phonetic cues for deciphering unknown words.

The analysis of the taped reading sessions would appear to support the view that the act of hearing reading was rarely used instructionally and that when a child could not recognise a word, he was prompted immediately, with rarely any discussion of decoding problems or of content (Southgate et al, 1981). The tactic of providing the pronunciation of the word for the pupil encourages a teacher-dependency culture (Beard, 1986) and is not conducive to promoting independent reading as it leaves the child bereft of any strategy for tackling unknown words. The tactic of providing the word also begs the question of how this equates with the child-centred view of learning by discovery, experience and problem-solving (Watt, 1990).

Resource-based learning would appear to be at odds with developing learning strategies which might be achieved by direct training, modelling and metacognitive skills (Nisbet and Shucksmith 1984). Without explicit direct training

and modelling practice, the children do not understand the relationship of the phonics task to the reading process and until they 'discover' this relationship and are able to tackle unknown words by transferring and applying a recognised procedure, the children will be unable to take a more dynamic and independent role in the challenging reading process. The analysis of the taped reading lessons also clearly demonstrates this point as the majority of the prompts related to pictorial cues and directional instructions with no discussion of decoding difficulties or content, only 1% of the prompts relating to comprehension of the text. Only the class 4 teacher encouraged the transfer of phonics teaching (Southgate et al, 1981).

As has previously been mentioned, the management model of the classroom on the surface reflected a child-centred philosophy, an element of which is an integrated day organisation whereby children work throughout the school day, usually individually but sometimes in groups at a variety of curriculum tasks at their own pace and level. An organisational model of grouping was adopted by all of the teachers for language/reading and number activities on the basis of ability (Dunne & Bennett, 1990), the teacher organising group teaching sessions, either language/reading before the morning interval (hearing reading individually) with number work after the morning interval followed by associated language/number resource-based tasks. It has been reported that 60% of such tasks set in language are intended as short-term practice tasks which does raise questions of what the children are learning (Bennett et al, 1984). Interspersed with teaching sessions and related prescribed tasks, each group was allocated to learning areas on a rota basis, e.g. a play corner, an art corner, table-top games, construction bricks, jigsaws. The afternoon was usually allocated for project work one per term. Class sessions included routine activities, story-telling, physical education, drama and music. However, as previously noted, the existence of

multiple, simultaneous activities does not necessarily mean that an integrated day is operating in the sense that children are able to exercise more control over their learning (Pollard and Tann, 1987).

Such a policy of group teaching and hearing children read aloud individually results in a resource-based organisational model requiring a plethora of commercial and teacher-devised materials to support the management of such a model and schools and teachers recognised the need for this (HMI Report, 1989). The preparation and organization for access and retrieval of commercial and teacher-devised resources had been well thought-out in all the schools and children were being trained in these skills.

Of the teachers who responded to the query about the time allocated to phonics, all, except 1, devoted more than the 25% of the reading time to phonics teaching as advocated by Stahl (1992). However, it is unclear whether this percentage of time relates to direct, explicit, phonics teaching or to distributing the resource-based activities, work sheet exercises. From observation in the classrooms and from Table 8 (Pace and sequence of phonics programme) the latter would appear to be the case (except for Class 4). Early visual discrimination activities took the form of worksheets with, for example, children colouring in the 'odd one out'. Initial letter-sounds and associated pictures were introduced at a gradual rate of about one per week from the middle of October or later, through phonic workbooks, commercial and/or teacher devised. With the class 4 teacher, however, initial letter-sounds were introduced from the outset of the school year direct, phonics teaching preceded the resource-based learning element and there was encouragement for auditory-visual blending during the process of hearing reading (Haddock, 1976). The most effective way of teaching a skill is to teach it directly (Hatcher, Hulme and Ellis, 1994), reading almost always requires explicit tuition (Liberman and Liberman, 1990). The accelerated teaching of the

letter sounds enabled the class 4 children to be introduced to the sounding and blending process much earlier than the other pupils and Johnston, Anderson and Holligan (1996) point out that awareness of the position of phonemes in words other than the initial sound and particularly the final phoneme may be a critical stage in the development of reading.

Chall (1967) and Adams (1990) stress that a systematic approach is needed for phonics teaching. Our investigations indicate that, in parallel with teaching look-and-say sight words whereby beginners access stored information from lexical memory (Seymour and Elder, 1986; Ehri, 1991, 1994), all 12 classes use a phonics programme which is systematic and gradual, continuing for the first three years of schooling. However, in the systematic analytic method adopted in the classes in the study, emphasis is placed on the initial letter sound for the greater part of Primary 1. When the 26 initial letter sounds have been introduced, the word building element of the programme is reached. One could perhaps argue that this approach would encourage incidental blending in that the process of carrying out the activity may be conducive to the child discovering blending through a visual route. Given that the resource-based approach adopted implies the ordered horizontal left-to-right correspondence between letters, it does not promote the practising of the coarticulation process so necessary for combining discrete phonemes into one single word (Liberman and Liberman, 1990). The systematic phonics programme may be viewed by the child as a directed written task whereas the oral reading experience is a spoken, lexical memory task possibly using pictorial clues and guessing the word after recognising the initial letter. Other than in Class 4, the transfer between the phonics task and the oral reading experience appears to depend on the child discovering the relationship,- the child-centred aspect. Such an approach does not appear conducive to helping the child understand the alphabetic principle that each word is formed by

the consonants and vowels that an alphabet represents,- "it is exactly this awareness that must be taught if the child is to grasp the alphabetic principle" (Liberman and Liberman, 1990, p. 63).

### Conclusion

This study set out to examine classroom practice in Scottish schools to investigate how phonics was actually implemented by the teachers, how it was co-ordinated with other aspects of teaching reading and to find answers to the following questions:

**Is phonics taught in a systematic explicit way or are children expected to deduce letter-sound associations for themselves (Johnston and Thompson, 1989m pp 134/135)?**

It would appear that while phonics is introduced in a systematic way, the pace is very gradual and the resource-based learning which is advocated expects children to deduce the blending process element of letter-sound associations for themselves. However, the impact of the alternative pedagogy of the Class 4 teacher will be examined with a view to identifying whether any improvement found in the progress of the class 4 children is due to the pedagogy or the personality of that teacher.

**If letter-sound associations are taught, what is the sequence in which they are introduced?**

The sequences in which letter-sound associations are introduced in the classes have been identified in Table 8. Some of the teachers combined their phonics and writing programmes, using the writing sequence of the Foundations of Writing Programme (1987) for introducing the initial letter-sound associations. Some of the teachers used the sequence suggested in the Regional Guidelines. The teachers in classes 1 and 12 (actually from the same school) used a sequence devised by the school. None of the phonics programmes appeared to

be guided towards an early appreciation of how letter-sounds can be combined to form words due to the late introduction of vowels.

**When do children start reading connected text and is the application of phonics skills integrated with the reading process?**

It has been shown that children are introduced to connected text from the outset using a look and say whole word approach with a predominance of directional prompts and pictorial cues during oral reading sessions. The application of phonics skills would appear to be divorced from the actual reading process except in one identified class, class 4.

In the next chapter, the effects of the different types of phonics instruction will be investigated. If there is a relationship between phonics teaching and children's progress in reading and spelling, which type of phonics instruction described is most effective?

## CHAPTER 5

### Observational Study. Is There A Relationship Between Phonics Teaching And Children's Progress In Reading And Spelling And, If So, When Is Phonics Teaching Most Effective?

*"HMI found a clear link between higher standards and systematic phonic teaching, but observed that 'how and how often to teach phonics were more controversial issues'".*

*(DES, 1991, p xii.31)*

## INTRODUCTION

Research studies have shown that children who learn to read by an approach which includes phonics teaching generally perform better than children who learn by non-phonics methods. They are better at reading and spelling and are equivalent, even superior, in comprehension skills (Chall, 1967; Adams, 1990; Connelly, Johnston and Thompson, 1996).

Morris (1990) describes how, in 1954, Daniels and Diack led the 'phonic revolt', marking the beginning of analytical phonics being the type of phonics approved by the Bullock Committee (DES, 1975) inasmuch as analytical phonics encourages children to learn sound-symbol relationships in the context of whole-word recognition. A series of experiments carried out by Daniels and Diack, (1960) the efficacy of the phonic word method with that of mixed methods as applied in infant schools. Both word recognition and reading comprehension tests were used along with two intelligence tests. From the test data, it was reported that in word recognition, pupils taught by the phonic word method were significantly superior to those taught by mixed methods both for regular and irregular words. The closer the method of teaching was to the phonic word method, the higher were the children's scores in word recognition. Furthermore, the children taught by the phonic word method were superior to the children

taught by mixed methods in reading comprehension as well as in word recognition and the phonic word method showed its superiority over mixed methods at all levels of intelligence.

Emphasis on a phonics method makes little sense if children are given texts to read where the words do not follow regular letter-sound correspondence generalizations (Juel and Roper/Schneider, 1985). However, at this period in time, when Daniels and Diack were writing, teachers using the phonic word method were able to avail themselves of phonic-based reading schemes e.g. Royal Road Readers Scheme (Daniels and Diack, 1954), thus children would be able to apply their phonic skills when reading text.

The most compelling arguments for phonics teaching for beginning readers are based on studies which have compared different approaches to teaching beginning reading, namely the whole language route as opposed to a phonics route of reading instruction (e.g. Chall, 1967, 1979; Jorm and Share, 1983; Liberman and Liberman, 1990). Chall (1967) spent three years comparing the alternative methods of teaching reading. She consulted the authorities, examined teaching manuals and classroom materials, visited over 300 classrooms and finally assembled data from research studies which were available at the time (Adams 1990). Chall found that programs which included teaching phonics explicitly, as the central, primary focus, namely systematic phonics, resulted in significantly better word recognition, better spelling, better vocabulary and better reading comprehension than intrinsic phonics teaching introduced as a secondary focus. Furthermore, as in the Daniels and Diack study, the advantage was as great with lower ability children as with more privileged children (Adams, 1990).

Stahl and Miller (1989) have produced a quantitative research synthesis of whole language and language experience approaches for beginning reading.

They concluded that whole language programmes appeared to work efficiently in kindergarten, diminishing in effectiveness in first grade where the children benefited from a more structured, code-emphasis approach. It is useful for the reader's benefit to point out that 'kindergarten' is equivalent to a Scottish Primary 1 class and an English Reception class, while 'first grade' is equivalent to a Scottish Primary 2 class and an English Year 1 class.

In the Seymour and Elder study referred to in an earlier chapter, beginning readers in Scotland received no phonics instruction during the first year of formal schooling (1986). Towards the end of the first year, Elder (1986) reported that the look-and-say whole word approach adopted with the children was producing a rise in error rates and an increase in confusion between familiar and unfamiliar items. Elder (1986) concludes by suggesting that had the teaching method not changed at this point, the children might have discovered the correspondences for themselves. Perhaps one could also suggest that, in line with Stahl and Miller's conclusions (1989), the teacher considered the children would benefit from a more structured, code-emphasis approach after experiencing whole language exposure rather than leave the children to deduce the correspondences for themselves. One of the main advantages for children of letter-sound instruction is that it provides them with a strategy for tackling unknown words independently (Adams, 1990).

The myth that phonics is not taught within a whole language approach has been disputed by Newman and Church (1990, p.20) "whole language teachers do teach phonics but not as something separate from actual reading and writing". Macmillan (1997) however questions whether teachers are teaching phonics by drawing attention to phonic elements when children are reading. In the New Zealand Book Experience approach described in a previous chapter, the word analysis element which is used, after prediction from context has failed, is

the initial letter name of the unknown word. However, it should be pointed out that in the Guided Reading stage, it is stated that the teacher helps the child in obtaining a sound cue for the initial letter of the word (Thompson, 1993, ed. Tunmer and Nicholson). Are teachers teaching phonics when they draw the children's attention to initial letters of a word only as "a last resort decoding strategy"? (Macmillan, 1997, p. 77). It would appear, therefore, that at some stage in the New Zealand whole language approach, grapho-phonetic cues can form part of the process of learning to read, although they may not be the primary focus for instruction and indeed, pupils may still be expected to deduce the grapho-phonetic correspondences themselves. Furthermore, their attention is not drawn to the left-to-right sequence of letters in words and how they map on to the sounds.

Johnston and Thompson (1989) compared 8 year old children in Scotland with 8 year old children in New Zealand (referred to earlier) and the Scottish children, who had followed a gradual, systematic, phonics programme in parallel with a look-and-say whole word approach, were found to be ten months ahead in word reading ability. This would appear to lend support to the argument that there is a relationship between specific teaching of a systematic phonics programme and children's progress in reading, such children having a positive advantage over leaving children to deduce spelling patterns for themselves (Johnston, Connelly and Watson, 1995).

In a longitudinal intervention study by Hatcher, Hulme and Ellis (1994) one group of 7 year old children trained only in reading using a highly structured context and meaning approach with no direct phonics teaching was less successful than another group trained in both reading and phonological awareness. The Reading and Phonology group also made significant progress in spelling. One of the questions arising from this study is the extent to which links

between phonological awareness and reading need to be made explicit in the teaching of reading (Hatcher, Hulme and Ellis, 1994).

From the study reported in the previous chapter, it was established that a phonics programme was used in all but one of the twelve classes, a systematic, analytic but gradual approach commencing in October or November of the first year of schooling, at the rate of one letter-sound per week. From observation in the classrooms, it was noted that this programme was preceded by the introduction of look-and-say sight words through pictures and captions at the start of the session in August, to build up a basic sight vocabulary of the words from the class reading scheme also being introduced at this time. As was discussed, the foundation of the phonics programme was based on resource-based learning and divorced from the continuous text reading task, except for class 4. Macmillan (1997) queries whether teachers are teaching phonics when they are prescribing phonics exercises. In class 4, the systematic, analytic phonics programme was accelerated, commencing in August with one letter sound per week being taught and taught in parallel with look-and-say sight words and the reading scheme. Furthermore, as has been previously shown, the teacher encouraged children to apply their phonics skills in the reading process. On the basis of the literature reviewed above, it can be predicted that the class 4 pupils would make more rapid progress in reading than the pupils in the other 11 classes.

The following quantitative study was carried out to compare the levels of reading standards of the pupils across the twelve classes to find out if the reading performance of the pupils in class 4 was indeed ahead of the other pupils and to try to identify if and when phonics teaching appears to be most effective.

Adams (1990) also invites us to consider when or how we should teach children about correct spellings. The Regional Guidelines referred to in the previous chapter direct School Management teams to take into account the need

to differentiate between how to teach phonics for reading (decoding) and how to teach phonics for writing, i.e. spelling (encoding). The developmental sequence suggested in the Guidelines proceeds from awareness of words, parts of words and the development of word banks. However, the Spelling Mastery Series Guide provides three distinct approaches, phonemic spelling (sound symbol), morphemic spelling (meaning symbol) and whole word spelling (Dixon, Engelmann and Glen, 1981). Only one class in our study, class 4, encouraged independent writing by the pupils and, following the dictum of the Guidelines this was with the help of support systems such as word books (Cato et al 1992). It is proposed therefore to further use the study to find out how the spelling ability of the pupils in class 4 compares with the spelling ability of the other pupils, predicting that the class 4 pupils would make more rapid progress in spelling ability than the pupils in the other 11 classes. It is also proposed to analyse the spelling errors made by the pupils as it is predicted that the phonics method taught in Class 4 would produce errors which were more developmentally mature than the errors produced in the other 11 classes.

It should be noted that it had been hoped to start the study in Term 1 of the 1992/93 Session. However, it took much longer than had been anticipated to obtain the necessary permission from the Director of Education, the Head Teachers and teachers of the schools concerned and the parents and therefore it started in March 1993, Term 2 of 1992/93 Session. It was proposed to follow the progress of the same children for three years, providing the opportunity to chart the development at each age level and, if found to be necessary, the development of each individual (Davies and Williams, 1974).

Study 3METHODPROCEDURE

SUBJECTS As previously stated, from the 13 Primary Schools existing in the Region concerned, schools operating a composite class organisational model in Primary 1 were excluded from the research study. 10 schools remained providing 12 Primary 1 classes (298 pupils). Table 9 indicates the number of pupils in each class. To ascertain levels of standards across the 12 classes, pupils were tested at the end of Term 2 and two months later in Term 3. The pooled mean chronological age was 5y.7m. Each class was given a number from 1-12 in ascending order of chronological age i.e. pupils in class 1 were the youngest, pupils in class 12 were the oldest.

Table 9 No. of pupils in each Primary 1 class

<u>Primary1 class</u>	1	2	3	4	5*	6	7	8	9	10	11	12
<u>No. of pupils</u>	23	21	25	24	26	25	27	22	31	23	29	22

\*excluding the pupil whose parent did not give permission for the child to take part in the study.

Only one child had not received nursery education, all schools having access to nursery schools/classes (See Table 2 ).

TEST MEASURES Results from the test measures will be compared with the policies and practices adopted for phonics teaching as described in the qualitative study in the previous chapter, to identify if there is a relationship between the phonics teaching and children's progress in reading and, if so, how and when the phonics teaching is most effective. The following quantitative test measures were carried out:

### Vocabulary knowledge

Test Materials The British Picture Vocabulary Scale (BPVS) (Short Form) (Dunn and Dunn, 1982) measures children's receptive vocabulary. The Manual points out that it is not a comprehensive test of general intelligence, but that it measures one important aspect of general intelligence and child development, namely vocabulary knowledge. Standardisation of the test has been conducted on a British national sample. The test is conducted on an individual basis in accordance with the instructions provided. As each stimulus word is said, the child points out one of four pictures as representing the word spoken.

### Word Recognition

Test materials The British Abilities Scales Word Reading Test (BAS) (Elliott, C.D., Murray, D.J., & Pearson, L.S., 1977) is a measure of context-free word recognition skills (Hatcher, Hulme and Ellis, 1994) and consists of a card with single words displayed in rows of 5 words. As with the BPVS test it has been developed in British schools and allows for cross comparison between and within groups based on a standard reading scale. The test is conducted on an individual basis in accordance with the instructions provided. Each child starts at the first word and works from left to right across one line at a time continuing until he has made ten successive failures (Appendix 1)

### Spelling.

The Regional Guidelines referred to earlier stress the need "to differentiate between how to teach phonics for reading (decoding) and how to teach phonics for writing i.e. spelling (encoding)". An assessment of spelling was made, to gauge the effectiveness of phonics teaching on this skill.

Test materials The Schonell Graded Word Spelling Test B (1955) is an attainment spelling test for an age range of 5-15 years, the aim being to find out how many of the dictated words the pupil can spell correctly. The words to be

dictated are set out with the first 10 words being for 5-6 year old pupils, the next 10 for 6-7 year old pupils and so on as the words are graded in order of increasing difficulty (See Appendix 2).

Test Setting The test can be given to a single testee or to a group of testees. It was decided to adopt the small group setting (4/5 pupils).

Administration procedures The words were dictated by the researcher, the pupils writing the words on paper. As suggested the pupils were encouraged to write the words in groups of five across the page i.e. along the page, not down the page. Each word was at first dictated, embedded in a meaningful sentence (see Appendix 3 ) then dictated again the researcher speaking slowly and carefully e.g.

WORD	SENTENCE	WORD
See	I can see out of the window	Write see.
Cut	Tom cut his finger	Write cut

Pupils continued writing until they failed with 8-10 consecutive words.

Scoring For each pupil, the number of words correctly spelled was scored and by using a given formula the spelling ages were calculated.

Administration times for the tests were:

TYPE	VOCABULARY KNOWLEDGE	WORD RECOGNITION	SPELLING
TEST	BPVS (short form)	BAS	Schonell
TIME	March                      June	March                      June	June

## RESULTS

1. Table 10 shows comparisons of the means and standard deviations (in brackets) for individual classes for chronological age, reading age and vocabulary knowledge at March 1993 and June 1993 together with spelling at

June 1993. The performance of class 4 is noteworthy for both reading and spelling ability. In Table 10 (b) a comparison is made of the total sample split by sex from which it can be seen that the girls are ahead of the boys in spelling but not reading.

Table 10 Comparison of mean chronological ages (CA) mean reading ages (RA) and mean vocabulary knowledge scores (VK) for March and June 1993 and mean spelling ages (SA) for June 1993 for (a) all 12 Primary 1 classes and (b) the total sample split by sex (standard deviations in brackets)

(a)

class	March			June			
	C.A. years	R.A. years	V.K.	C.A. years	R.A. years	V.K.	S.A. years
1	5.2 (.14)	5.0 (.27)	87.83(10.71)	5.5(.14)	5.3(.38)	86.67(9.6)	5.0 (.1 )
2	5.3 (.16)	4.9 (.27)	101.1(15.04)	5.5 (.16)	5.3(.47)	101.4(14.9)	5.1(.25)
3	5.4 (.27)	5.0 (.26)	90.68(15.81)	5.7 (.27)	5.6(.48)	94.3(13.13)	5.6(.48)
4	5.5 (.28)	5.7 (.78)	97.54 (11.9)	5.7 (.27)	6.2(.59)	101.9(10.4)	6.2(.75)
5	5.5 (.28)	5.2 (.51)	95.69(15.87)	5.7 (.28)	5.5 (.8)	104.8(12.6)	5.6(.69)
6	5.6 (.24)	5.1 (.46)	91.36 (14.0)	5.8 (.23)	5.4(.67)	107.5(17.2)	5.3(.54)
7	5.6 (.33)	5.1 (.28)	96.96(11.57)	5.8 (.33)	5.6(.49)	98.72(14.1)	5.3(.49)
8	5.6 (.28)	5.4 (.97)	95.77(15.39)	5.8 (.26)	5.9(1.4)	99.6(14.32)	5.5(.84)
9	5.7 (.32)	5.1 (.29)	96.32(14.79)	5.8 (.26)	5.9(.39)	101.7(13.9)	5.4(.56)
10	5.8 (.17)	5.3 (.58)	91.39(13.22)	6.0 (.18)	6.0(.87)	100.2(16.6)	5.9(.54)
11	5.9 (.18)	5.4 (.63)	92.38(16.16)	6.1 (.19)	5.8(.85)	99.5(15.46)	5.9(.74)
12	5.9 (.32)	5.1 (.40)	90.64(16.57)	6.1 (.34)	5.7(.49)	94.43(19.3)	5.6(.62)

(b)

sex	C.A.	R.A.	V.K.	C.A.	R.A.	V.K.	S.A.
g	5.6(0.3)	5.2(0.6)	94.25(14.3)	5.8 (0.3)	5.8 (0.7)	100.1(14.6)	5.6(.71)
b	5.6(0.3)	5.1(0.5)	93.91(14.9)	5.8 (0.3)	5.8 (0.8)	99.16(15.5)	5.4(.58)

2. Table 11(a) shows comparisons of the means and standard deviations (in brackets) for individual classes for the difference between chronological age and reading ages at both test times, March and June 1993 and for the difference

between chronological and spelling ages in June. The total sample split by sex is also compared (Table 11 (b)). In March, in only class 4 is reading age ahead of chronological age. The superior performance of class 4 is maintained in June, 1993, with spelling age also being ahead of chronological age. However, in June, in classes 8 and 9 an improved performance is noted with reading age now also being slightly ahead of chronological age.

Table 11 Comparison of chronological and reading age differences (in months) at March and June, 1993 and chronological and spelling age differences (in months) at June 1993 for (a) individual classes and (b) the total sample split by sex (standard deviations in brackets)

(a)	March 1993		June 1993		June 1993	
class	RA < CA by months	RA > CA by months	RA < CA by months	RA > CA by months	SA < CA by months	SA > CA by months
1	-3.4 (3.6)		-2.0 (4.9)		-5.0 (2.4)	
2	-4.9 (3.5)		-2.7 (5.8)		-5.1 (3.6)	
3	-5.2 (4.8)		-.7 (7.2)		-2.0 (6.4)	
4		+1.83(8.5)		+6.0 (6.0)		+6.1 (8.0)
5	-4.5 (6.4)		-3.0 (9.5)		-2.0 (8.1)	
6	-6.1 (5.5)		-4.0 (7.3)		-4.7 (5.9)	
7	-6.4 (5.2)		-2.2 (7.3)		-5.8 (7.6)	
8	-2.2 (12.4)			+1.6(18.2)	-4.2(10.8)	
9	-7.3 (5.0)			+.8 (5.4)	-5.5 (7.7)	
10	-6.8 (6.6)		-.2 (10.1)		-1.2 (5.8)	
11	-6.5 (8.7)		-1.6 (11.3)		-1.9 (9.9)	
12	-9.3 (6.4)		-4.9 (8.7)		-6.6 (9.2)	
(b)						
girls	-4.5 (6.9)		-.18 (8.03)		-1.5(8.27)	
boys	-5.9 (7.1)		-1.9(10.19)		-4.9 (7.6)	

3. Table 12 compares the means and standard deviations (in brackets) with one-way ANOVA results between classes for the total Primary 1 population for vocabulary knowledge and word recognition at March 1993 and June 1993 and of spelling at June, 1993. The differences between chronological and reading ages and chronological and spelling ages are also shown.

Table 12 Comparison of means and standard deviations (in brackets) with one-way ANOVA results between classes for the total Primary 1 population for Vocabulary Knowledge, Word Recognition and Spelling at March and June 1993.

TEST TIMES	TYPE OF TEST MEASURE	MEANS	ONE-WAY ANOVAS
March	Vocabulary knowledge	93.99 (14.56)	F (11,286) = 1.63 p < .09 ns
June	Vocabulary knowledge	99.4 (15.05)	F (11,266) = 3.112 p < .001sig
June	Vocabulary difference March/June	5.45 (14.55)	F (11,266) = 2.58 p < .000 sig

March	Word Recognition	5.1 (.55)	F (11,286) = 3.89 p < .001sig
June	Word Recognition	5.7 (.75)	F (11,266) = 3.90 p < .000sig
March	CA/RA difference RA < CA by no. of months	-5.14 (7.16)	F (11,286) = 4.33 p < .001sig
June	CA/RA difference RA < CA by no. of months	- 1.02 (9.25)	F (11,266) = 2.35 p < .009 sig

June	Spelling (spelling ages)	- 5.5 (.66)	F (11,264) = 7.36 p < .000 sig
June	CA/SA difference SA < CA by no.of months	- 3.12 (8.13)	F (11,264) = 4.79 p < .000 sig

4. Table 13 compares the means and standard deviations (in brackets) with one-way ANOVA results for the total sample split by sex for vocabulary knowledge, word recognition and differences between chronological age and reading and spelling.

**Table 13** Comparison of means and standard deviations (in brackets) with one-way ANOVA results between sex for the Primary 1 sample population for Vocabulary Knowledge, Word Recognition and Spelling at March and June 1993.

TEST TIMES	TYPE OF TEST MEASURE	MEANS	ONE-WAY ANOVAS
March	Vocabulary knowledge		
	girls	94.25 (14.31)	F (1,286) = .037 p < .847 ns
boys	93.91 (14.99)		
June	Vocabulary knowledge		
	girls	100.09 (14.56)	F (1,266) = .262 p < .609 ns
boys	99.16 (15.01)		
June	Vocabulary difference		
	March/June	5.76 (14.29)	F (1, 266) = .020 p < .889 ns
girls	5.52 (15.01)		
	boys		

March	Word Recognition		
	girls	5.2 (.55)	F (1,286) = 2.29 p < .131ns
boys	5.1 (.54)		
June	Word Recognition		
	girls	5.8 (.69)	F (1,266) = 1.83 p < .177ns
boys	5.7 (.79)		
March	CA/RA difference		
	RA < CA in months		F (1,286) = 3.12 p < .079ns
girls	-4.4 (6.9)		
	boys	-5.91 (7.12)	
June	CA/RA difference		
	RA < CA in months		F (1,266) = 2.50 p < .115ns
girls	-.18 (8.03)		
	boys	-1.93 (10.19)	

June	Spelling		
	girls	5.7 (.71)	F (1,264) = 10.99 p < .001 sig
boys	5.4 (.58)		
June	CA/SA difference		
	SA < CA in months		F (1,264) = 12.49 p < .000 sig
girls	-1.47 (8.27)		
	boys	-4.89 (7.62)	

#### STATISTICAL COMPARISONS

Analyses of Variance were carried out comparing classes on test scores.

In addition ANOVAs were carried out comparing each class on the extent to which reading and spelling ages were ahead of chronological age.

### Vocabulary knowledge

One-way ANOVA tests showed that the differences between the classes on vocabulary knowledge at March 1993 were not significant ( $F(11,286) = 1.63, p > .09$ ), therefore it was valid to compare word recognition scores between classes. Differences between the classes on vocabulary were significant in June 1993, however, ( $F(11,266) = 3.112, p < .001$ ) and there was a significant gain in vocabulary knowledge between March and June ( $F(11,266) = 2.58, p < .004$ ). See Table 12.

Newman Keuls test showed that in June class 1 was significantly below all other classes ( $p < .05$ ) except 3 and 12 who did not differ from the other classes.

One-way ANOVA tests showed that the differences between girls and boys on vocabulary knowledge at March 1993 were not significant ( $F(1,286) = .037, p < .847$ ), neither were the differences between girls and boys significant at June 1993 ( $F(1,266) = .262, p < .609$ ). See Table 13.

### Word Recognition

One-way ANOVAs showed significant differences between the classes in word recognition at March 1993 ( $F(11,286) = 3.89, p < .001$ ), even when differences in chronological age were accounted for by subtracting chronological age from reading age for each class ( $F(11,286) = 4.33, p < .001$ ). See Table 12.

In March, Class 4 had a mean reading age which exceeded their mean chronological age by 2 months. Newman Keuls test on CA/RA difference scores indicated that class 4 was significantly ahead of all other classes ( $p < .05$ ). It is possible that the accelerated introduction to letter-sounds and an awareness of the blending process had had a significant impact on the word recognition ability of the pupils in class 4.

One-way ANOVAs showed there were no significant differences between girls and boys at March 1993 ( $F(1,286) = 2.29$   $p < .131$ ) and although mean reading ages were behind mean chronological ages for both girls and boys, there were no significant differences between girls and boys on RA < CA measure ( $F(1,286) = 3.12$   $p < 0.79$ ).

One-way ANOVAs indicated significant differences between the classes for word recognition at June 1993 ( $F(11,266) = 3.90$   $p < .000$ ), even when chronological age was subtracted from reading age ( $F(11,266) = 2.35$   $p < .009$ ). In the 2 month gap between the testing times, there had been a considerable improvement in reading skill, the mean reading age of all the children had increased by 7 months.

In June, Class 4 still exhibited an enhanced performance with mean reading age, now 6 months above chronological age. Newman Keuls test on the difference between chronological and reading ages showed that Class 4 was significantly ahead of all classes in ( $p < .05$ ) reading except classes 8,9,10,3 and 11. These results warranted further investigation into the teaching practices adopted in the other classes between the two test times which may have caused the increase in word recognition ability.

One-way ANOVAs still indicated that there were no significant differences between girls and boys for word recognition at June 1993 ( $F(1,266) = 1.83$   $p < .177$ ) and sex differences on reading age and chronological age disparity were not significant ( $F(1,266) = 2.50$   $p < .115$ ).

### Spelling

One-way ANOVA tests indicated that there were significant differences between classes for spelling as at June 1993 ( $F(11,264) = 7.36$   $p < .000$ ).

Newman Keuls test showed that Class 4 was significantly better than classes 1,2,7,6,9,8,5,3 and 12 but was not significantly better than classes 10 and 11. Taking the difference scores between chronological age and spelling age at June 1993, Newman Keuls tests showed that Class 4 was significantly better than all other 11 classes ( $p < .05$ ). This may indicate that the method adopted in Class 4 had a stronger effect on spelling than reading.

One-way ANOVA tests indicated there were significant differences between girls and boys for spelling as at June 1993 ( $F(1,264) = 10.99$   $p < .001$ ), girls being ahead of boys.

### SPELLING ERROR ANALYSIS

An analysis was made of the spelling errors to try to identify what effect the method adopted in Class 4 had on the children's progress in spelling. By looking at the maturity of the errors children make, we can learn much about their developing cognitive approaches to the spelling task. The children's spelling errors were loosely classified according to Morris and Perney's spelling classification scheme (1984). Errors were judged to be phonetic (1) if only the beginning consonant was given e.g. 's' for see and 'c' for cut. Errors were classified as phonetic (2) if the beginning consonant and vowel were given e.g. 'le' for leg and 'ba' for bag. Errors were classified as transitional if whole words were given showing that an attempt had been made to spell the whole word e.g. soner for sooner and skat for skate (see Appendix 11, pp 279-281). Transitional errors show knowledge of English orthography and are considered to be developmentally more mature. Scores were calculated as a percentage proportion of the total errors for each child i.e. actual misspelt responses excluding refusals.

1. Table 14 shows the percentage of errors made by each individual class in each of the above categories and also the total sample split by sex. The mean

reading ages and difference scores between reading, and chronological ages are also shown for comparison. Class 4 errors are highlighted as exhibiting the highest percentage of transitional errors and the lowest number of phonetic (1) errors.

Table 14 Percentage of whole word errors (transitional) (T error) consonant and vowel errors (phonetic 2) (P2 error) and consonant only errors (phonetic 1)(P1error) at June 1993 together with mean reading ages (RA) and CA/RA differences at June 1993 for all classes and total sample split by sex (standard deviations in brackets).

class	T error %	P2 error %	P1 error%	R.Age months	RA < CA months	RA>CA months
1	4.8 (21.8)	.00 (.00)	95.(21.8)	5.3 (.38)	-2.0 (4.9)	
2	7.0(28.8)	14.5(30.9)	78.5(37.8)	5.3 (.47)	-2.7 (5.8)	
3	29.(32.1)	22.0(23.3)	48.5(44.1)	5.6 (.48)	-.7 (7.2)	
4	90.(21.9)	4.2 (10.2)	5.6(17.3)	6.2 (.59)		+6.0(6.0)
5	33.4(45.9)	5.7(21.23)	60.9(47.5)	5.5 (.8)	-3.0 (9.5)	
6	17.1 (32.7)	3.4 (9.8)	79.5(37.6)	5.4 (.67)	-4.0 (7.3)	
7	29.5(42.6)	5.5 (14.3)	65.0(44.1)	5.6 (.49)	-2.2 (7.3)	
8	48.9(43.5)	5.1 (9.4)	45.9(44.9)	5.(1.47)		+1.6 (18.2)
9	20.1(36.9)	8.7 (19.2)	73.8(38.4)	5.9 (.39)		+8 (5.4)
10	54.2(41.3)	16.7(31.01)	29.1 (37.6)	6.0(.87)	-.2 (10.1)	
11	45.9(44.3)	10.8(19.2)	43.2(41.9)	5.8 (.85)	-1.(11.3)	
12	36.5(38.9)	8.3 (15.9)	55.2(40.7)	5.7 (.49)	-4.9 (8.7)	
girls	37.8 (42.4)	10.16(20.9)	52.02(44.6)	5.8 (.7)	-.18(8.03)	
boys	31.8 (42.2)	7.12(17.63)	61.52(44.37)	5.8 (.8)	-1.9(10.2)	

2. Table 15 compares the means and standard deviations (in brackets) with one-way ANOVA results for (a) the total Primary 1 sample and (b) the total sample split by sex for each type of error, transitional, phonetic (2) and phonetic (1).

Table 15 Comparison of means and standard deviations (in brackets) with one-way ANOVA results between classes for the total Primary 1 population for type of spelling error and for the total sample split by sex as at June 1993.

Spelling Error Analysis

TYPE OF ERROR	MEANS	ANALYSIS OF VARIANCE
Transitional errors	34.56 (42.25)	F (11,258) = 8.752 p < .000
Phonetic (2) errors	8.56 (19.26)	F (11,258) = 2.359 p < .009
Phonetic (1) errors	57.09 (44.62)	F (11,258) = 8.581 p < .000

Transitional errors girls	37.82 (42.36)	F (1,263) = 1.324 p < .251
Transitional errors boys	31.84 (42.4)	
Phonetic (2) errors girls	10.16 (20.94)	F (1,263) = 1.633 p < .202
Phonetic (2) errors boys	7.12 (17.64)	
Phonetic (1) errors girls	52.02 (44.56)	F (1,262) = 3.017 p < .084
Phonetic (1) errors boys	61.52 (44.27)	

STATISTICAL COMPARISONS

Transitional type errors

One-way ANOVA tests showed that there were significant difference between classes for transitional-type errors (F (11,258) = 8.752 p < .000) but that there were no significant differences between girls and boys (F(1,263) = 1.324 p < .251).

Newman Keuls test showed that class 4 had significantly more transitional errors than any of the other classes, with classes 10, 8 and 11 having significantly more than the remaining classes (p < .05). The transitional errors exhibited by classes 1 and 2 were significantly less than the other classes (p < .05). As has previously been noted, taking the difference scores between chronological age

and spelling age, class 4 was significantly better than all other 11 classes suggesting that better spelling performance is associated with transitional-type spelling errors.

#### Phonetic (2) errors

One-way ANOVA tests showed that differences between classes for phonetic (2) type errors were significant ( $F(11,258) = 2.359$   $p < .009$ ) although the differences between girls and boys were not significant ( $F(1,263) = 1.633$   $p < .202$ ).

Newman Keuls test showed that classes 1 and 6 had significantly less phonetic (2) errors than any of the other classes with class 3 significantly displaying the highest percentage of phonetic (2) errors compared with any of the other classes ( $p < .05$ ). perhaps suggesting a move in the direction of more developmentally mature transitional-type spelling errors.

#### Phonetic (1) errors

One-way ANOVA tests showed that differences between classes for phonetic (1) errors were significant ( $F(11,258) = 8.581 < .000$ ) although the differences between girls and boys were not significant ( $F(1,262) = 3.017$   $p < .084$ ).

Newman Keuls test showed that class four had significantly less phonetic (1) errors than any of the other classes, with classes 8,10 and 11 having significantly less phonetic (1) errors than the remaining classes. Class 1 had significantly more phonetic (1) errors than any of the other classes.

### DISCUSSION

A comparison of the levels of reading progress of the pupils in this study was carried out with a view to investigating whether or not there is a relationship between phonics teaching and progress in reading and spelling and, if so, how

and when it appears to be most effective. The results suggest that there is a relationship between type of phonics teaching and children's progress in reading and spelling.

The reported results in this investigative study highlight the enhanced reading performance of the pupils in class 4 at both test times. In the previous chapter, it was found that at the start of the year the class 4 pupils were introduced to initial letter-sounds through alliterative groups of words and associated pictures and learning the symbols for the sounds following the sequence of the writing programme, followed by word building activities. A parallel strand was building up a look-and-say sight vocabulary of words from the graded reading scheme, which was also introduced at the same time. The pace of teaching letter sounds, one per week as soon as the children came to school, resulted in an early introduction to word building in Term 2 of the school year, with an element of practising auditory-visual blending during oral reading (Haddock M. 1976).

In the other eleven classes, at the start of the school year, the pupils were introduced to early pre-reading visual and auditory discrimination activities and building up a look-and-say sight vocabulary of the words from the graded reading scheme which was also introduced at this time. As displayed in Table 8 the phonics programme was delayed until after the mid-term holiday week. The later, slower pace of introducing letter sounds at the rate of one per week resulted in the word building element of the phonics programme (incidental blending) being delayed until well into Term 3 of the school year with little or no evidence of phonic clues being encouraged in the oral reading experience or of sounding and blending being taught. In fact, this element was introduced after the first phase of testing in March 1993.

Johnston, Anderson and Holligan (1996) propose that awareness of the position of phonemes in words other than the initial sound and particularly the final phoneme may be a critical stage in the development of reading. The enhanced reading performance of the pupils in class 4, who were introduced to incidental blending before the March testing time, and the increase in independent reading skill of the remaining pupils after their attention had been drawn to the position of letters other than at the beginning of words (June), would appear to support this view. Class 4 pupils were ahead of all classes in March but not ahead of all classes in June after attention had been drawn to all positions of letters in cue words in the other eleven classes. However, it should perhaps be noted that while the method of resource-based learning which was used in the other eleven classes to encourage the awareness of the blending process may be conducive to the child discovering the process through this visual route, it certainly does not promote the practising of the coarticulation process so necessary for combining the single discrete phonemes into one single word (Liberman and Liberman, 1990).

In essence, while the children in this study have followed a systematic programme for single letter-sound correspondences, they are (with the exception of class 4) expected to deduce the blending process for themselves. Haddock (1976, p. 826) makes this very point, i.e. that "in actual practice, blending instruction is often not attempted at all. Instead, children are taught sound-letter correspondences and are expected to acquire the blending concept on their own". The reported study by Haddock (1976, p.830) concludes that "explicit training in blending whether by an auditory or an auditory-visual method, results in superior blending ability than does training which consists of practice only on sound-letter correspondences. The results further indicate that an auditory-visual method of blending instruction is significantly more effective than an auditory method". The

results from our study would appear to suggest that even drawing children's attention to letters in all positions of words such as has been described has a positive effect on word recognition ability but to differing degrees. As seen in Table 10 (excluding class 4) improvement can vary from 3 months to 8 months in a space of two months. The visual closure task given for combining letters to produce words is divorced from explicit training in both auditory and auditory/visual blending and children vary in the degrees to which they may be able to deduce the process for themselves. The earlier introduction of the process to class 4 together with the link between phonological skills and the reading process being made explicit (Hatcher, Hulme and Ellis, 1984) resulted in a superior performance by these pupils. It would appear therefore that accelerated training in letter-sounds together with explicit teaching of the blending process and its relationship to the reading process would be the most effective form of phonics teaching.

In a study carried out by Connelly (1994), two Scottish schools were compared which varied in the extent to which phonics was taught in the first year of schooling. At the start of the session, the pupils in school A were taught the letter-sound associations and after 3 months were taught to sound and blend in order to pronounce unknown words. In March, the progress of the pupils was measured on the BAS Word Reading test (1977) and the mean reading age was found to be nine months ahead of their chronological age. At the start of the session, the pupils in school B were taught the sounds of letters at the beginning of the year and encouraged to look at the initial sound of an unknown word. Not until February, 6 months after school entry, were the school B pupils taught to sound and blend the sounds together. In March, the mean reading age of school B was found to be three months ahead of their chronological age. However, as in this study, Connelly (1994) witnessed an increase in the mean reading ages

between March and June of 5 months for school A and 6 months for school. Connelly concluded that the degree to which phonics is taught had a measurable effect on reading attainment (1994). One may recall the conclusion reached by Daniels and Diack (1960, p. 17) quoted earlier that “the closer the method of teaching was to the phonic word method, the higher were the children’s scores in word recognition”. Connelly’s conclusions would also appear to support the results found in this study that the timing and explicitness of the introduction to the blending process has a measurable impact on reading attainment.

Another purpose of this study was to investigate whether there is any relationship between phonics teaching, children’s progress in reading and children’s progress in spelling ability. The mean reading age for class 4 was ahead of the mean chronological age at both test times which was not the case for most of the other classes. Taking the difference between chronological age and spelling age at June 1993, a Newman Keuls test showed that Class 4 was significantly better than all other 11 classes ( $p < .05$ ), although other classes were showing an improvement in reading. Class 4 pupils were also the only pupils encouraged to carry out independent writing, albeit using the support of word banks. Treiman (1993, p. 280) indicates 3 processes involved in spelling a word, “analyzing the spoken word into smaller units, remembering the identity and order of units and assigning a grapheme to each unit”. It could be argued that the method of phonics teaching used with class 4 pupils was more conducive to their being able to carry out these three processes. However, it should be noted that classes 10, 8 and 11 produced significantly more transitional errors than the pupils in the other 8 classes and these were three of the classes who were catching up in reading ability. In the other classes for the major part of the school year, pupils had been practising initial letter sounds and could assign a grapheme to this initial phoneme unit of a word, hence the large number of phonetic (1)

responses. When carrying out the spelling test, many of the children could analyse the first syllable into phonemes and reproduce the correct graphemes and these error types were assigned to the phonetic (2) category. In this respect, class 3 produced significantly more errors in this category suggesting these pupils may have been striving towards producing transitional errors. Class 3 was also one of the classes catching up on reading ability. However, many of the children were able to analyse the first syllable into phonemes but could not always remember how to assign the correct grapheme(s) to the phonemes and these error types were assigned to the phonetic (1) category.

It is suggested that the class 4 pupils with a mean reading age 6 months ahead of mean chronological age have demonstrated an awareness of the orthographic constraints working in spelling, their transitional spelling errors providing evidence that they know that spelling consists of more than merely converting phonemes into graphemes (Holligan and Johnston, 1991). As the class 4 pupils recorded the highest percentage of transitional spelling attempts (90%), representing the ability to carry out the three processes of analysis, memory and spelling advocated by Treiman, (1993) this would appear to lend support to the view that accelerated training in letter-sounds together with explicit teaching of the blending process would be the most effective form of phonics teaching for both reading and spelling as it stresses the left-to-right sequence of letters in words. Not only did the class 4 children spell better, but also their errors were more developmentally mature.

Treiman goes on to suggest that although learning to read words may help children to learn to spell, children should be writing and reading from the outset. She agrees with Frith (1985) that writing is actually more powerful than reading in enabling children to come to grips with the alphabetic principle. Indeed, both Froebel and Montessori considered that writing should precede reading. Recent

research suggests that children who are encouraged to write early and allowed to spell as best they can develop insights which carry over into their ability to read words (Gunning, 1994). This would appear to suggest that the phonics teaching method should also include teaching of letter formation to encourage such early writing and spelling.

This study set out to examine whether there is a relationship between phonics teaching and children's progress in reading and spelling, and, if this is the case, how and when is phonics teaching most effective? It is suggested that the results indicate that there is a relationship between the type of phonics teaching used and children's progress in reading and spelling and that "the aspect of phonics teaching which appears to be most beneficial and effective in providing children with a strategy for reading unfamiliar words independently is sounding and blending" (Johnston, Connelly and Watson, 1995, p. 36). This conclusion will be examined experimentally using a training paradigm and the results are reported in Chapter 7 .

As was stated earlier in this chapter, it was proposed to follow the progress of the same children for the three years of the duration of the phonics programme suggested by the Regional Guidelines, providing the opportunity to chart the development at each age level (Davies and Williams, 1974). However, in view of the superior performance of the Class 4 pupils at both test times in Primary 1, it is proposed to analyse the test results in Primaries 2 and 3 with particular reference to answering the question whether children who are ahead in reading and spelling at the end of Primary 1 stay ahead in reading and spelling in Primaries 2 and 3? Furthermore, if this is the case, is such superior performance transferred to reading comprehension? It is also proposed to analyse the children's spelling errors to identify whether there is any association between the

elements of the phonics programme being taught and the developmental maturity of the spelling errors being produced.

## CHAPTER 6

### Observational Study. Do Children Who Are Ahead In Reading And Spelling At The End Of Primary 1 Stay Ahead And Does The Superior Performance Transfer To Reading Comprehension?

#### INTRODUCTION

As stated in the previous chapter, it was proposed to follow the progress of the same children for the three years of the duration of the phonics programme suggested by the Regional Guidelines which provided the opportunity to chart the development at each age level (Davies and Williams, 1974). All pupils received a systematic approach to phonics teaching but, as described earlier, one class, class 4 achieved significantly better results than the other eleven classes. This was associated with accelerated teaching of the letter sounds together with an earlier introduction to the blending process, relating the use of phonic strategies to the pronunciation of unfamiliar words in text. It was noticeable that once the attention of the pupils in the other eleven classes had been drawn to the position of letters other than only at the beginning of words i.e. boundary and internal positions, there was a marked increase in independent reading skill (Johnston and Watson, 1997). In view of the superior performance of the Class 4 pupils at both test times in Primary 1, it is proposed to analyse the test results in Primaries 2 and 3 with particular reference to answering the following questions,

- Do the class 4 children who are ahead throughout Primary 1 remain ahead of the pupils in the other eleven classes in reading and spelling or is there a point at which the latter children catch up?
- Is there a point at which there is a significant improvement in the overall proportion of transitional spelling errors produced by the children?

- Do class 4 pupils who are better readers and spellers in Primary 1 show similarly good comprehension skills by the end of Primary 3?

#### Study 4

### METHOD

#### SUBJECTS

The children who started in Primary 1 were followed through to Primary 2 and Primary 3. It will be recalled that at the outset of the selection of classes, schools operating a composite class organisation were excluded from the study. However, in Primaries 2 and 3 this type of organisation was in operation in a number of the classes, e.g. one class could have pupils in both Primaries 1 and 2, in Primaries 2 and 3 or in Primaries 3 and 4.

#### TEST MEASURES

The following table provides the framework for carrying out the same tests as before with the exception of the BPVS test for vocabulary knowledge. In view of the superior performance of Class 4 pupils in Primary 1, it is proposed to pay particular attention to the progress of all the pupils in relation to the performance of the Class 4 pupils.

#### Framework for test measures being carried out in Primaries 2 and 3.

TYPE	WORD RECOGNITION	SPELLING
TEST	BAS	Schonell
PRIMARY 2	November 1993 March, 1994, June 1994	June 1994
PRIMARY 3	November 1994 and March 1995	March 1995

#### RESULTS

The results will be presented in the following order:

## 1. Word Recognition

1.1 A reminder of the results at the end of Primary 1 (June, 1993) indicating the superior performance of class 4.

1.2 Results for test times in Primary 2 and Primary 3 for all 12 classes and

1.3 Results for total population split by sex.

## 2. Spelling

2.1 A reminder of the results at the end of Primary 1 (June, 1993) indicating the superior performance of class 4.

2.2 Results for test times in Primary 2 and Primary 3 for all 12 classes and

2.3 Results for total population split by sex.

2.4 Spelling error analyses for Primary 2 and Primary 3.

## 3. Reading Comprehension

3.1 Results at the end of Primary 3

### 1. WORD RECOGNITION

1.1 Primary 1 Table 16 recalls the mean chronological and mean reading ages at the end of Primary 1 including scores when chronological age is taken into account showing whether mean reading ages were ahead of or below the mean chronological ages.

**Table 16** Comparison of mean chronological ages (CA) mean reading ages (RA) at the end of Primary 1 together with scores showing whether mean RA is ahead of or below mean CA (standard deviations in brackets)

class	Mean CA	Mean RA	RA > CA months	RA < CAmonths
1	5.5 (.14)	5.3 (.38)		-2.0 (4.9)
2	5.5 (.16)	5.3 (.47)		-2.7 (5.8)
3	5.7 (.27)	5.6 (.48)		-.7 (7.2)
4	5.7 (.27)	6.2 (.59)	+6.0 (6.0)	
5	5.7 (.28)	5.5 (.8)		-3.0 (9.5)
6	5.8 (.23)	5.4 (.67)		-4.0 (7.3)
7	5.8 (.33)	5.6 (.49)		-2.2 (7.3)
8	5.8 (.26)	5.9(1.47)	+1.6 (18.2)	
9	5.8 (.26)	5.9 (.39)	+ .8 (5.4)	
10	6.0 (.18)	6.0 (.87)		-.2 (10.1)
11	6.1 (.19)	5.8 (.85)		-1.6 (11.3)
12	6.1 (.34)	5.7 (.49)		-4.9 (8.7)

From Table 16 it can be seen that the mean reading age for class 4 is ahead of all the other classes and when chronological age is taken into account, class 4 is also ahead. The following Tables will indicate whether this performance is maintained throughout Primaries 2 and 3.

1.2 Primary 2 Table 17 shows comparisons of the means and standard deviations for individual classes for chronological age and reading age at November, 1993, March and June 1994. Table 18 shows whether the mean reading age is ahead of or below the mean chronological age at November 1993, March and June 1994.

**Table 17** Comparison of mean chronological ages (CA) and mean reading ages (RA) for all 12 classes in Primary 2 at November 1993 and March and June 1994 (standard deviations in brackets)

Class	November 1993		March 1994		June 1994	
	Mean CA	Mean RA	Mean CA	Mean RA	Mean CA	Mean RA
1	5.8 (.14)	6.0 (.69)	6.2 (.14)	6.4 (.74)	6.4 (.14)	6.6 (.85)
2	5.9 (.15)	5.6 (.6)	6.3 (.15)	6.3 (.5)	6.5 (.15)	6.6 (.65)
3	6.2 (.26)	6.4 (.53)	6.5 (.26)	6.7 (.73)	6.8 (.26)	7.4 (.9)
4	6.2 (.27)	6.7 (.74)	6.5 (.27)	7.3 (1.0)	6.8 (.27)	7.5 (.8)
5	6.2 (.29)	6.3 (.73)	6.5 (.29)	6.5 (.8)	6.8 (.29)	6.9 (1.0)
6	6.2 (.23)	6.0 (.76)	6.5 (.22)	6.3 (.9)	6.7 (.22)	6.6 (.92)
7	6.3 (.34)	6.1 (.44)	6.6 (.33)	6.6 (.6)	6.9 (.34)	7.0 (.71)
8	6.2 (.29)	6.0 (.73)	6.5 (.29)	6.5 (.9)	6.8 (.29)	6.8 (1.1)
9	6.3 (.25)	6.4 (.44)	6.6 (.25)	6.9 (.51)	6.9 (.25)	7.4 (.6)
10	6.4 (.18)	6.3 (.93)	6.7 (.18)	6.8 (1.2)	7.0 (.18)	7.3 (1.6)
11	6.5 (.15)	6.6 (.9)	6.8 (.15)	7.0 (1.2)	7.1 (.15)	7.7 (1.7)
12	6.5 (.31)	6.0 (.63)	6.8 (.31)	6.5 (.72)	7.0 (.32)	7.0 (.91)

In Primary 2, Class 4 pupils are still ahead of the total population for mean reading age at November 1993 and March 1994. However, at June 1994, it can be seen that one class, class 11, has now moved ahead of class 4 for mean reading age.

**Table 18** Comparison of mean scores showing whether mean reading ages (RA) are ahead of (>) or below (<) mean chronological ages (CA) in Primary 2 at November, 1993, March and June 1994 for all 12 classes (standard deviations in brackets).

Class	November 1993		March 1994		June 1994	
	RA > CA months	RA < CA months	RA > CA months	RA < CA months	RA > CA months	RA < CA months
1	+1.61(8.9)		+2.89(9.02)		+2.35(10.13)	
2		-4.3 (7.19)	+ .27 (6.17)		+ 1.0 (7.64)	
3	+2.41(6.61)		+2.72(8.92)		+7.22 (10.7)	
4	+6.42(7.63)		+8.74(9.94)		+9.00 (7.96)	
5	+.17(9.24)		+.27(8.93)		+1.32(11.03)	
6		-2.8(8.19)		-2.14 (9.11)		-1.09(9.94)
7		- 2.3(6.67)		- . 28 (8.66)	+1.58 (9.83)	
8		-1.8 (10.37)	+ .14 (11.67)		+1.07(14.27)	
9	+1.52(6.61)		+3.53(7.05)		+6.31 (8.37)	
10		-1.43(10.88)	+1.24(14.22)		+3.73(19.13)	
11	+1.5(12.05)		+2.32(15.4)		+7.60(21.14)	
12		-4.21(8.06)		-2.88(11.13)	+ .20 (13.34)	

Although class 11 had moved ahead of class 4 for mean reading age at the end of Primary 2, when chronological age was taken account, Table 18 shows that the reading age for class 4 is still ahead of chronological age by 9 months, whereas in class 11, the mean reading age is ahead by 7 months. Although the mean reading age for classes 3 and 9 are still below that for class 4, when chronological age is taken into account, the reading ages for these classes are 7 months and 6 months ahead of chronological age respectively.

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1.2. Primary 3 Table 19 shows comparisons of the means and standard deviations for individual classes for chronological age and reading age at November, 1994 and March 1995. Table 20 shows whether the mean reading age is ahead of or below the mean chronological age at November 1994 and March 1995.

Table 19 Comparison of mean chronological ages (CA) and mean reading ages (RA) for all 12 classes in Primary 3 at November, 1994 and March, 1995 (standard deviations in brackets)

Class	November 1994		March 1995	
	Mean CA	Mean RA	Mean CA	Mean RA
1	6.8 (.14)	7.1 (.97)	7.2 (.13)	7.4 (1.3)
2	7.0 (.15)	7.0 (.81)	7.3 (.15)	7.3 (.95)
3	7.1 (.26)	7.7 (1.04)	7.4 (.26)	8.5 (1.4)
4	7.2 (.27)	8.1 (1.2)	7.5 (.27)	8.5 (1.2)
5	7.2 (.29)	7.1 (1.0)	7.5 (.29)	7.7 (1.4)
6	7.2 (.22)	7.2 (1.1)	7.5 (.22)	7.8 (1.4)
7	7.3 (.34)	7.3 (.9)	7.5 (.29)	7.8 (1.0)
8	7.2 (.29)	7.0 (1.1)	7.5 (.29)	7.3 (1.4)
9	7.3 (.25)	7.7 (.73)	7.6 (.25)	8.3 (.9)
10	7.4 (.18)	7.7 (2.1)	7.7 (.18)	8.1 (2.1)
11	7.5 (.15)	7.9 (1.6)	7.8 (.15)	8.4 (1.6)
12	7.5 (.31)	7.3 (1.2)	7.6 (.31)	8.0 (1.6)

In March, 1995, at the end of Term 2, Primary 3 class 11 does not retain its position of being ahead of class 4 and is one month behind class 4 pupils. However, the mean reading age for class 3 pupils is now the same as that for class 4. This could be due to a change of teacher, the pupils having remained

with the same teacher for Primary 1 and 2. The following Table 20 will show if this remains the position when chronological age is taken into account.

Table 20 Comparison of mean scores showing whether mean reading ages (RA) are ahead of (>) or below (<) mean chronological ages (CA) at November, 1994 and March 1995 for all 12 classes (standard deviations in brackets).

Class	November 1994		March 1995	
	RA > CA months	RA < CA months	RA > CA months	RA < CA months
1	+2.44 (11.74)		+3.05 (15.80)	
2		-.13 (9.55)		-.21 (10.96)
3	+7.50 (12.31)		+12.94 (16.66)	
4	+10.58 (12.93)		+12.29 (14.15)	
5		-.67 (11.54)	+2.35 (16.07)	
6	+.52 (12.22)		+3.17 (15.57)	
7	+.80 (11.94)		+1.84 (11.94)	
8		-2.57 (14.32)		-1.64 (18.77)
9	+4.93 (9.86)		+7.86 (11.89)	
10	+4.05 (24.4)		+4.30 (24.26)	
11	+5.54 (20.15)		+7.52 (20.12)	
12		-1.47 (16.30)	+2.29 (21.65)	

Taking chronological age into account, the reading age for class 3 is now over 12 months ahead of chronological age, actually slightly ahead of Class 4 while the reading ages for classes 9 and 11 are both just over 7 months ahead of chronological age. The acceleration in performance in class 3 appears to have taken place between term 3 of Primary 2 (RA > CA by 7 months) and term 2 of Primary 3 (RA . CA by 12.9 months). Performance has been increasing gradually in the other 2 classes. Class 2 and 8 are the only 2 classes remaining with mean

reading age below mean chronological age. In class 2 the mean ages are almost equivalent and in class 8 the mean reading age is 1.6 months below mean chronological age.

1.3 Primaries 1,2 and 3 Table 21 shows the mean chronological ages and the mean reading ages for the total sample split by sex in Primaries 1, 2 and 3 together with scores showing whether reading is above or below chronological age when chronological age is taken into account. It can be seen from the Table that the girls perform better than the boys.

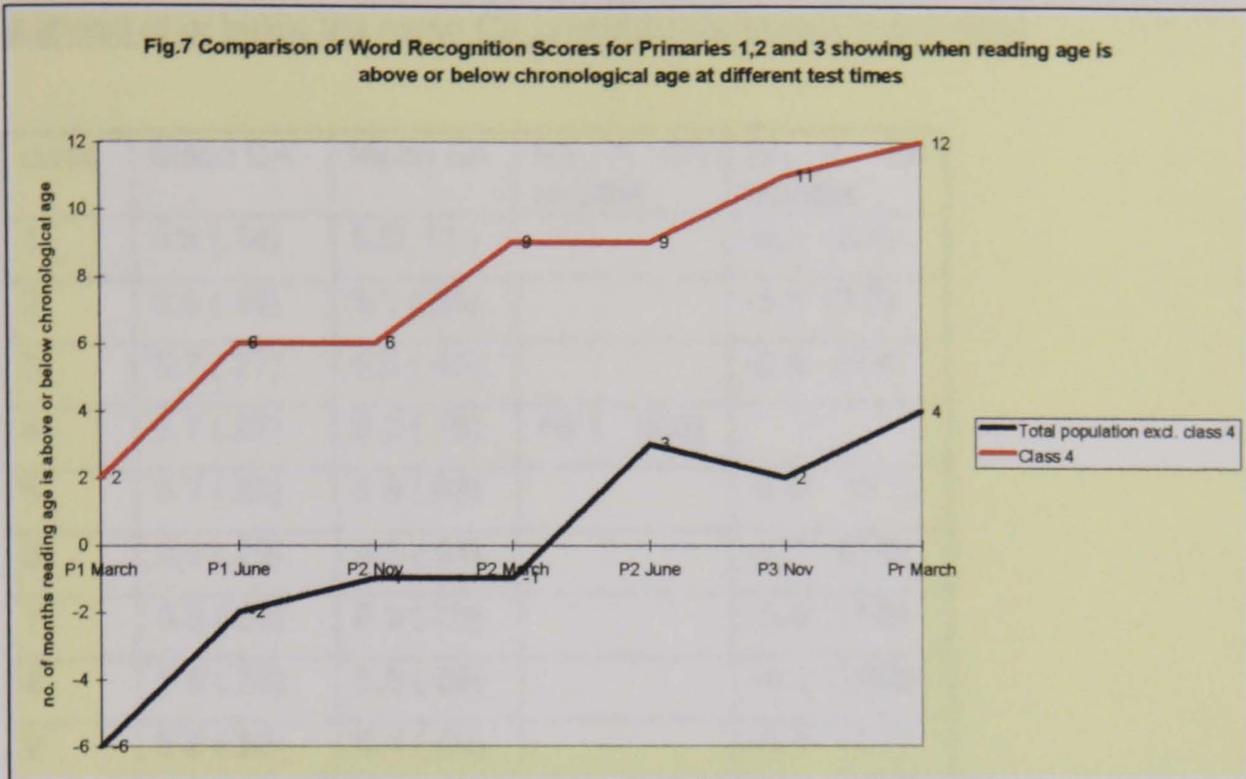
Table 21 Comparison of mean chronological ages (CA) and reading ages (RA) for total sample split by sex for Primaries 1, 2 and 3 together with scores showing whether mean reading age is ahead of (>) or below (<) chronological age (standard deviations in brackets)

Class	Girls		Boys	
	Mean CA	Mean RA	Mean CA	Mean RA
P1	5.6 (.30)	5.2 (.55)	5.6 (.30)	5.1 (.53)
P2	6.6 (.30)	6.8 (.95)	6.6 (.29)	6.6 (.72)
P3	7.6 (.29)	8.1 (1.5)	7.6 (.29)	7.8 (1.3)

P1	RA < CA by 4.5 months	RA < CA by 5.9 months
P2	RA > CA by 3.14 months	RA equivalent to CA
P3	RA > CA by 6.4 months	RA > CA by 2.9months

Fig. 7 compares the word recognition performance of class 4 with that of the other 11 classes from Primary 1 to Primary 3 when chronological age is taken into account showing that class 4 remained ahead of the other 11 classes during this period.

Fig.7 Comparison of Word Recognition Scores for Primaries 1,2 and 3 showing when reading age is above or below chronological age at different test times



## 2. SPELLING

2.1 Primary 1 Table 22 recalls the mean chronological and mean spelling ages at the end of Primary 1 including scores when chronological age is taken into account showing whether mean spelling ages are ahead of or below the mean chronological ages.

**Table 22** Comparison of mean chronological ages (CA) and mean spelling ages (SA) at the end of Primary 1 together with scores showing whether the mean SA is ahead of or below the mean CA (standard deviations in brackets)

class	Mean CA	Mean SA	SA > CA months	SA < CA months
1	5.5 (.14)	5.0(.13)		-5.0 (2.4)
2	5.5 (.16)	5.1 (.25)		-5.1 (3.6)
3	5.7 (.27)	5.6 (.48)		-2.0 (6.4)
4	5.7 (.27)	6.2 (.75)	+6.1 (8.0)	
5	5.7 (.28)	5.6 (.69)		-2.0 (8.1)
6	5.8 (.23)	5.3 (.54)		-4.7 (5.9)
7	5.8 (.33)	5.3 (.49)		-5.8 (7.6)
8	5.8 (.26)	5.5 (.84)		-4.2 (10.8)
9	5.8 (.26)	5.4 (.56)		-5.5 (7.7)
10	6.0 (.18)	5.9 (.54)		-1.2 (5.8)
11	6.1 (.19)	5.9 (.74)		-1.9 (9.9)
12	6.1 (.34)	5.6 (.62)		-6.6 (9.2)

From the above Table it can be seen that the mean spelling age for class 4 is ahead of all the other classes even when chronological age is taken into account.

**2.2 Primary 2** Table 23 shows comparisons of the means and standard deviations for individual classes for chronological age and spelling age at March 1994. Table 23 also shows whether the mean spelling age is ahead of below the mean chronological age at March 1994.

**Table 23** Comparison of mean chronological ages (CA) and mean spelling ages (SA) for all 12 classes at March 1994 together with scores showing whether SA is ahead of (>) or below (<) chronological age (standard deviations in brackets)

Class	March 1994		in months	
	Mean CA	Mean SA	SA > CA	SA < CA
1	6.2 (.14)	5.7 (.8)		-6.33 (9.93)
2	6.3 (.15)	6.0 (.59)		-3.4 (7.35)
3	6.5 (.26)	6.5 (.75)		- .44 (10.14)
4	6.5 (.27)	7.0 (.64)	+6.21 (7.22)	
5	6.5 (.29)	6.1 (.71)		-4.77 (8.30)
6	6.5 (.22)	6.0 (.74)		-5.7 (7.49)
7	6.6 (.33)	6.3 (.6)		-4.17 (8.28)
8	6.5 (.29)	6.1 (.6)		-4.79 (7.8)
9	6.6 (.25)	6.8 (.4)	+2.63 (5.92)	
10	6.7 (.18)	6.8 (.59)	+.42 (6.32)	
11	6.8 (.15)	6.8 (.74)		- .78 (9.61)
12	6.8 (.31)	6.5 (.65)		-3.69 (10.22)

Table 23 shows that the mean spelling age for class 4 is still ahead of all the other classes. However, when chronological age is taken into account, mean spelling age is ahead of mean chronological age in classes 9 and 10, although not to the same extent as for class 4. Table 24 will indicate whether this improvement in classes 9 and 10 is maintained.

**2.2 Primary 3** Table 24 shows comparisons of the mean chronological ages and the mean spelling ages for all 12 classes at March 1995 together with scores showing whether spelling age is ahead of or below chronological age .

**Table 24** Comparison of mean chronological ages (CA) and mean spelling ages (SA) for all 12 classes at March 1995 together with scores showing whether SA is ahead of (>) or below (<) chronological age (standard deviations in brackets)

Class	March 1995		in months	
	Mean CA	Mean SA	SA > CA	SA < CA
1	7.2 (.13)	6.8 (.8)		-5.0 (9.34)
2	7.3 (.15)	7.2 (.86)		-1.43 (9.65)
3	7.4 (.26)	7.9 (.66)	+4.8 (8.67)	
4	7.5 (.27)	8.0 (.62)	+5.67 (7.23)	
5	7.5 (.29)	7.2 (.79)		-3.45 (8.27)
6	7.5 (.22)	7.3 (.78)		-2.0 (8.46)
7	7.5 (.29)	7.2 (.8)		-4.94 (11.40)
8	7.5 (.29)	6.9 (.8)		-7.0 (10.67)
9	7.6 (.25)	7.8 (.62)	+2.14 (9.78)	
10	7.7 (.18)	7.6 (.92)		-1.43 (10.90)
11	7.8 (.15)	7.9 (.71)	+5.57 (9.24)	
12	7.6 (.31)	7.3 (.83)		-6.0 (13.01)

Table 24 shows that the mean spelling age for class 4 is still just ahead of all the other classes with classes 3, 9 and 11 catching up. When chronological age is taken into account, class 10 has regressed but it is noteworthy that the mean spelling age for class 3 is now 4.8 months ahead of mean chronological age. It was noted earlier, in Table 20, that at this point, March 1995, class 3 had moved slightly ahead of class 4 for mean reading age and when chronological age was taken into account was 12 months ahead of mean reading age.

**2.3** Primaries 1,2 and 3 Table 25 shows the mean chronological ages and the mean reading ages for the total sample split by sex in Primaries 1, 2 and 3 together with scores showing whether reading is above or below chronological age when chronological age is taken into account. It can be seen from the Table that the girls perform better than the boys. When chronological age is taken into

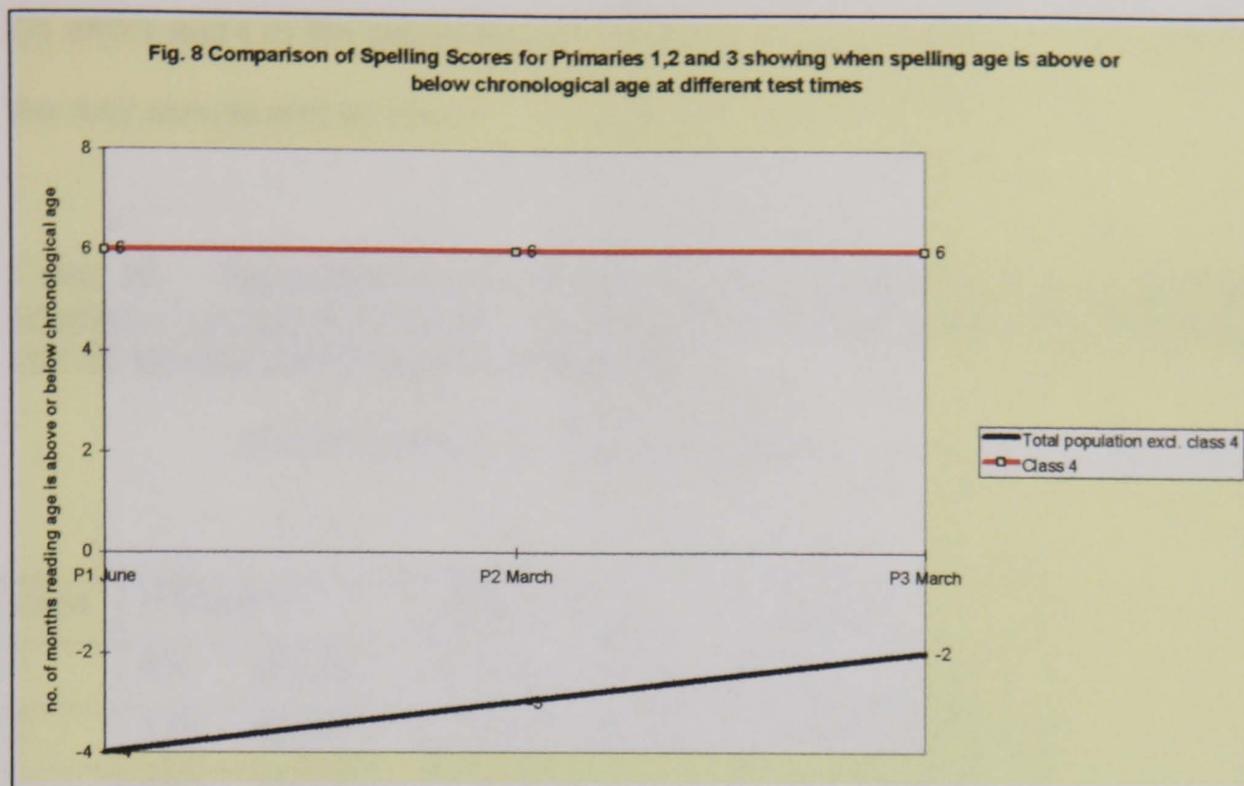
account, the spelling age of the girls is equivalent to chronological age by the Primary 3 test time while for the boys it is 4 months below chronological age.

**Table 25** Comparison of mean chronological ages (CA) and spelling ages (SA) for total sample split by sex for Primaries 1, 2 and 3 together with scores showing whether mean spelling age is ahead of (>) or below (<) chronological age (standard deviations in brackets)

Class	Girls		Boys	
	Mean CA	Mean SA	Mean CA	Mean SA
P1	5.6 (.30)	5.7 (.71)	5.6 (.30)	5.4 (.58)
P2	6.6 (.30)	6.5 (.76)	6.6 (.29)	6.2 (.73)
P3	7.6 (.29)	7.6 (.85)	7.6 (.29)	7.2 (1.04)

P1	SA > CA by 1.08 months	SA < CA by 2.81 months
P2	SA < CA by 1.2 months	SA < CA by 3.9 months
P3	SA is equivalent to CA	SA < CA by 4.18 months

Fig. 8 compares the spelling performance of Class 4 with that of the other 11 classes from Primary 1 to Primary 3 when chronological age is taken into account showing that class 4 remained ahead of the other 11 classes during this period.



#### 2.4 Spelling Error Analyses Primaries 2 and 3

As mentioned in the previous chapter, Treiman (1993, p. 280) indicates 3 processes involved in spelling a word, "analyzing the spoken word into smaller units, remembering the identity and order of units and assigning a grapheme to each unit". Other than in class 4, for the major part of Primary 1, pupils had been practising initial letter sounds and could assign a grapheme to this initial phoneme unit of a word, hence the large number of 'phonetic (1) responses. It could be argued that the method of phonics teaching used with class 4 pupils was more conducive to their being able to carry out these three processes. However, it was noted that classes 10, 8 and 11 produced significantly more transitional errors than the pupils in the other 8 classes. It is hoped to show that as children proceed through the complete phonics programme, so will the percentage of transitional spelling errors increase as the percentage of phonetic 1 errors decreases. Table 26 shows the pattern of spelling errors produced by the children over Primaries 1,2 and 3 (a) the percentage of transitional errors (b) the percentage of phonetic

(2) errors and (c) the percentage of phonetic (1) errors for all classes and for the total sample split by sex.

**Table 26** Percentage of (a) transitional errors (b) phonetic (2) errors and (c) phonetic (1) errors in Primaries 1, 2 and 3 for all classes and for the total sample split by sex (standard deviations in brackets).

**(a) Percentages of Transitional errors**

class	Primary 1	Primary 2	Primary 3
1	4.8 (21.8)	22.56 (37.6)	81.41 (36.03)
2	7.01 (28.8)	21.15 (32.74)	76.19 (43.21)
3	29.4 (22.01)	78.57 (42.58)	100.00 (.000)
4	90.2 (21.9)	91.3 (28.8)	95.00 (22.36)
5	33.4 (45.9)	28.63 (42.9)	97.36 (11.47)
6	17.1 (32.7)	71.11 (45.19)	88.69 (30.59)
7	29.5 (42.6)	93.42 (23.33)	87.50 (29.31)
8	48.9 (43.5)	58.17 (42.22)	97.08 (6.23)
9	20.1 (36.9)	94.82 (13.49)	97.5 (10.21)
10	54.2 (41.3)	75.92 (34.18)	100.00 (.000)
11	45.9 (44.3)	60.22 (38.05)	98.63 (6.24)
12	36.5 (38.9)	72.32 (45.5)	91.67 (28.87)

girls	37.8 (42.4)	69.75 (40.86)	95.48 (18.85)
boys	31.8 (42.2)	63.73 (45.11)	91.04 (25.89)

Table 26 (contd)

(b) Percentages of Phonetic (2) errors

class	Primary 1	Primary 2	Primary 3
1	.00 (.00)	7.77 (19.94)	3.85 (13.87)
2	14.5 (30.9)	40.94 (36.55)	4.17 (14.43)
3	22.01 (23.3)	1.79 (6.68)	.000 (.000)
4	4.2 (10.2)	2.17 (10.43)	2.00 (8.94)
5	5.7 (21.23)	10.95 (13.89)	2.63 (11.47)
6	3.4 (9.8)	12.50 (27.55)	.000 (.000)
7	5.5 (14.3)	1.32 (5.74)	1.47 (6.06)
8	5.1 (9.4)	4.42 (11.277)	2.50 (5.27)
9	8.7 (19.2)	4.62 (13.35)	2.50 (10.21)
10	16.7 (31.01)	10.60 (19.66)	.000 (.000)
11	10.8 (19.2)	5.00 (9.92)	1.36 (6.24)
12	8.3 (15.9)	2.86 (10.69)	.000 (.000)

girls	10.16 (20.9)	6.73 (18.10)	1.47 (8.49)
boys	7.12 (17.63)	8.92 (19.21)	1.83 (7.61)

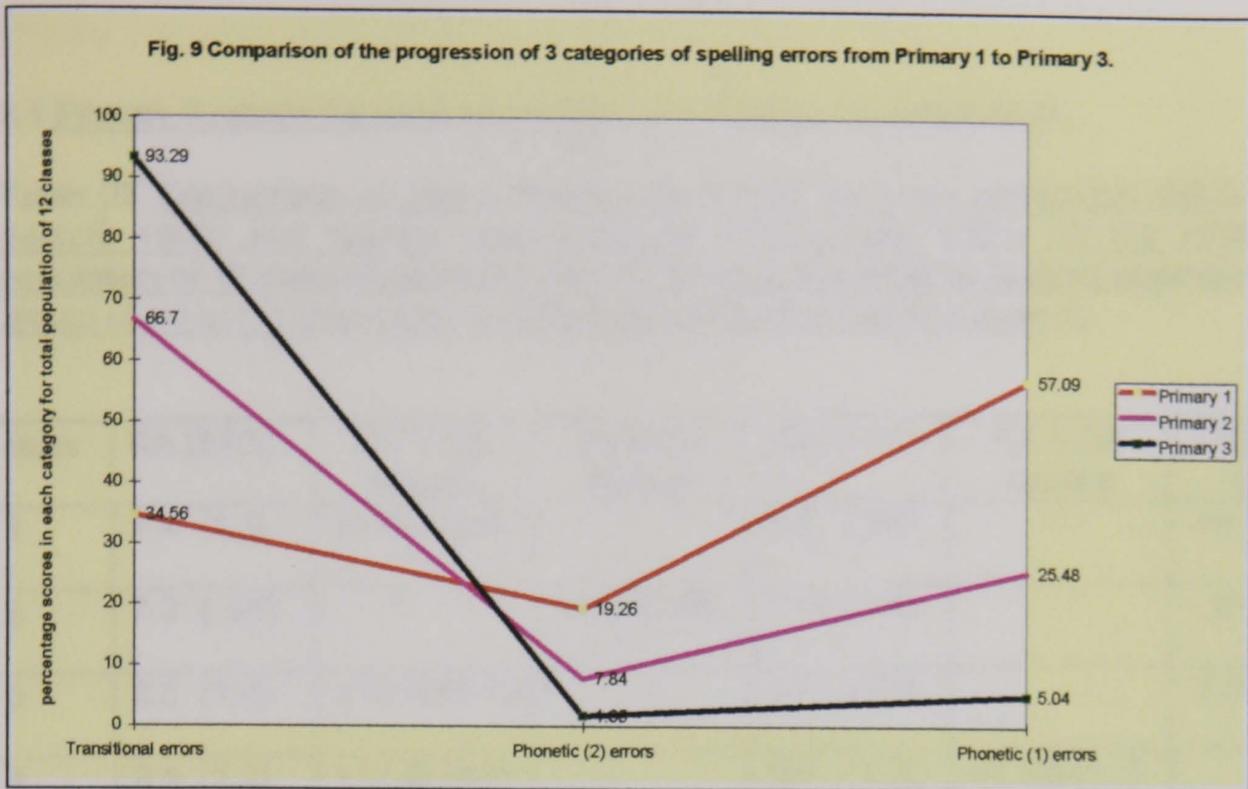
Table 26 (contd)

(c) Percentages of Phonetic (1) errors

class	Primary 1	Primary 2	Primary 3
1	95.2 (21.8)	69.66 (41.25)	14.75 (31.95)
2	78.5 (37.8)	37.91 (440.39)	19.64 (37.19)
3	48.5 (44.1)	19.64 (39.44)	.000 (.000)
4	5.6 (17.3)	6.52 (22.89)	3.00 (13.42)
5	60.9 (47.5)	60.42 (39.59)	.000 (.000)
6	79.5 (37.6)	16.39 (29.9)	11.31 (30.59)
7	65.0 (44.1)	5.26 (22.94)	11.03 (27.20)
8	45.9 (44.9)	35.97 (40.56)	.000 (.000)
9	73.8 (38.4)	.557 (13.35)	.000 (.000)
10	29.1 (37.6)	13.48 (27.06)	.000 (.000)
11	43.2 (41.9)	36.52 (38.65)	.000 (.000)
12	55.2 (40.7)	24.82 (41.72)	8.33 (28.87)

girls	52.02 (44.56)	23.55 (37.24)	3.05 (16.36)
boys	61.52 (44.27)	27.35 (39.85)	7.09 (5.04)

Fig.9 shows that as children proceed through the gradual phonics programme from Primary 1 - Primary, the percentages of transitional spelling errors increase as the percentages of phonetic 1 errors decrease.



It should be noted that in Class 4, two children had not responded in Primary 1. The girl produced phonetic 1 errors in Primary 2 but had transferred to transitional errors by Primary 3. However the boy produced both phonetic (1) and phonetic (2) errors in Primary 2 and Primary 3.

### 3. READING COMPREHENSION

Reading single words is only a part of reading skill, albeit a critical one. By Term 2 of Primary 3, taking chronological age into account, the reading ages of all classes, except two, were ahead of chronological ages. It was decided to test the children for comprehension at the end of Primary 3 measuring reading by the Primary Reading Test (France, 1981) which assesses comprehension through a cloze procedure technique (Appendix 3). Table 27 shows the Primary Reading Test reading ages (Scottish norms) for June 1995 together with the BAS reading ages at March 1995 for comparison. The Table also shows whether reading ages are ahead of or below chronological ages for both sets of scores.

### 3.1 Primary 3 results for word recognition and reading comprehension.

**Table 27 Comparison of mean reading ages (RA) for word recognition (BAS) (March, 1995) and reading comprehension (PRT) (June 1995) for the total population of 12 classes together with scores indicating whether reading ages are ahead of (>) or (<) chronological ages (standard deviations in brackets).**

class	RA (BAS)	RA > CA months	RA < CA months	RA (PRT)	RA > CA months	RA < CA months
1	7.4 (1.3)	+3.05(15.8)		6.5 (.56)		-10.95(7.45)
2	7.3 (.95)		-.21(10.96)	7.5 (1.14)		-.36 (14.4)
3	8.5 (1.4)	+12.9(16.7)		7.1 (.74)		-7.0 (9.05)
4	8.5 (1.2)	+12.3(14.6)		8.1 (1.0)	+4.13(11.7)	
5	7.7 (1.4)	+2.35(16.1)		7.4 (1.34)		-2.7 (15.02)
6	7.8 (1.4)	+3.17(15.6)		6.9 (.76)		-9.6 (8.13)
7	7.8 (1.0)	+1.84(13.8)		6.8 (.81)		-12.3(11.51)
8	7.3 (1.4)		-1.64(18.8)	6.5 (.644)		-15.0(7.62)
9	8.3 (.9)	+7.86(11.9)		7.4 (.95)		-4.41(11.87)
10	8.1 (2.1)	+4.3 (24.3)		7.4 (1.2)		-6.24(15.34)
11	8.4 (1.6)	+7.52(20.1)		7.8 (1.0)		-2.04(12.89)
12	8.0 (1.6)-	+2.29(21.7)		6.8 (.71)		-14.8(10.93)

It is noteworthy that when chronological age is taken into account, class 4 is the only class with the mean reading age being ahead of chronological age for reading comprehension. It is also worth noting that in Primary 2, the class 4 children were allocated to a different teacher and in Primary 3 the children were split into a composite class, some being in Primary 3 of Primary 2/3 and the remainder in a Primary 3 class, thus a further two teachers were involved. This would tend to support the contention that it was the alternative pedagogy of the

Primary 1 teacher which had the greater impact on the success of the children's progress rather than the teacher's personality. Although the reading comprehension age for class 2 is the only one which exceeds the word recognition reading age and when chronological age is taken into account both reading ages are more or less age-equivalent.

### STATISTICAL COMPARISONS

As in the Results section, it is proposed to present the relevant Tables in the same order:

1. Word Recognition for Primaries 1,2 and 3.
2. Spelling
3. Reading Comprehension

#### 1. WORD RECOGNITION

Table 28 shows a comparison of the means and standard deviations in brackets with one-way ANOVA results between classes for word recognition in Primaries 1, 2 and 3.

Table 28 Comparison of means and standard deviations in brackets with one-way ANOVA results between classes for word recognition (BAS scores) in Primaries 1,2 and 3

TEST TIMES	TYPE OF TEST MEASURE	MEANS	ONE-WAY ANOVAS
Mar'93	Word Recognition	5.1 yrs (.55)	F (11,286)=3.89 p < .001 sig
June'94	Word Recognition	5.7 yrs (.75)	F (11,266)=3.90 p < .000 sig
Nov'93	Word Recognition	6.2 yrs (.73)	F (11,216)=3.718 p<.000 sig
Mar'94	Word Recognition	6.7 yrs (.87)	F (11,224)=2.483 p<.006 sig
June'94	Word Recognition	7.1 yrs (1.1)	F (11,225)=2.58 p <.004 sig
Nov'94	Word Recognition	7.5 yrs (1.2)	F (11,231)=2.133 p<.02 sig
Mar'95	Word Recognition	8.0 yrs (1.4)	F (11,221)=1.92 p < .04 sig

When chronological age is taken into account, Table 29 shows whether reading age is ahead of or below chronological age at each of the test times together with one-way ANOVA results.

Table 29 Comparison of reading age scores together with one-way ANOVAs when chronological age is taken into account showing whether reading age (RA) is ahead of (>) or below (<) chronological age at each of the test times (standard deviations in brackets).

TEST TIMES	TYPE OF TEST MEASURE	MEANS	ONE-WAY ANOVAS
Mar'93	RA < CA in months	-5.14 (7.16)	F(11,286)=4.33 p < .001 sig
June'94	RA < CA in months	-1.02 (9.25)	F(11,266)=2.35 p < .009 sig
Nov'93	RA < CA in months	-.12 (8.97)	F(11,216)=2.55 p < .005 sig
Mar'94	RA < CA in months	-1.56 (10.49)	F(11,224)=1.65 p < .087 n.s.
June'94	RA < CA in months	-3.49 (12.75)	F(11,225)=1.47 p < .144 n.s.
Nov'94	RA > CA in months	+3.08 (14.75)	F(11,231)=1.47 p < .14 n.s.
Mar'95	RA > CA in months	+5.04 (16.99)	F(11,221)=1.31 p < .22 n.s.

Primary 1 At the end of Primary 1, one-way ANOVAs indicated significant differences for word recognition and although reading age was still behind chronological age, there had been a considerable improvement in reading skill. Newman Keuls test on the difference between chronological and reading ages showed that class 4 was still significantly ahead of all classes except 8,9,10,3 and 11 ( $p < .05$ ) (discussed in the previous chapter)

Primary 2 In Term 1, November 1993, one-way ANOVAs showed significant differences between the classes ( $F(11,216) = 3.718$   $p < .000$ ). Class 4 had a mean reading age which still exceeded the mean chronological age by 6.4 months.

Newman Keuls tests confirm the superiority of class 4 for reading age and when chronological age was taken into account, it was found that class 4 was significantly ahead of the other classes ( $p < .05$ ). Only in classes, 3,1,9,11 and 5 was the reading age now one or two months ahead of chronological age. Class 8 had not maintained the improved performance noted at the end of Primary 1. It is possible that the introduction of letter-sounds in internal and final positions in words through resource-based learning (described in the previous chapter) may now be having a positive effect in the classes which were showing an improved level of performance.

In Term 2, March 1994, one-way ANOVAs showed significant differences between the classes ( $F(11,224) = 2.483$   $p < .006$ ) and classes differ on chronological and reading age difference scores ( $F(11,224) = 1.647$   $p < .087$  n.s.). Class 4 had a mean reading which now exceeded the mean chronological age by 10 months.

Newman Keuls tests still confirm the superiority of Class 4 for reading age ( $p < .05$ ) and was still significantly ahead of the other classes on chronological and reading age difference scores ( $F(11,224) = 1.647$   $p < .087$  n.s.). However, in all the other classes, with the exception of classes 7,6 and 11, reading age was moving ahead of chronological age even if for classes 5,2 and 8 the movement was slight.

In Term 3, June, 1994 one-way ANOVAs showed significant differences between the classes ( $F(11,225) = 2.58$   $p < .004$ ). However, the trend appeared in Term 2 continued with classes differing on chronological and reading age differences ( $F(11,225) = 1.470$   $p < .144$  n.s.). Class 4 now had a mean reading age which was ahead of the mean chronological age by 9 months.

Newman Keuls tests confirm the superiority of Class 4 for reading age ( $p < .05$ ) and with the exception of classes 2 and 6, reading ages were moving

gradually ahead of chronological ages with class 4 still ahead of the other classes. Indeed, in classes 11, 3 and 9 reading ages were now 6/7 months ahead of chronological ages. Therefore, by the end of Primary 2, performance is improving across the classes and beginning to level out in classes 11, 3 and 9.

Primary 3 In Term 1, November 1994 one-way ANOVAs showed significant differences between the classes ( $F(11,231) = 2.133$   $p < .02$ ) but classes did not differ on difference scores when chronological age was taken into account ( $F(11,231) = 1.47$   $p < .14$  n.s.). The mean reading age for class 4 was now ahead of chronological age by 11 months.

Newman Keuls tests show that the differences in reading ages between classes were not significant ( $p > .05$ ), neither were the difference significant when chronological age was taken into account ( $p > .05$ ). In classes 3, 11, 9 and 10 reading ages were ahead of chronological ages by from 7 months to 4 months. In classes 2, 5, 12 and 8 reading ages were behind chronological age and in the remaining classes 1, 7 and 6 reading age was very slightly ahead of chronological age.

In Term 2, March 1995 one-way ANOVAs showed significant differences between the classes ( $F(11,221) = 1.92$   $p < .04$ ), and classes did not differ on difference scores when chronological age was taken into account ( $F(11,221) = 1.31$   $p < .22$  n.s.). The mean reading age for class 4 was now ahead of chronological age by 12 months.

Newman Keuls tests showed that the differences in reading ages between classes were not significant ( $p > .05$ ) neither were the differences significant when chronological age was taken into account ( $p > .05$ ). In classes 3 and 4, reading age was ahead of chronological age by 12 months; in classes 9 and 11 by 7 months and in classes 10, 6, 1, 5, 12, and 7 by from 4 to 2 months. In

classes 2 and 8 reading age was behind chronological age by .21 months and 1.64 months respectively.

## 2. SPELLING

Table 30 shows a comparison of the means and standard deviations in brackets with one-way ANOVA results between classes for spelling in Primaries 1, 2 and 3.

Table 30 Comparison of means and standard deviations in brackets with one-way ANOVA results between classes for spelling in Primaries 1,2 and 3

TEST TIMES	TYPE OF TEST MEASURE	MEANS	ONE-WAY ANOVAS
June '93	Spelling	5.5 yrs. (.66)	F(11,266) = 2.35 p < .009 sig
Mar '94	Spelling	6.4 yrs (.76)	F(11,226) = 8.593 p < .000 sig
Mar '95	Spelling	7.5 yrs (.82)	F(11,218) = 5.456 p < .000 sig

When chronological age is taken into account, Table 31 shows whether spelling age is ahead of or below chronological age at each of the test times.

Table 31 Comparison of spelling age scores with one-way ANOVA results when chronological age is taken into account showing whether spelling age (SA) is ahead of (>) or below (<) chronological age at each of the test times (standard deviations in brackets).

TEST TIMES	TYPE OF TEST MEASURE	MEANS	ONE-WAY ANOVAS
June '93	SA < CA in months	-3.12 (8.13)	F(11,264)=4.79 p < .000 sig
Mar '94	SA < CA in months	-1.86 (8.87)	F(11,226)=4.348 p < .000 sig
Mar '95	SA < CA in months	-1.14 (10.10)	F(11,218)=3.334 p < .000 sig

Spelling Error Analyses Table 32 shows the mean percentage scores with standard deviations in brackets and one-way ANOVAs for the three categories of

spelling errors, transitional, phonetic (2) and phonetic (1) between the 12 classes for Primaries 1,2 and 3.

Table 32 Comparison of mean percentage scores (standard deviations in brackets) with one-way ANOVA results between 12 classes for spelling errors in three categories transitional, phonetic (2) and phonetic (1) in Primaries 1,2 and 3.

TEST TIMES	CATEGORY OF ERROR	MEANS	ONE-WAY ANOVAS
June'93	Transitional errors %	34.56 (42.25)	F(11,264)=8.75 p < .000 sig
	Phonetic (2) errors %	8.56 (19.26)	F(11,264)=2.36 p < .009 sig
	Phonetic (1) errors %	57.09 (44.62)	F(11,264)=8.58 p < .000 sig
Mar '94	Transitional errors %	66.70 (43.07)	F(11,226)=10.89 p<.000 sig
	Phonetic (2) errors %	7.84 (18.61)	F(11,226)= 5.87 p <.000 sig
	Phonetic (1) errors %	25.48 (38.47)	F (11,226)= 9.04 p <.000 sig
Mar '95	Transitional errors %	93.29 (22.65)	F (11,218)=1.72 p< .071
	Phonetic (2) errors %	1.65 (8.05)	F (11,218)= .49 p < .906 ns
	Phonetic (1) errors %	5.04 (19.84)	F (11,218)= 1.98 p < .033

Primary 1 One-way ANOVAs indicated significant differences between classes ( $F(11,264) = 7.36$   $p < .000$ ) for spelling, when chronological age was taken into account ( $F(11,264) = 4.79$   $p < .000$ ) and between classes for the different categories of errors. The spelling age for class 4 was 6 months ahead of chronological age.

Newman Keuls tests showed that class 4 was significantly better than all classes for spelling with the exception of classes 10 and 11 ( $p < .05$ ). However, when chronological age was taken into account, class 4 was significantly better than all other 11 classes ( $p < .05$ ). Newman Keuls tests showed that for transitional spelling errors, class 4 displayed significantly more of this type of

error than any of the other classes and for phonetic (1) errors class 4 displayed significantly less of this type of error than any of the other classes ( $p < .05$ ).

Primary 2 One-way ANOVA tests indicated that there were significant differences between classes for spelling ( $F(11,226) = 8.593$   $p < .000$ ) and for the three different categories of error. When chronological age is taken into account, classes differ on difference scores ( $F(11,226) = 4.348$   $p < .000$ ). The spelling age for class 4 was still 6 months ahead of chronological age.

Newman Keuls tests showed that class 4 was significantly better than all classes for spelling with the exception of classes 9,10,11,12 and 3 ( $p < .05$ ). When chronological age is taken into account, Newman Keuls tests showed that class 4 was significantly better than all other 11 classes with the exception of classes 9,10, and 3 ( $p < .05$ ) where spelling was moving slightly ahead of chronological age. Newman Keuls tests showed that for transitional spelling errors, classes 2,1 and 5 displayed significantly less in this category than all the other classes who did not significantly differ ( $p > .05$ ). For phonetic (2) errors none of the classes differed significantly ( $p > .05$ ) with the exception of class 2 who displayed significantly more of this category than any of the other classes. For phonetic (1) errors, classes 9,7 and 4 did not differ ( $p > .05$ ) and displayed significantly less of this type of error than any of the other classes .

Primary 3 One-way ANOVA tests indicated that there were significant differences between classes for spelling ( $F(11,218) = 5.458$   $p < .000$ ), classes did not differ on the three categories of error and when chronological age is taken into account classes did differ on difference scores ( $F(11,218) = 3.334$   $p < .000$ ). The spelling age for class 4 was still 6 months ahead of chronological age.

Newman Keuls tests showed that classes 4, 11, 3, 9 and 10 do not differ significantly but are significantly better than the remaining classes. When chronological age is taken into account, Newman Keuls tests showed that classes

4, 3, 9 and 11 are significantly ahead of the other classes. Newman Keuls tests showed that for all categories of error there were no differences between classes ( $p > .05$ ).

### 3. READING COMPREHENSION

Table 33 shows a comparison of the means and standard deviations (in brackets) with one-way ANOVA results between classes for the total population for reading comprehension (Primary Reading Test reading ages) at the end of Primary 3, June 1995) together with the RA/CA discrepancy scores (standard deviations in brackets). For comparison purposes, Table 33 also shows reading ages (BAS) together with RA/CA discrepancy scores at the end of Term 2, Primary 3, March 1995 (standard deviations in brackets).

Table 33 Comparison of means with one-way ANOVA results between classes for the total population for reading comprehension (Primary Reading Test reading ages) at the end of Primary 3 (June 1995) together with the RA/CA discrepancy scores (standard deviations in brackets). For comparison purposes, reading ages (BAS) together with RA/CA discrepancy scores at the end of Term 2, Primary 3 (March 1995) are also included (standard deviations in brackets).

TEST TIMES	TYPE OF TEST MEASURE	MEANS	ONE-WAY ANOVAS
June '95	Comprehension (PRT)	7.2 yrs (0.93)	F(11,226) = 5.360 p<.000sig
June '95	RA < CA in months	-6.2 (12.68)	F (11,226)= 4.728 p<.000sig
Mar '95	Word Reading (BAS)	8.0 yrs (1.4)	F (11,221) = 1.92 p < .04sig
Mar '95	RA > CA in months	+5.04 (16.99)	F (11,221) = 1.31 p < .22 ns

#### Word Reading and Reading Comprehension

For the March 1995 scores, one-way ANOVAs showed significant differences between the classes in word recognition (BAS) ( $F(11,221) = 1.92 p < .04$ ) but not when RA/CA disparity scores were analysed ( $F(11,221) = 1.31 p < .22$  n.s.)

Newman Keuls tests show that the difference in classes in reading ages were not significant ( $p > .05$ ) neither were the CA/RA differences between classes significant ( $p > .05$ ). In classes 3 and 4 reading age was ahead of chronological age by 12 months. In classes 9 and 11, reading age was ahead by 7 months. In classes 10,6,1,5,12 and 7 reading age was ahead by from 4 months to 2 months and in classes 2 and 8 reading age was still slightly behind chronological age, by .21 months and 1.64 months respectively.

For the June 1995 scores, one-way ANOVAs showed significant differences between classes for reading comprehension (PRT) ( $F(11,226) = 5.360$   $p < .000$ ) which was maintained when CA/RA differences were analysed ( $F(11,226) = 4.728$   $p < .000$ ). The mean reading age for class 4, however, was ahead of the mean chronological age by 4.13 months.

Newman Keuls tests confirm the performance of class 4 was significantly better than that of all the other classes ( $p < .05$ ), which was sustained when CA/RA differences were analysed ( $p < .05$ ).

## DISCUSSION

The test results reported in this chapter set out to answer the following questions,

- **Do the class 4 children who are ahead throughout Primary 1 remain ahead of the pupils in the other eleven classes in reading and spelling or is there a point at which the latter children catch up?**
- **Is there a point at which there is a significant improvement in the overall proportion of transitional spelling errors produced by the children?**
- **Do class 4 pupils who are better readers and spellers in Primary 1 show similarly good comprehension skills by the end of Primary 3?**

1 Do the class 4 children who are ahead throughout Primary 1 remain ahead of the pupils in the other eleven classes in reading and spelling or is there a point at which the performance levels out?

It was found that differences in word recognition performance between classes were maintained through to Term 2 of Primary 3 but when adjusted for chronological age, differences became non-significant by March of Primary 2. In spite of this non-significance, in three of the classes, 3, 9 and 11 the difference between classes was diminishing more quickly for reading. By March, Primary 3, although there were no overall differences between classes, despite the non-significance, the reading age for class 3 had caught up with that of class 4 and classes 9 and 11 were also catching up.

Although the difference between classes was diminishing more gradually for spelling, by March of Primary 3, classes 3, 9 and 11 were the only classes of the eleven beginning to catch up to class 4, with spelling age now ahead of chronological age.

It would appear, therefore, that the results support the view that the enhanced reading and spelling performance of class 4 pupils in Primary 1 which is maintained into Term 2 of Primary 3, is associated with the accelerated teaching of the letter sounds together with an earlier introduction to the blending process and encouraging the application of these phonic strategies to the pronunciation of unfamiliar words. Furthermore, the introduction of the other children to letters in initial, middle and final positions in words in Term 3 of Primary 1 does not lead them to catch up with class 4 straight away. The point at which the performance of the children in the other classes levels out would appear to be dependent upon the degree to which they are able to deduce the process of tackling unknown words for themselves or the degree to which

different teachers may encourage children to use sounding and blending to tackle unfamiliar words in the oral reading process.

2. Is there a point at which there is a significant improvement in the overall proportion of transitional spelling errors produced by the children?

It was found that from Primary 1 to Primary 3, the percentage of transitional spelling being produced by the children increased with a complementary decrease in the percentages of phonetic 1 and phonetic 2 errors (See Fig. 9). At the end of Primary 1, other than in class 4 where pupils had produced the highest percentage of transitional errors, pupils in the other eleven classes had been concentrating on initial letter sounds, thus producing the large number of phonetic (1) responses. The children were at the stage of being able to assign a grapheme to the initial phoneme of a given word, providing they could remember how to form the associated grapheme. In the previous chapter, it was pointed out that the phonics teaching method should also include the teaching of related letter formation to encourage early writing and spelling. Early writing is a potent force in promoting the alphabetic principle (Frith, 1985). In class 4, the teacher actually used the sequence of the letter formation programme to form the nucleus of the sequence for the phonics programme.

Once the attention of the children in the other eleven classes had been drawn to the letter sounds in initial, middle and final positions in words through carrying out the written exercises, the children became more able to analyse given CVC words into smaller units, remember the identity and order in which these units occurred and could assign an associated grapheme to each unit (Treiman, 1993). In only one class, class 2, was the phonetics (2) stage used to any great extent. It could perhaps be argued that in the classes where the percentages of phonetic (2) errors were evident this could be related to the stage of the phonics programme being taught. If the children were practising

learning the final sounds of words by being given e.g. the picture of a box with the initial consonant and vowel underneath, namely *bo -*, and filling in the missing final letter, this might account for the phonetic (2) errors, only consonant and vowel being given. As the phonics programme proceeded through Primary 2 and Primary 3 with the introduction of vowel and consonant digraphs, long vowels, silent consonants etc. so the ability to try to represent these sounds by the appropriate grapheme(s) seemed to improve. The method adopted in class 4 precipitated an earlier introduction into aspects of the sequential phonics programme than with the other eleven classes, hence the earlier production of the developmentally more mature transitional errors at the end of Primary 1.

It would appear, therefore, that the point at which there is a significant improvement in the overall proportion of transitional spelling errors produced by the children is dependent upon the degree to which they are able to use an alphabetic phonological strategy for tackling unknown words, which in turn enables them to use their letter/sound knowledge to produce a spelling attempt.

3. Do class 4 pupils who are better readers and spellers in Primary 1 show similarly good comprehension skills by the end of Primary 3?

The process of comprehension occurs during the interaction between the text and the reader. The comprehension process would appear to be a parallel processing mechanism which is carried out simultaneously with such interaction between the text and the reader. Surely, if children are struggling to decode unknown words, it would be plausible to suggest they could be reading without comprehension. Comprehension is not an inevitable end-product of reading a piece of continuous text; to all intents and purposes a child can be said to be reading but not necessarily conceptualising the ideas contained within that text. There is some evidence to suggest that better readers and better spellers have equivalent or even superior comprehension skills (Connelly, Johnston and

Thompson, 1996). Hence the question, did class 4 pupils, who were better readers and spellers than the children in the other classes, display similarly good comprehension skills?

It has been shown that when chronological age was taken into account, some of the eleven classes had caught up with the level of class 4 for word reading and spelling by the end of Term 2 in Primary 3, and indeed were also producing transition-type spelling errors. Nevertheless, at the end of Primary 3, the performance of class 4 for reading comprehension was significantly better than that of all the other classes and was maintained when chronological age was taken into account. As class 4 pupils gained a headstart in word recognition with the early introduction to the sounding and blending process, it could be argued that such acceleration enabled them to embark upon the process of comprehension at an earlier stage than the other children.

Merritt et al (1977) describe the organisation of meanings that are derived from print as higher order reading skills and that these are not skills which can be ignored until the primary and intermediate reading skills have been established. Merritt advises that all levels of skill must be developed simultaneously from the earliest stages if children are to become efficient and effective readers (Merritt, 1977). The superior performance of the class 4 pupils in reading, spelling and reading comprehension compared with that of the children in the other eleven classes highlights the effectiveness of teaching beginning readers from the start of formal schooling by using systematic accelerated phonics which explicitly accentuates the blending process. The headstart experienced by class 4 pupils enabled them to begin developing higher order reading skills at a much earlier stage than the children who were being taught by the more gradual approach, an approach which appeared to delay the transition from word reading to reading with comprehension. The performance of class 4 would also appear to support

the link found by HMI between higher standards of reading and systematic phonics teaching (DES, 1991).

In the next chapter, a training study is described which set out to compare the effectiveness of (a) accelerating the teaching of the letter-sounds and (b) accelerating the teaching of the letter-sounds together with the explicit teaching of blending skills.

## CHAPTER 7

### Experimental Study. Is Sounding And Blending The Aspect Of Phonics Teaching Which Is Most Beneficial And Effective In Providing Children With A Strategy For Reading Unfamiliar Words?

(Johnston, Connelly and Watson, 1995, p. 36)

*“One specific treatment, sound-symbol blending, made a significantly greater impact on reading than the other experimental treatments. This finding supports the earlier evidence from beginning reading research on the superiority of regular systematic phonics instruction”*

*(Pflaum, 1980, p.18)*

## INTRODUCTION

We have seen in previous chapters that phonics teaching is included in the reading programme of most of the Scottish schools, albeit to different degrees (e.g. Connelly, 1994). We have examined in some detail the phonics programme followed in twelve Primary 1 classes to identify what aspects of such phonics teaching were particularly beneficial. As the title suggests, sounding and blending would appear to be the aspect of phonics teaching which is most beneficial and effective in providing children with an independent strategy for tackling unknown words. However, it has also been shown that explicit teaching of blending is more successful than resource-based learning whereby the blending process is introduced implicitly.

For a child to become a skilled reader crucial elements of the reading procedure are the processing of individual letters within words and the processing of individual words (Harrison, 1996). Reading an unfamiliar word derived from an alphabet script requires the ability to segment the word, connect the letters which make up the word with their associated letter sounds and then recombine/ blend these letter sounds together into one discrete unit (Golinkoff, 1978). Golinkoff suggests that before a child can blend a word from its separate phonemic

elements, the child would have to know that a word can be analyzed into separate parts.

How does this insight come about? It has been suggested that preschool children who are non-readers may start to build up an understanding of this phonemic structure of the spoken word through pro-literacy knowledge e.g. knowledge of the letters of the alphabet and the reading of environmental print (Johnston, Anderson and Holligan, 1996). It has been established that preschool phonological awareness skills are a good predictor of later reading ability (Lewkowicz, 1980, Lundberg, Olofsson and Wall, 1980, Bradley and Bryant, 1983, Stuart and Coltheart, 1988), phonological awareness being "the ability to reflect on and manipulate the phonemic segments of speech" (Tunmer, 1991, p. 105). Bradley and Bryant showed that the ability to detect which item started with a different phoneme in a sequence of auditorily presented words e.g. hill, pig and pin, had a high correlation with later reading and spelling skill. They also found that training in sound categorisation skills led to a significant increase in reading skill. However, this training was only effective when the children were shown how the sounds were represented by letters of the alphabet. This is further supported in a study carried out by Cunningham (1990) with kindergarten and first grade children who were given two types of phonemic awareness instruction (1) a skill and drill approach of the procedural knowledge for segmenting and blending phonemes was taught and (2) a conceptual instruction approach where in addition to being taught the procedural knowledge for segmenting and blending phonemes, the teaching explicitly emphasized the application of the learned procedure to the printed text. The children who received the conceptual instruction who were encouraged to apply the skill in the reading process performed significantly better than the 'skill and drill' children on a measure of

reading achievement. The 'skill and drill' instruction, however, did lead to increased reading skill, unlike the Bryant and Bradley findings.

Learning to read in itself has been shown to have a significant impact on the ability to carry out explicit phonemic awareness tasks (Morais, Cary, Alegria and Bertelson, 1979; Morais, Bertelson, Cary and Alegria, 1986), and it is now generally proposed that there is a reciprocal relationship between phonemic awareness ability and reading (Morais, Alegria and Content, 1987; Bryant and Goswami, 1987) (Perfetti et al, 1987). This raises the question that if children learn to read by different methods, including different phonic methods, is any one method more likely to increase phonemic awareness ability and so enhance reading skill?

It has been found that letter knowledge mostly precedes the development of phonemic awareness ability in young children (Stahl and Murray, 1994, Johnston et al 1996) and the significance of children acquiring letter name or letter sound knowledge in learning to read is well-established ( e.g. Ehri, 1983, Blatchford, Burke, Farquhar, Plewes and Tizard, 1987, Blatchford and Plewis, 1990). For the last 30 years, research has indicated that the best single predictor of reading achievement is the ability to recognise and name the letters of the alphabet upon entry to school (Bond and Dykstra, 1967, Blatchford et al, 1987).

However, various studies have shown that neither phonemic awareness nor letter knowledge alone is sufficient to enable children to learn to read (Byrne and Fielding-Barnsley, 1989; Hatcher et al, 1994. Tunmer, Herriman and Nesdale, 1988). "Explicit phonological awareness is a necessary, but not sufficient, condition for acquiring the grapheme-phoneme correspondence rules" (Tunmer 1991, p. 109). Share (1994) concludes that knowledge of both letter sounds and phonemic awareness skills are obligatory for successful reading

acquisition and that training in either skill on its own will be ineffective. This raises the question as to whether teaching children letter sounds, in the absence of direct phonemic awareness training, enhances reading skill?

The previous study with the twelve Primary 1 classes (Study 3) questioned the value of using a method of teaching letter-sound correspondences without explicitly applying that knowledge to the printed text. In the study by Haddock (1976, p. 826), two categories of blending instruction were investigated, one which defines blending as “an auditory task even when applied to the skill of reading” and one which defines blending as “both auditory and visual”. Haddock’s study clearly demonstrated “explicit training in blending, whether by an auditory or an auditory-visual method, results in significantly superior blending ability than does training which consists of practice only on sound-letter correspondences” (p. 830). The results further indicated that an auditory-visual method of blending instruction was significantly more effective than an auditory method.

Feitelson (1988) singles out this process of blending as being of particular importance in learning to read, the skills involved in blending bearing a causal relationship to emerging word recognition skills (Perfetti et al 1987). The method described by Feitelson (1988) used in Germany and Austria, has a strong emphasis on the blending of letters to pronounce words (coarticulation) and building up words from letters and letter sequences, i.e. a synthetic phonics approach. It is therefore proposed to include in this study an experimental condition for teaching blending, explicitly modelling the coarticulation process for the children to practise and make automatic the combining of discrete phonemes into one fluent unit (Liberman and Liberman, 1990). As the children become more adept in processing unfamiliar words, the blending process may be sub-vocalised or carried out silently (Feitelson, 1988).

Feitelson (1988, p. 124) describes the use of a method whereby children “discover” words. Children receive a single letter card each time they learn a new letter. These are stored to be used for word “building” or “word discovery”. With each new and previously learned single letter cards, all blends and words can be produced in various “juxtapositions” by the children. Feitelson (1988, pp 128/129) cites two types of blending procedure, the “final blending procedure” of Richardson (1977) and the “successive blending procedure” of Resnick and Beck (1976). The main difference between Richardson’s final blending procedure and Resnick and Beck’s successive version is that “in the final blending procedure, blending is only attempted after the sounds of all graphemes have been derived and stored in memory. The example given is “/k/ /a/ /t/ /s/ cats”. However, in the successive blending procedure “sounds are synthesized successively as the reader goes along”. The example given is “/k/ /a/ /ka/ /t/ /kat/ /s/ kats/ cats”. Feitelson goes on to suggest that a child who had learned to blend concurrently with single letters would not need one additional step, e.g. by proceeding “/ka/ /t/ ka/ /s/ /kats/ cats” (1988, pp 128/129).

The present study (Study 5) sets out to examine the effects of teaching letter sounds on reading, comparing its effectiveness with teaching children letter sounds and how to blend them. It is proposed to use magnetic letters in this study to promote the blending process visually and concretely in addition to the explicit modelling of the coarticulation process described earlier (Liberman and Liberman, 1990).

Another purpose of this study is to investigate whether there is any relationship between phonics teaching and children’s progress in spelling ability. Although Adams (1990) claims that to learn how to spell, they must also learn to read, there is evidence that children “catch” the spelling of one new word in every twenty five words they read and with this percentage we cannot rely on reading

alone to improve a child's spelling (Peters, 1979). While it would appear that it is rare to find a good speller who has reading difficulty we often find spelling ability lagging behind reading ability (Todd, 1982). Although there were significant differences between all of the 12 classes for spelling, (Study 4) Newman Keuls test showed that Class 4 was significantly better than all other 11 classes. This enhancement of spelling ability may be due to the sounding and blending aspect of the class 4 phonics programme. In Primary 1, these class 4 pupils recorded the highest percentage of spelling errors representing the sounds of words in the category described as transitional in Study 3. In this new study (Study 5) the effect of teaching blending on spelling ability will be examined.

The questions being addressed are:

- 1. Does teaching children letter sounds in the absence of direct phonemic awareness training enhance reading and spelling skill?
- 2. Does teaching sounding and blending lead to better reading and spelling than just teaching letter sounds?

### Study 5

#### PROCEDURE

Subjects One week after entry to school in early September, subjects were drawn from 2 of the schools from the previous study supplying four Primary 1 classes. The original number of children was 99 but during the initial period when pre-test measures were taking place, due to transfers and absences, this number was reduced to 92, 46 boys and 46 girls. The mean chronological age of the children was 4.97 years (s.d. .27). The mean vocabulary knowledge was 95.01 (s.d. 13.41) based on the British Picture Vocabulary Scales (BPVS) (Dunn & Dunn 1982). By the end of the study at the beginning of Primary 2, 87 subjects remained.

Classroom Method for Teaching Reading The layout of the classrooms was such as to foster emergent literacy experiences e.g. play areas around the room organised to stimulate 'reading' and 'writing' activities with displays of short phrases on the walls. However, one is reminded of the Seymour and Evans study (1995) described in Chapter 1 of this thesis, where print displayed round the room was one of the types of print vocabulary presented to the children. When children were asked to read such words, it was found that they had developed little familiarity with them as these words were not taught, learning was meant to be incidental.

The teachers read stories to the children on a daily basis, and as described in Chapter 4 of this thesis, children were introduced to whole words with associated pictures and captions from the outset, the purpose being to encourage the children to build up a sight vocabulary of the words from the class reading scheme. At the same time, children were experiencing pre-reading activities including phonemic awareness (see Study 2). Rudimentary phonics teaching was introduced after the half-term holiday in the middle of October, one new letter being introduced each week through alliterative words and pictures sharing the same initial letter sound, a gradual analytic method. The sight words which all of the teachers used for comparison were taken from "Sounds Like This" (Kitching, 1993) e.g. for the letter 'p' the words and pictures presented were pencil, pear, panda, purse and pig; for the letter 'h' the words and pictures presented were heart, hat, house, horseshoe and holly.

DESIGN Pre-test measures were carried out on the total sample at the start of the school session. Three groups, two experimental and one control, were matched on chronological age, vocabulary knowledge, letter knowledge, emergent reading, phoneme segmentation and rhyme skills. The groups were not matched on spelling as this was not taught and the children would not be able

to score on a standardised test at the beginning of the school year. Each group was composed of children from all four classes to control for the effects of classroom teaching. All three groups were exposed to the same print vocabulary, all of the children spending the same amount of time working with the experimenter.

The control group of 29 children (Group 1) received no experimental training. The children were exposed to the printed items and told what the words were. The two experimental groups received accelerated teaching of letter sounds. For the first experimental group of 33 children (Group 2), the letter sounds were taught in the initial position of words. The pace of one letter-sound per session was an acceleration of the gradual approach used in the classroom where letter-sounds were introduced one per week in the initial position of words. For the second experimental group of 30 children (Group 3) the same letter-sounds were taught at the rate of one per session, but in all letter positions. In addition, Group 3 children were explicitly taught to blend the letter sounds to pronounce the words.

The intervention programme continued for a ten-week period of two fifteen minute sessions per week for each group. This was followed by retesting on the same battery of tests as before to assess the effects of the training programmes. No further intervention activities were undertaken. Further post-tests were carried out in March and September (9 months after completion of intervention). Table 34 shows the pre-test measures carried out in September, 1995 and Table 35 shows post-test measures which were carried out together with times of application.

Table 34 Pre-test measures carried out in September 1995 for Primary 1 Experimental Study.

TYPE	TEST
Vocabulary knowledge	BPVS short form
Letter knowledge names and sounds	Sheet of 26 lower case letters unordered
Emergent reading	Clay 'Ready to Read'
Phoneme segmentation	Yopp Singer
Rhyme generation	12 given words

Table 35 Post-test measures carried out together with times of application.

TIME	TYPE	TEST
Dec '95, Mar'96, Sep'96	Word reading	British Ability Scales (BAS)
Dec '95, Mar'96, Sep'96	Emergent reading	Clay 'Ready to Read'
Dec '95, Mar'96, Sep'96	Letter knowledge, sounds	26 lower case letters
Dec '95, Mar'96, Sep'96	Phoneme segmentation	Yopp Singer
Dec'95, Mar'96, Sep'96	Rhyme generation	12 words
Sep '96	Non-word reading	20 CVC words on cards
Sep '96	Spelling	Schonell

## METHOD

### PRE-TEST MEASURES

Test materials Seven days after the start of the term in one school and nine days in the other, the following pre-test measures were taken. These were presented individually and in the following order:

(a) Vocabulary knowledge British Picture Vocabulary (BPVS) (Short Form) (Dunn and Dunn. 1982) . As described in the previous study, as each stimulus word is spoken, the child points out one of four pictures as best representing the word spoken.

(b) Letter knowledge Pupils were shown a sheet with all 26 letters of the alphabet (not in alphabetical order) in lower case print. Children were tested under two conditions, all letters given to each child (Appendix 4).

1. Each child was asked to give the name for each letter (maximum 26)
2. Each child was asked to give the sound for each letter (maximum 26)
3. Scoring was 1 for each correct name given, 1 for each correct sound given.

(c) Emergent reading The Clay 'Ready to Read' Word Test (1979) was used. Each child was asked to read a practice word (not scored) followed by 15 very high frequency single words from List A of 3 lists ("I, Mother, are, here, me, shouted, am, with, car, children, help, not, too, meet, away"). Scoring was 1 for each correct response (Appendix 5).

(d) Phonemic awareness To test the children's ability to segment words into discrete phonemes, the Yopp Singer Test (1988) was used (Appendix 6). There were 3 practice items, the first trial being carried out as a demonstration by the experimenter and the child attempting the other two practice items. The test stimuli consisted of eleven two-phoneme words e.g. zoo and eleven three-phoneme words e.g. dog.

Each child was asked to say the word spoken by the experimenter and then say all the sounds in the word. As few of the children were able to segment a whole word, scores were given for each single spoken phoneme according to whether it was in the initial, middle or final position in the word, raw scores being translated into percentage scores for each category.

(e) Generating rhyme The children were asked to generate rhyming words. Nursery rhymes were discussed to make the rhyming task clear to the children. The experimenter said a word and each child was asked to produce a rhyming word. Two or three practice words were given. 12 words were read out, one at a time ("hop, tall, hen, dog, man, coat, tail, door, tree, jump, tin, nest") and for each word pupils were asked to give one word which rhymed with the given word. Scoring was 1 for each correct rhyme given. Rhyming non-words were accepted as rhymes (Appendix 7).

### PRE-TEST RESULTS

#### TOTAL SAMPLE

Table 36 shows the mean scores for the total sample of 92 pupils for chronological age, vocabulary and letter knowledge (names and sounds) emergent reading, phonemic awareness and generating rhyme (words and non-words) which were used to match the groups to the different research conditions.

Table 36 Pre-test scores for the total sample for chronological age in years, (CA), vocabulary knowledge (BPVS) standardised score, letter knowledge names (LK (n) and letter knowledge sounds (LK (s)) emergent reading (ER) phonemic awareness (initial, middle and final) and generating rhyme (rhyme) (standard deviations in brackets) at September 1995

CA years	BPVS SS	LK(n)	LK(s)	ER	Phonemic awareness			rhyme
					initial	middle	final	
4.97 (.27)	95.01 (13.41)	11.26 (21.2)	7.8 (18.6)	2.7 (12.6)	3.86 (13.8)	3.16 (13.8)	2.61 (10.8)	31.8 (56.4)

Subjects were allocated to one of the three conditions, -

Group 1 receiving no intervention

Group 2 receiving accelerated letter sound teaching and

Group 3 receiving accelerated letter sound teaching with blending teaching and practice.

Table 37 shows that all three groups were equivalent at the outset on the pre-test measures.

Table 37 Mean performance of each of the three research groups on pre-intervention measures, chronological age in years (CA) vocabulary knowledge (BPVS) standardised score) letter knowledge (LK) names and sounds, emergent reading (ER) phoneme awareness (PA) initial, middle, final, total and rhyme generation (rhyme) indicating equivalence of match (standard deviations in brackets).

CA years	BPVS SS	LK(n)	LK(s)	ER	Phonemic awareness			
					initial	middle	final	rhyme
					% correct			
Group 1								
5.0 (0.3)	94.3 (12.5)	8.8 (18.5)	8.0 (18.7)	3.7 (16.2)	4.07 (13.3)	3.45 (13.4)	3.29 (12.2)	30.5 (37.6)
Group 2								
5.0 (0.3)	94.6 (15.2)	10.2 (21.1)	5.9 (16.9)	1.8 (10.4)	3.88 (14.3)	2.75 (12.8)	2.47 (11.14)	26.5 (38.5)
Group 3								
5.0 (0.3)	95.5 (14.4)	7.0 (15.3)	8.6 (21.2)	3.5 (13.4)	3.63 (14.1)	3.3 (12.05)	2.11 (9.15)	20.6 (27.3)

### STATISTICAL COMPARISONS

One-way ANOVAs were carried out on chronological age ( $F(2,89) = .62$   $p < 1$ ), on vocabulary knowledge ( $F(2,89) = .06$   $p < 1$ ), on letter knowledge (names) ( $F(2,89) = .19$   $p < 1$ ), on letter knowledge (sounds) ( $F(2,89) = .19$   $p < 1$ ), on emergent reading ( $F(2,89) = .19$   $p < 1$ ) and on rhyme ( $F(2,89) = .99$   $p < 1$ ). No group differences were found.

Two-way repeated measure ANOVAs were carried out on phonemic awareness, initial position ( $F(2,89) = .01$   $p < 1$ ), middle position ( $F(2,89) = .01$   $p < 1$ ) and final position ( $F(1,89) = .01$   $p < 1$ ). No group differences were found.

### INTERVENTION PROGRAMME

Pace Each group was seen on two days per week, not consecutive days but separated by two non-intervention days. Each session was for 15 minutes duration. The programme continued for ten weeks, there being nineteen

sessions in all for each group (due to holiday arrangements). Experimental groups 2 and 3 were introduced to letter sounds at the rate of two per week.

Social context Children were normally seen in groups of four or five for the explicit teaching element of the programme, dividing into smaller groups, pairs or individuals for games reinforcement.

Physical context Sessions were carried out in a quiet area separate from the main classroom. In one school, this was in the Assistant Head Teacher's room which was used for learning support purposes. In the other school where the classes were housed in an open plan area, a small adjoining teaching room was made available also normally used for learning support purposes.

Resources Teaching resources were taken from the Phonics Handbook used in Woods Loke school (Lloyd 1992) and adapted to match each research condition. The Phonics Handbook consists of suggested storylines for each letter-sound being taught, a colouring-in sheet for each letter to remind the child of the story character with space for practising the formation of the letter which is taught at the same time in Woods Loke. Nineteen of the storylines were used with all three groups. There are also lists of suitable words for the teacher and games with pictures, letters and words and lotto boards which could be readily adapted to match each condition. This multi-sensory method is based on teaching all of the 40+ sounds of English not just the individual letters of the alphabet, but only a subset were taught in this study. The categories of sounds were initially selected on the basis that in combination they generate a large number of 2, 3 and 4 letter words. In the time span given, Groups 2 and 3 would be introduced to the first three groups of letters at the rate of two letters per week and the first letter of the fourth group

(1) s a t i p n (2) c(k) e h r m d (3) g o u l f b and  
(4) j

Each group of letters has an accompanying Finger Phonics Book consisting of two facing pages for each letter. The letter is displayed in upper case form, lower case form and indented form with five printed words containing the target letter and five associated pictures. Masking flaps were fixed to cover the letters in upper case, lower case and indented forms on the pages when using with Group 1 as these were superfluous for this control condition. Each of the five words includes the letter-sound being taught which may occur at any position in the word, initial, final and/or internal position. The key words for the 19 letter-sounds taught in this study are listed in Appendix 8 together with additional CVC words extracted from the Phonics Handbook and used for games with all three groups. In addition, magnetic boards and lower case magnetic letters were used with Group 3.

Description The introductory element for each session was a short story which was used with all 3 groups. The experimenter sat on a chair facing the small group of 4/5 children who sat in front on the carpet facing her. The stimuli used to accompany each short story were the two facing picture pages contained in the appropriate Finger Phonics Book from which the children could follow the characters and sequence of the story being told. The pages accompanying each sound display five key words which were used for explicit phonics teaching with Groups 2 and 3. The words were not located alongside the pictures with which they were associated, being printed either in a horizontal, diagonal or vertical direction.

The format for each session detailed below started with a brief introduction, which was the same for all groups, followed by the teaching component which differed for each research group. The final element consisted of independent activities for consolidation and practice of what had been taught earlier to each group.

The format followed for each session.

## INTRODUCTION for all 3 groups

<u>Experimenter</u>	<u>Pupils</u>
Opens the pages being used with the pictures facing the pupils	Listen to the story and follow the picture sequence
Asks the children to listen carefully and follow the pictures with the story	
Tells the story indicating the characters as they occur on the picture pages	Look at the pictures as story unfolds
Asks the children about items of interest on the picture pages	Label and point to characters and items of interest on the pages

DEVELOPMENT - Teaching component Print stimuli adapted to match each group condition. Same picture pages as before but introducing the five key print words for all 3 groups, with lower case and indented target letters for groups 2 and 3. Upper case letters were not used as teachers do not teach capital letters until Primary 2.

Teaching for Group 1: Research condition, no phonics training. Look and say method used for reading words

<u>Experimenter</u>	<u>Pupils</u>
Pronounces one of the 5 key words	Hear the spoken word
Asks the pupils to point to the picture for that word	Point to the picture which matches the word
Points to and reads the associated print word	Pronounce the name of the picture
	Look at the print word indicated
	Hear the spoken word, point to and label pictures, point to the associated print word

<p>Repeats this procedure for each of the 5 words</p> <p>Points to each of the pictures for the 5 key words in turn</p> <p>Asks the pupils to say the name of the picture and point to the associated print word</p>	<p>with the help of the experimenter</p> <p>Look at each picture indicated by the experimenter</p> <p>Label the picture</p> <p>Label the picture</p> <p>Pronounce the target word and point to the printed target word</p>
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Teaching for Group 2: Research condition, initial letter-sound training.

<u>Experimenter</u>	<u>Pupils</u>
<p>Indicates each of the 5 print words in turn</p> <p>Asks pupils to point to the words which start with the same letter</p> <p>Reads each alliterative word accentuating the initial sound</p> <p>Asks pupils to point to the picture for each of the alliterative key words</p> <p>Isolates the target initial sound using the indented shape and lower case letter</p> <p>Pronounces the letter sound clearly and distinctly</p> <p>Asks the children to repeat the sound and feel the shape of the letter at the same time both in indented form and two-dimensional</p>	<p>Point to the key words indicated which start with the same letter</p> <p>Listen to each word read by the experimenter</p> <p>Points to the picture associated with each of the alliterative words</p> <p>Listen to the sound pronounced for each of the letter shapes</p> <p>Repeat the sound and feel the shape of the letter in both forms, indented and two-dimensional form</p>

<p>form</p> <p>Points to each of the alliterative pictures in turn</p> <p>Asks pupils to say the same of the picture and pronounce the target initial sound</p> <p>Asks pupils to point to the matching print word</p>	<p>Look at each of the alliterative pictures indicated by the experimenter</p> <p>Label the picture and pronounce the target initial sound</p> <p>Point to the matching print word</p>
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N.B. Words which are not alliterative are presented to the children with the practice activities.

Teaching for Group 3: Research condition, explicit sounding and blending training.

<u>Experimenter</u>	<u>Pupils</u>
<p>Pronounces the target sound indicating both the indented shape and the two-dimensional lower case form of the target letter</p> <p>Asks pupils to repeat the spoken target sound and feel the shape of the letter in both forms</p> <p>Indicates the 5 printed key words</p> <p>Asks pupils to look for the target letter-sound in each of the printed words and point to it</p> <p>Models how one of the words can be read by blending each of the sounds distinctly and smoothly and from left to right</p> <p>Asks the pupils to practise the process along with the experimenter</p>	<p>Listen to the target sound pronounced by the experimenter and watch the formation of both shapes of the target letter</p> <p>Repeat each sound and feel the shape of the letter form in both indented and lower case two-dimensional form</p> <p>Study the printed words to identify and point to all examples of the target letter sound in initial, middle and final positions</p> <p>Listen to and observe how the experimenter models the blending process</p> <p>Practise the blending process along with the experimenter</p>

<p>Repeats the procedure for the other words</p> <p>Asks the pupils to practise the process on their own for each of the words</p> <p>Lays out an array of magnetic letters representing the category of letter sounds being taught e.g s a t i p n</p> <p>pronounces a CVC word e.g. tap</p> <p>(a) selects each magnetic letter required to form the word, tap, placing each letter in order from left to right underneath the given array, using a magnetic arrow to indicate the starting point</p> <p>Reads the word modelling the blending process</p> <p>Asks the children to read the word then</p> <p>Replaces the magnetic letters</p> <p>(b) repeats the procedure for the word e.g. pin</p> <p>Asks the pupils to assist in the forming of the word with the magnetic letters</p> <p>Asks the pupils to read the word along with her using the blending process</p> <p>Asks the pupils to replace the magnetic letters</p>	<p>Practise the blending process independently of the experimenter for each of the key words</p> <p>Watches the experimenter setting out the magnetic letters</p> <p>Listen to the word pronounced by the teacher</p> <p>Observe the procedure carried out to form the word particularly the magnetic arrow for starting and the left to right sequence</p> <p>Practise reading the word along with the experimenter and observes how the magnetic letters are replaced along the top of the board</p> <p>Repeat the procedure for the next word,</p> <p>Assist in the forming of the word pin with the magnetic letters</p> <p>Practise reading the word as before following the left to right progression of the word made by the magnetic letters</p> <p>Replace the magnetic letters as before</p>
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<p>( c ) Repeats the procedure for another CVC word e.g. sat</p> <p>Asks the pupils to make the word 'sat' with the magnetic letters and read the word using the blending process and replace the magnetic letters</p> <p>Asks the pupils if they can make any other words with the magnetic letters on their own</p> <p>N.B. Steps (a) and (b) are only included initially. Once the pupils are conversant with the procedure, only step (c ) is used.</p>	<p>independently of the experimenter</p> <p>Repeat the procedure for the next spoken word</p> <p>Make the word with the magnetic letters, reading the word using the blending process independently of the experimenter and replacing the magnetic letters as before</p> <p>Generate word(s) for themselves from the given magnetic letters to read to the experimenter</p>
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N.B. CVC words used with Group 3 with the magnetic letters are presented to Groups 1 and 2 with the concluding activities.

CONCLUDING ACTIVITIES for consolidation and practice. The activities are designed to match each research condition. In order that all of the children are exposed to the same print the following conditions were met in the design of the activities: (a) words which were not alliterative in each session with Groups 1 and 2 were included in this element of the programme, as were (b) CVC words introduced with Group 3 with magnetic letters. These activities were carried out independently, in pairs and/or individually.

Group 1 Card games, lotto-type games, pencil and paper games and board games adapted from the Phonics Handbook, matching pictures to print, matching words to pictures and matching picture/word games. Pupils use the look and say approach, words being read as required with the help of the experimenter.

Group 2 Card games, lotto-type games and board games adapted from the Phonics Handbooks, matching pictures to initial letters sounds, matching pairs of pictures and words using initial letter sounds, matching pictures, letters and words in pencil and paper activities. Playing picture/word games using the initial letter-sound approach to read the words with the help of the experimenter as required.

Group 3 Individual word booklets, words to be read using the blending process with self-checking pictures on the reverse page. Lotto-type games and board games adapted from the Phonics Handbook. Pupils were asked to match the printed words on the lotto boards to words spoken by the experimenter.

For all 3 groups.

Different versions of the board game were designed to contain all the CVC words which had been used with the magnetic letters task.

Group 1 children reading CVC words using look and say with the help of the experimenter

Group 2 children reading CVC words using initial letter sounds and a guessing strategy

Group 3 children reading CVC words using the blending process practised with the magnetic letters task.

(See Appendix 9 for lists of words used with all children, all children being exposed to the same print vocabulary)

## RESULTS

The following post-test measures were carried out as indicated in Table 35:

- (a) Letter knowledge (sounds). As for pre-test measures, pupils were shown a sheet with all 26 letters of the alphabet (not in alphabetical order) in lower case print and children were asked to give the sound for each letter (Appendix 4)
- (b) Emergent reading As for pre-test measures, the Clay 'Ready to Read' Word Test (1979) was used (Appendix 5)
- (c) Phonemic awareness To test the children's ability to segment words into discrete phonemes, the Yopp Singer Test (1988) was used as for pre-test measures (Appendix 6)
- (d) Generating rhyme The children were asked to generate rhyming words as for pre-test measures (Appendix 7)
- (e) British Ability Scales Word Reading Test (Elliott and Elliott, 1977). This standardised single word reading test was carried out at December 1995, March and September 1996 (Appendix 1)
- (f) Non-Word Reading Non-word reading was tested at the final post-test time, 9 months after the intervention had ended at September 1996. 20 short CVC nonwords were used (see Appendix 10 ). These were designed by taking each of the 5 short vowels four times and combining them with a selection of initial and final consonants. The expected pronunciations are listed in Appendix 10. Each CVC word was printed in black lower case letters in the middle of white cards which were blank on the reverse. Two practice items were carried out to familiarise the child with the procedure. Cards were shuffled for each child and spread out on the table print side facing downwards. Each child was told that the experimenter had made up some funny words. Child would be asked to choose

any card, turn it over, try to read it and then place it in a given tray. This procedure was repeated until all the cards had been turned over and read.

(g) Spelling The Schonell Graded Word Spelling Test B (1955) was used in the previous study was adopted (Appendix 2) As in that study, words are dictated by the experimenter, embedded in a meaningful sentence (see Appendix 3) then dictated again for the children to write down. Children were given the spelling test in June and September 1996.

The results will be presented in the following order:

1. Post-test measures and statistical comparisons for December, 1995
  2. Post-test measures and statistical comparisons for March, 1996
  3. Post-test measures and statistical comparisons for September, 1996
  4. Spelling error analyses and statistical comparisons, June and September, 1996
1. Post-test measures for December 1995

On completion of the 19 sessions with each group, the following post-test measures were carried out, Table 38 summarising the mean scores with standard deviations in brackets.

Table 38 Mean post-test scores for 3 research groups after completion of 10 week intervention programme for chronological age (CA), reading age on BAS scores (RA), emergent reading (ER), letter knowledge (sounds) (LK), phonemic awareness (initial) (middle) (final) and rhyme generation (rhyme) as at December 1995 (standard deviations in brackets)

	CA	RA	ER	LK	Phonemic awareness			
					initial	middle	final	rhyme
Group	years	years	% correct					
1	5.24 (.29)	5.04 (.47)	8.1 (18.3)	30.3 (24.0)	15.36 (23.25)	12.85 (25.99)	10.66 (21.36)	47.4 (38.1)
2	5.23 (.26)	5.03 (.29)	10.3 (15.9)	37.03 (26.8)	46.15 (37.69)	11.33 (22.69)	11.7 (23.78)	36.3 (37.6)
3	5.3 (.25)	5.38 (.25)	25.5 (17.7)	51.8 (21.7)	64.11 (30.38)	39.9 (35.72)	23.95 (26.84)	33.6 (35.9)

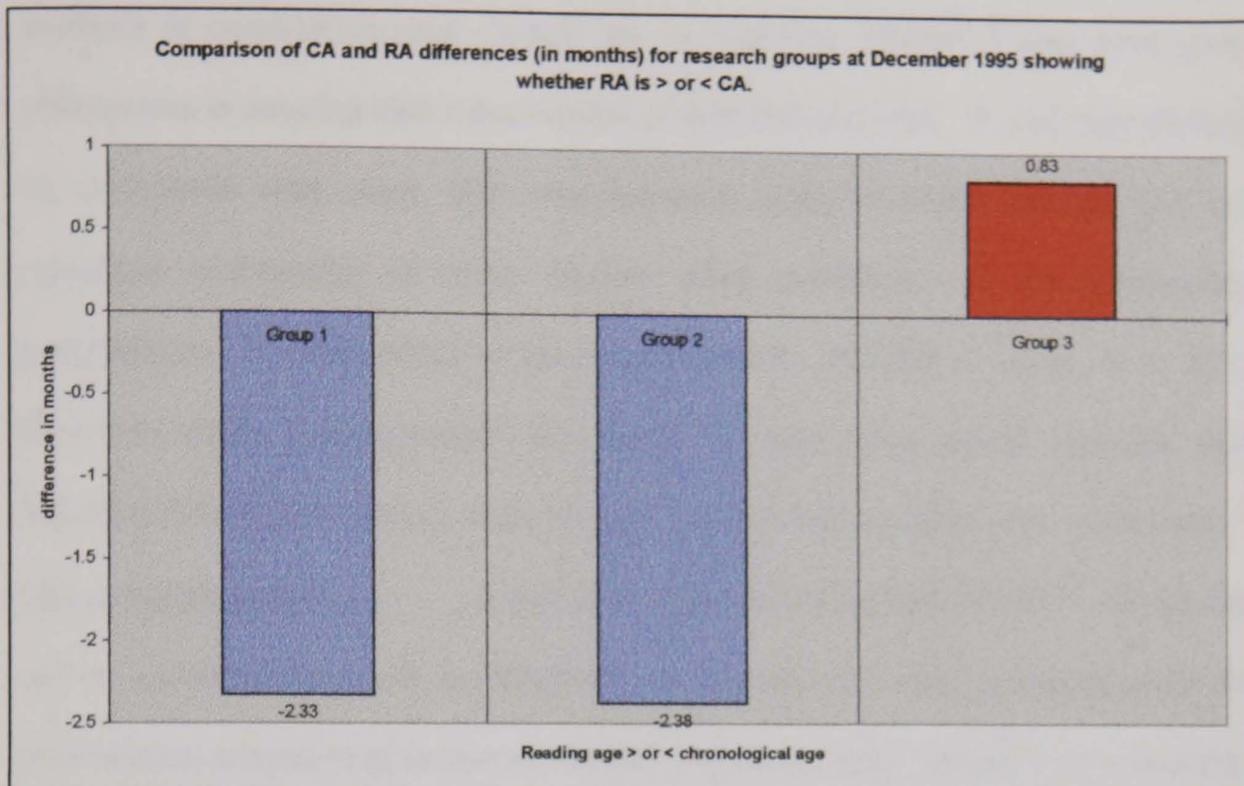
From the mean scores in Table 38 above, it can be seen that, after completion of the intervention programme, with the exception of generating rhyme, the scores for Group 3, the sounding and blending group, were higher than those for Groups 1 and 2. Table 39 summarises the gain scores for all 3 groups, obtained by subtracting the September pre-test scores from the December post-test scores. As the BAS test was not used in the battery of pre-test measures, mean gain scores could not be obtained for this measure.

**Table 39** Mean gain scores for 3 groups for emergent reading (ER) letter sound knowledge (LK) phonemic awareness (initial) (middle) (final) and rhyme generation (rhyme) obtained by subtracting the September performance from the December performance (standard deviations in brackets).

			Phonemic awareness			
	ER	LK	initial	middle	final	rhyme
Group	% gain					
1	4.3 (8.0)	22.4 (19.4)	11.29 (16.64)	9.4 (16.84)	7.37 (12.89)	13.8 (40.3)
2	8.5 (11.3)	31.2 (22.9)	42.27 (37.69)	8.58 (21.39)	9.22 (20.97)	4.0 (64.2)
3	22.0 (12.0)	43.2 (18.3)	60.82 (29.9)	36.56 (33.3)	21.84 (23.88)	13.1 (32.0)

Fig. 10 shows the comparison of means and standard deviations for each of the groups for reading ages when chronological age has been taken into account. For Group 1 the reading age is behind chronological age by -2.33 months (s.d. 6.18); for Group 2, reading age is behind chronological age by -2.38 months (s.d. 3.58) and for Group 3, reading age is ahead of chronological age by .83 months (s.d. 5.49).

Fig. 10



#### STATISTICAL COMPARISONS FOR DECEMBER 1995

Letter sound Knowledge A one-way ANOVA was carried out to compare the gain in letter sound knowledge. There was a main effect of group,  $F(2,98) = 7.73$ ,  $p < .001$ ; Newman Keuls tests showed that Group 3 performed better than Groups 1 and 2 on letter sound knowledge. Groups 1 and 2 did not differ in performance.

Reading measured on BAS Word Reading Test A one-way ANOVA was carried out when letter knowledge was not controlled for, a main effect of group was found,  $F(2,89) = 7.43$ ,  $p < .001$ ; Newman Keuls tests showed that Group 3 performed better than Groups 1 and 2, while Groups 1 and 2 did not differ. A one-way analysis of covariance was carried out to examine whether there were group differences in reading age when controlling for letter knowledge. The main effect of group was not significant  $F(2,88) = 2.96$ ,  $p < 0.57$ .

Emergent reading An analysis was made of the gain in emergent reading skill. As there were differential gains in letter sound knowledge between the groups, an analysis of covariance was carried out to examine whether there were group differences in reading skill independent of letter-sound skill. A one-way analysis of covariance was used, with one between subjects factor, group, and one covariate, knowledge of letter sounds after completion of the intervention programme. A main effect of group was found  $F(2,88) = 14.64, p < .001$ ; Newman Keuls tests showed that Group 3 read more words correctly than subjects in Groups 1 and 2, while Groups 1 and 2 did not differ from each other.

Phonemic awareness A two-way repeated measures ANOVA was carried out to compare the gain in phonemic awareness skill after completion of the intervention programme, with one between-subjects factor, group, and one within-subjects factor, phoneme position (initial, middle and final). There was a main effect of group,  $F(2,89) = 15.42, p < .001$ , a main effect of phoneme position  $F(2,178) = 59.91, p < .001$ ) and an interaction between group and phoneme position,  $F(4,178) = 12.62, p < .001$ . Newman Keuls tests on the interaction showed that for initial phoneme position Group 3 performed better than Groups 1 and 2, and Group 2 performed better than Group 1. For middle and final phoneme positions, Group 3 performed better than Groups 2 and 1, who did not differ from each other.

As the groups differed in letter sound knowledge, an analysis of covariance was carried out to control for any effect it may have had on phonemic awareness ability. An interaction was again found between group and phoneme position,  $F(4,178) = 12.62, p < .001$ ; Newman Keuls tests showed the same pattern of performance as in the ANOVA except that the groups no longer differed in phonemic awareness ability in the final phoneme position.

Rhyme generation A two-way repeated measures ANOVA was carried out to compare the gain in rhyme generating skills, with one between-subjects factor, group, and one within-subjects factor, type of rhyme response (word or nonword). There was no main effect of group,  $F(2,89) = 1.39$ , there was no main effect of type of response  $F(1,89) = 1.39$ , and there was no interaction between group and type of response,  $F(2,89) = 1.40$ .

## 2. Post-test measures for March 1996

After the 19 sessions had been carried out, the pupils reverted to their normal class routines and no further intervention activities took place. The following post-test measures were carried out at the end of a further ten-week period in school, three months after the conclusion of the intervention programme, to find out whether the scores for Group 3 still remained higher than those for Groups 1 and 2. Table 40 summarises the mean scores with standard deviations in brackets.

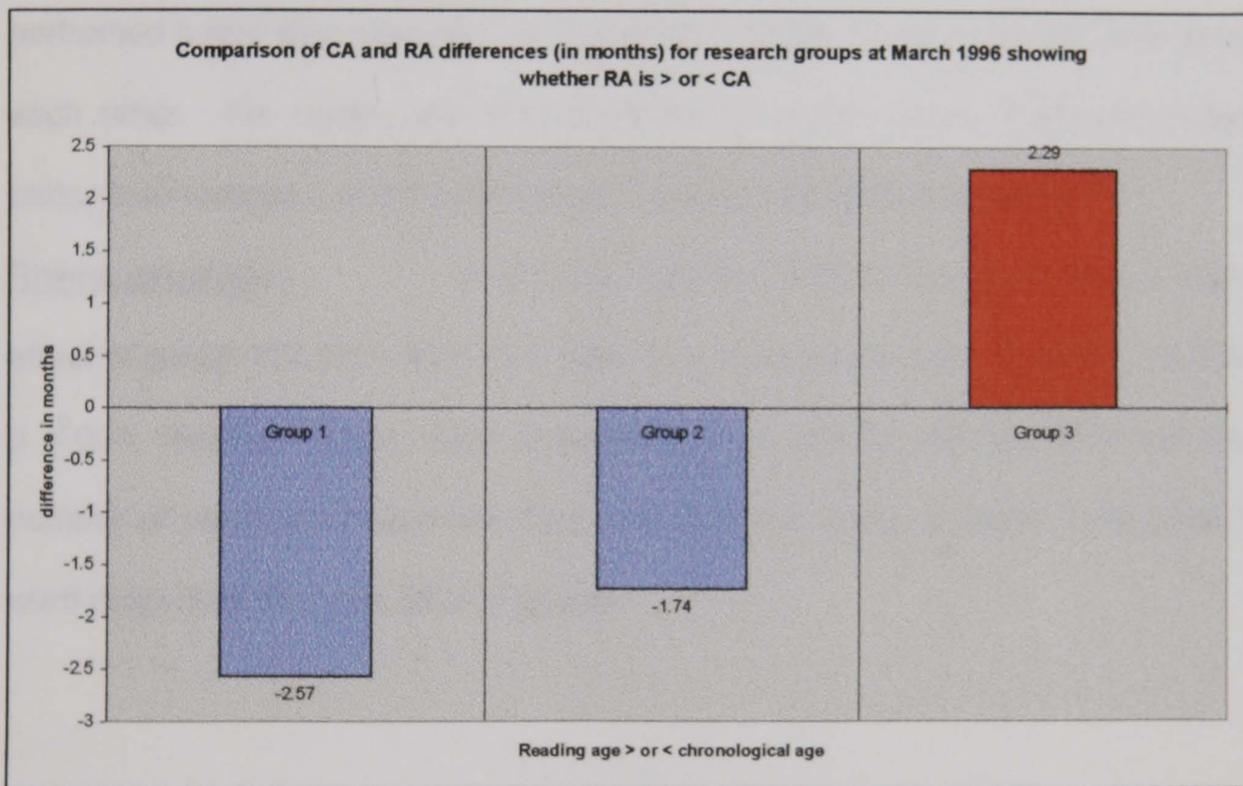
Table 40 Mean performance scores on chronological age (CA) reading age on BAS scores (RA) emergent reading (ER) letter sound knowledge (LK) phonemic awareness (initial) (middle) and (final) and rhyme generation (rhyme) ( standard deviations in brackets).

					Phonemic awareness			
	CA	RA	ER	LK	initial	middle	final	rhyme
Group	years	years	% correct					
1	5.4 (.28)	5.3 (.74)	22.5 (24.4)	49.6 (24.7)	71.16 (31.07)	32.6 (39.21)	31.66 (39.44)	66.4 (37.31)
2	5.5 (.26)	5.3 (.62)	25.5 (27.7)	50.5 (26.8)	72.72 (34.35)	18.46 (33.05)	17.77 (32.76)	35.1 (39.0)
3	5.5 (.24)	5.7 (.67)	44.1 (25.3)	62.2 (25.3)	83.93 (23.02)	50.65 (39.46)	49.22 (40.77)	33.9 (40.8)

From the above scores in Table 40 it can be seen that, although the intervention programme had ended, with the exception of rhyme generation, the scores for Group 3 were still higher than those for Groups 1 and 2.

Fig. 11 shows the comparison of means for each of the groups for reading ages when chronological age has been taken into account. For Group 1 reading age is behind chronological age by -2.57 months (s.d. 9.16): for Group 2 reading age is behind chronological age by -1.74 months (s.d. 6.77) and for Group 3, reading age is ahead of chronological age by 2.29 months (s.d. 8.13).

Fig. 11



#### STATISTICAL COMPARISONS FOR MARCH 1996

Reading measured on BAS Word Reading Test A one-way ANOVA showed that there was a main effect of group,  $F(2,87) = 3.93$ ,  $p < .023$ ; Newman Keuls tests showed that Group 3 read better than Groups 1 and 2 while Groups 1 and 2 did not differ.

Emergent reading A one-way ANOVA showed that there was a main effect of group  $F(2,87) = 5.81$ ,  $p < .004$ . Even although letter sound knowledge did not

now differ between groups, Newman Keuls tests showed that Group 3 performed better than Groups 1 and 2 while Groups 1 and 2 did not differ.

Letter-sound knowledge A one-way ANOVA showed no main effect of group,  $F(2,87) = 2.18$ ; therefore Groups 1,2 and 3 no longer differed. The class teachers had now almost finished introducing initial letter sounds to all pupils.

Phonemic Awareness A two-way ANOVA showed a main effect of group,  $F(2,87) = 5.07$ ,  $p < .01$ , a main effect of phoneme position, ( $F(2,174) = 124.36$ ,  $p < .001$ , and an interaction of group and phoneme position,  $F(4,174) = 2.75$   $p < .03$ . Newman Keuls tests showed that for initial phoneme position, Group 3 still performed better than Groups 1 and 2, while Groups 1 and 2 did not differ from each other. For middle and final phoneme positions Group 3 still performed better than Groups 2 and 1 while Group 1 performed better than Group 2.

Rhyme generation A one-way ANOVA showed that there was a main effect of group,  $F(2,87) = 6.57$ ,  $p < .002$ , and of response type,  $F(1,87) = 112.23$ ,  $p < .001$ ; Newman Keuls tests showed that the groups did not differ on the number of non-word responses they produced but Group 3 made more correct word responses than the other 2 groups.

### 3. Post-test measures for September 1996

The following post-test measures were taken at the start of Primary 2, nine months after completion of the intervention programme to find out if the superior performance by Group 3 had been maintained. Table 41 summarises the mean test scores with standard deviations in brackets.

**Table 41 Mean chronological ages (CA) and mean performance scores for reading ages on BAS scores (RA), spelling ages (SA) emergent reading (ER) non-word reading (NWR) letter sound knowledge (LK) phonemic awareness (PA) initial (I)middle (M) and final (F) and rhyme generation (rhyme) for September 1996 (standard deviations in brackets).**

Grp.	CA yrs	RA yrs	SA yrs	ER %	NWR %	LK %	Phonemic awareness			
							I %	M %	F %	rhyme %
1	6.0 (.29)	5.6 (.89)	5.6 (.76)	24.8 (24.)	14.6 (26.8)	68.1 (22.5)	83.3 (23.2)	34.0 (40.1)	29.5 (37.3)	41.3 (44.1)
2	6.0 (.26)	5.5 (.83)	5.4 (.67)	27.3 (30.6)	12.1 (24.6)	68.1 (24.9)	76.98 (29.2)	32.6 (39.5)	29.6 (38.5)	36.0 (48.3)
3	6.0 (.25)	6.3 (1.3)	6.3 (.77)	49.9 (28.1)	54.6 (40.7)	82.0 (20.2)	93.8 (12.2)	79.1 (25.9)	70.3 (36.7)	65.2 (51.6)

Fig. 12 (a) shows the comparison of means for each of the groups for reading ages when chronological age has been taken into account. For Group 1 reading age is behind chronological age by 5.37 months (s.d. 11.02): for Group 2 reading age is behind chronological age by 5.52 months (s.d. 9.15) and for Group 3 reading age is ahead of chronological age by 3.39 months (s.d. 14.75). and standard deviations for each of the groups for reading ages when chronological age was taken into account. Fig. 12 (b) shows the comparison of means for each of the groups for spelling ages when chronological age is taken into account. For Group 1 spelling age is behind chronological age by 4.96 months (s.d. 10.14): for Group 2 spelling age is behind chronological age by 6.39 months (s.d. 7.51) and for Group 3 spelling age is above chronological age by 2.89 months (s.d. 8.66).

Fig. 12 (a) and (b)

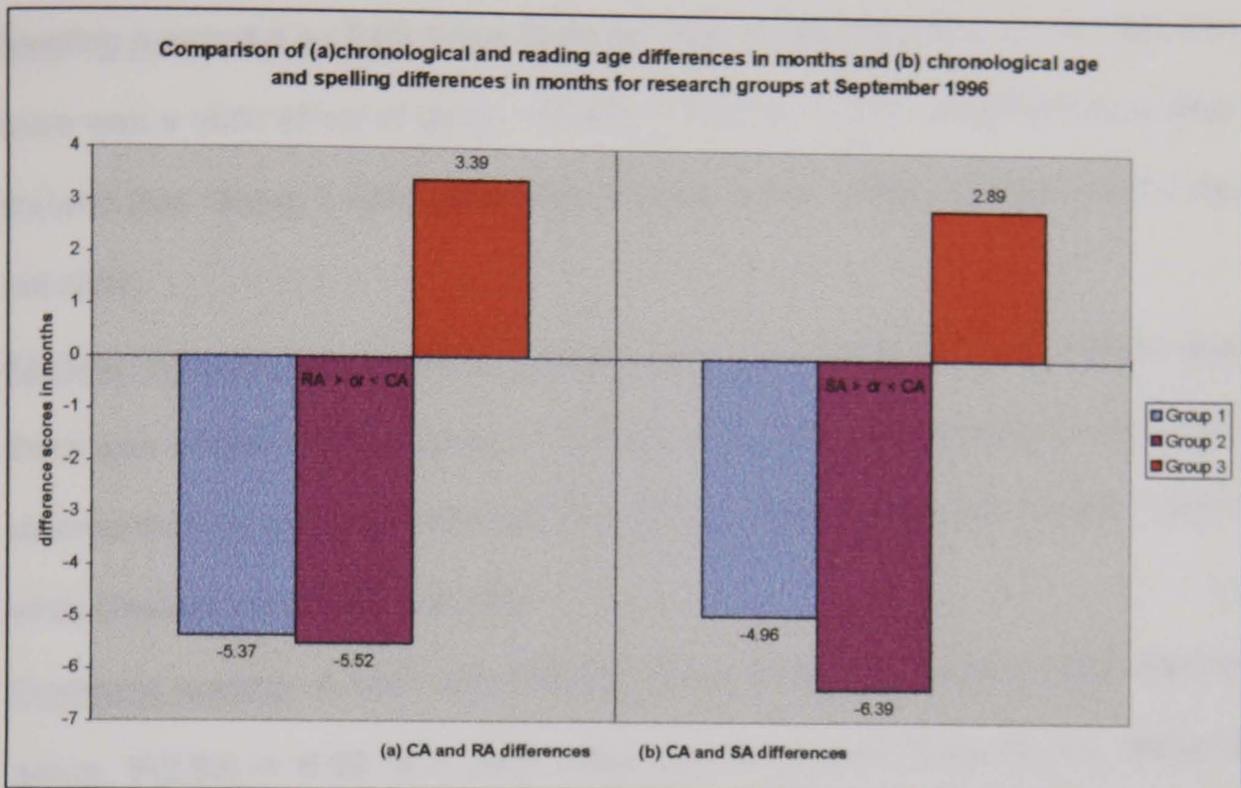


Table 42 shows the comparison of means and standard deviations for each of the groups for non-word reading analysing the responses into categories for non-words read correctly, refusals, non-word spoken errors with real words given and non-word spoken errors with non-words given.

Table 42 Comparison of mean percentage scores for levels of performance on non-word reading task (NW) (standard deviations in brackets)

Group	NW read correctly	NW refusals	NW spoken errors	Spoken real words given	Spoken non-words given
1	14.63 (26.82)	45.77 (39.84)	42.88 (34.59)	86.93 (19.37)	13.69 (19.62)
2	12.09 (24.59)	46.12 (40.09)	39.19 (36.63)	90.08 (22.21)	9.91 (22.21)
3	54.64 (40.69)	20.9 (34.98)	36.52 (33.11)	59.43 (33.00)	35.91 (31.57)

### STATISTICAL COMPARISONS FOR SEPTEMBER 1996

Reading measured on BAS Word Reading Test A one-way ANOVA showed that there was a main effect of group,  $F(2,83) = 5.82$ ,  $p < .004$ ; Newman Keuls tests showed that Group 3 read better than Groups 1 and 2 while Groups 1 and 2 did not differ.

Spelling measured on Schonell Spelling Test A one-way ANOVA showed that there was a main effect of group,  $F(2,83) = 11.1$ ,  $p < .001$ ; Newman Keuls tests showed that the spelling performance of Group 3 was better than Groups 1 and 2 while Groups 1 and 2 did not differ.

Emergent reading A one- way ANOVA showed that there was a main effect of group,  $F(2,83) = 6.88$ ,  $p < .002$ ; Newman Keuls tests showed that Group 3 performed better than Groups 1 and 2 while Groups 1 and 2 did not differ.

Letter sound knowledge A one way ANOVA was carried out on letter-sound knowledge,  $F(2,83) = 3.55$ ,  $p < .033$ . However, Newman Keuls tests showed no significant difference in the groups at .05 level, although group 3 appeared to have an advantage.

Phonemic awareness A two-way ANOVA was carried out. There was a main effect of group,  $F(2,83) = 13.89$ ,  $p < .001$ , and of phoneme position,  $F(2,166) = 93.89$ ,  $p < .001$ . However these factors also interacted,  $F(4,166) = 6.14$ ,  $p < .001$ . Newman Keuls tests showed that for initial phoneme position, Group 3 performed better than Group 2 but not better than Group 1, while Groups 1 and 2 did not differ from each other. For middle and final phoneme positions Group 3 performed better than Groups 1 and 2 while Groups 1 and 2 did not differ.

Phonemic awareness, whole words correctly segmented A main effect of research group was found,  $F(2,83) = 13.27, p < .000$ . Newman Keuls tests showed that Group 3 performed better than Groups 1 and 2 who did not differ.

Generating rhyme (words and non words accepted). One-way ANOVA test showed no effect of group  $F(2,83) = 2.99, p > .056$ .

#### Non-word reading

Non-word reading - correct responses A one-way ANOVA showed that there was a main effect of group,  $F(2,83) = 16.50, p < .000$ ; Newman Keuls tests showed that Group 3 performed better than Groups 1 and 2 while Groups 1 and 2 did not differ.

Refusals All refusals by each child were scored out of a total of the 20 non-word cards presented and transformed into a percentage score for each child. A one-way ANOVA test showed that there was a main effect of group,  $F(3,42) = 2.83 p < .038$ . Although Group 3 produced less refusals than Groups 1 and 2, Newman Keuls tests found no group differences.

Non-word spoken errors Responses which were not included in correct responses or refusals to respond were scored as non-word spoken errors and transformed into a percentage score. A one-way ANOVA showed that there was no main effect of group,  $F(2,77) = 2.80 p > .067$ .

Non-word spoken errors were sub-divided into two categories, responses which were real words and responses which were non-words. Each category was then calculated as a percentage of the total non-word spoken errors.

Spoken errors, real words were given A one-way ANOVA showed no main effect of group,  $F(2,62) = 6.99, p < .002$ .

Spoken errors, non-words given A one-way ANOVA showed a main effect of group  $F(2,61) = 6.67 p < .002$ ; Newman Keuls tests showed that while Group 3

offered more spoken errors in the non-word category, Groups 1 and 2 did not differ.

#### 4. Spelling error analyses and statistical comparisons for June and September, 1996

The Schonell spelling test was administered in June and September to compare the spelling errors produced by the children on each occasion. Analysis of the errors was carried out using the spelling categories described in Studies 3 and 4 namely, transitional errors, phonetic (2) and phonetic (1) errors.

Table 43 shows the percentages of spelling errors produced by Groups 1, 2 and 3 in these spelling categories in June and September, 1996, with standard deviations in brackets.

Table 43 Percentages of transitional errors, phonetic (2) and phonetic (1) errors in Groups 1,2 and 3 at June and September 1996 with standard deviations in brackets

	June 1996					
	transitional errors		phonetic (2) errors		phonetic (1) errors	
	percentage scores					
Group 1	20.8	(34.92)	25.17	(29.03)	54.03	(41.24)
Group 2	18.10	(34.17)	32.74	(39.9)	45.71	(46.6)
Group 3	50.66	(42.32)	20.94	(28.65)	28.4	(41.6)

#### September 1996

Group 1	30.95	(43.05)	15.56	(23.84)	53.49	(46.24)
Group 2	23.33	(36.79)	11.76	(25.51)	64.91	(45.75)
Group 3	59.78	(43.48)	20.93	(32.83)	19.29	(31.71)

### STATISTICAL COMPARISONS FOR SPELLING ERRORS

Transitional-type spelling errors ANOVA tests showed that there was a main effect of group in June, six months after completion of the intervention

programme,  $F(2,80) = 6.64$   $p < .002$  and a main effect of group in September, nine months after completion of the intervention programme,  $F(2,82) = 6.2$   $p < .003$ . Newman Keuls tests found that for both June and September, group 3 children produced more transitional-type errors than groups 1 and 2, who did not differ.

Phonetic (2) type spelling errors ANOVA tests showed no effect of group in June,  $F(2,80) = .9$   $p < .394$ , and with no effect of group in September,  $F(2,82) = .801$   $p < .453$ .

Phonetic (1) type spelling errors ANOVA tests showed that there was no main effect of group in June,  $F(2,80) = 2.500$   $p < .088$  n.s. but there was a main effect of group in September,  $F(2,82) = 9.024$   $p < .000$ . Newman Keuls tests found that in September group 3 produced less errors in the phonetic (1) category than groups 1 and 2, who did not differ.

## DISCUSSION

It has been demonstrated in this intervention study that teaching letter sounds, whether at a gradual pace or at an accelerated pace, did not in itself enhance reading ability. However, explicitly teaching children how letters can be blended together to form words led to improved reading skill, a gain which was still apparent at the beginning of Primary 2, nine months after the intervention had ended, by which time all three groups had equivalent letter sound knowledge. However, children who had been taught to blend letters (Group 3) read more nonwords correctly than the other two groups demonstrating a superior ability to apply decoding strategies to unfamiliar words out of context.

Spelling was tested at the end of Primary 1 and the beginning of Primary 2, six and nine months respectively after the intervention ended. It was found that the children taught how to blend letters were significantly better spellers, being 8 months ahead of one group and 10 months ahead of the other group. It

was also found that the children explicitly taught how to blend letters had a significant effect on the proportion of spelling errors produced which encode orthographic information: Group 3 produced more transitional-type errors than the other 2 groups, who did not differ, notwithstanding the summer vacation which was contrary to normal expectations.

#### Importance of the blending process in the development of independent reading

Feitelson (1988) refers to the trend towards delaying the introduction of the blending process until all the initial letter-sound relationships have been taught. We have seen in previous chapters that this is indeed the approach followed by eleven of the schools described, two of which schools were used in the present study. We have seen how at the start of formal schooling, teachers approached the teaching of reading through the look-and-say whole word approach, building up a sight vocabulary with pupil exposure to print, pictures and the class reading scheme. In Chapter 3, it was noted that one of the disadvantages of the look-and-say whole word approach is the demand made on the child's memory (Horner, 1972). Another disadvantage which was highlighted in chapter 3, is that the child has no technique for deciphering new words, being left too dependent upon the teacher for knowing what the print represents (Beard, 1988). This is supported by Byrne who suggests that if the child is not expected to decipher unknown printed words, there is no reason why the child need consider the alphabetic principle (Byrne, 1997, in press). In other words, a look-and say method can be said to be promoting a dependency culture.

Approximately 6 weeks after formal entry to school, the phonics programme was very gradually introduced at the rate of one letter sound per week taking altogether 32 weeks. At a surface level, this would appear to be integrating the teaching of reading and phonological skills (Hatcher, Hulme and Ellis, 1994) and should be an effective method. However, one could argue that

this method of phonics instruction, where the initial phonetic cue requires either a picture cue, a recall mechanism or an adult to supply the remainder of a word, is ineffective in that it also tends to promote a dependency culture rather than an independent ability to process all the letter sounds in sequence to read a word (Ehri and Wilce, 1987).

As previously described, these eleven schools (including the two in the present study) delay the process of blending until all the initial letter sound relationships have been introduced (Feitelson, 1988). The blending process itself is presented through worksheet activities, described in chapter 4, whereby children would be given partial words with picture cues and asked to write in the missing letter e.g. su -, s - n , - un, thereby deducing the blending process for themselves. One could argue that this procedure serves to illustrate the point that if the instructional approach does not include an explicit direct teaching element, it may well affect the development of the blending skill (Richardson et al, 1977). It could also be argued that delaying the introduction of the blending element until all of the letter-sounds had been learned (Feitelson, 1988) added to the knowledge pupils gained from the simultaneous reading scheme experience, such that the teaching of blending might be unnecessary (Thomson, 1996). The results reported in this study, however, would not appear to support this viewpoint. All pupils in the study participated in the normal school reading programme which did not include blending activities and were exposed to the same print vocabulary. Post-test measures carried out immediately on completion of the Intervention Programme and at 3 months and 9 months thereafter indicate that, with the exception of rhyme generation, Group 3 pupils (those who were explicitly taught blending) were superior in both literacy and phonological skills. It is suggested, therefore, that this superior performance of Group 3 pupils is directly associated with the explicit instructional approach in the

blending process adopted with these pupils. It is also noteworthy that the level of performance of Groups 1 and 2, who had received no direct explicit instruction in the blending process, did not level out with that of Group 3 either at the March testing or the September testing at the start of Primary 2.

The effect of different types of instruction on reading acquisition has been the subject of recent research studies (e.g. Thompson and Johnston, 1993, Connelly, Johnston and Thompson, 1996). Many studies refer to explicit phonics instruction, systematic phonics instruction, direct phonics instruction etc. but the present study may serve to have succeeded in isolating the specific component in explicit, systematic, direct phonics which forms the most effective central element of instruction, namely the development of the blending skill, which is closely related to phonemic synthetic teaching (Feitelson, 1988). Fox and Routh (1984) subscribe to the view that phonemic awareness skills such as segmenting and blending are causally related to learning to read and are not merely a by-product of reading instruction. Early introduction to the blending process necessitates a well-thought-out sequence of letters and sounds which lend themselves to the application of the word-building procedure (Feitelson, 1988, Wimmer and Goswami, 1994, Ehri (1995/1996) thus enabling children to generate words (Thompson and Johnston, 1993). Furthermore, early introduction to the blending process which formed such an essential part of the intervention programme with Group 3 pupils, enables children to generate meaningful words from the outset (as described in the Viennese method by Feitelson, 1988) and provides the pupils with a strategy for independently reading unknown words in print, so releasing them from the look-and-say dependency culture being perpetuated by the system. If it is expected that a child should read unknown words independently a logographic strategy will not do. The child will need to resort to the alphabetic principle and learn the correspondences between letters

and phonemes (Byrne, 1997, in press). Such a strategy would promote a culture of independence.

Impact of letter-sound training and blending on phonemic awareness and spelling

Johnston, Anderson and Holligan (1996) point out that awareness of the position of phonemes in words other than in the onset position, and particularly the final phoneme, may be a critical stage in the development of reading. This study by Johnston, Anderson and Holligan (1996) demonstrated that explicit awareness of phonemes emerged after the children started to learn the alphabet letters whereas phonemic awareness was rarely shown if there was no evidence of alphabetic knowledge. Share (1996) describes phonemic awareness as a reading skill. On the basis of an extensive review of the literature Share proposes that phonemic awareness and letter knowledge are co-requisites for the development of reading. Chew (1997) points out that the alphabetic code in which graphemes represent phonemes can be taught to beginning readers. It is suggested from the results of this study that the use of explicit synthetic phonics accelerates not only reading and spelling but also phonemic awareness. From the post-test measures taken in December, immediately following completion of the Intervention Programme, Group 3 pupils who received accelerated training in letter-sound relationships together with explicit training in the blending process and word building, exhibited the greatest gain for initial, middle and final phoneme positions. Group 2 pupils who had been taught to identify letters only in the initial position at the same accelerated rate as Group 3 but had not been trained in the blending process for word building, had increased the ability to segment the initial phonemes in words and performed better than the control, look-and-say pupils (Group 1).

From post-test measures taken 3 months after completion of the intervention programme, Group 3 was still ahead in phoneme segmentation tasks

in initial, middle and final phoneme positions. There was now no difference between Groups 1 and 2. By now, the end of March, teachers had more or less completed the component of the phonics programme which dealt with the introduction of initial letter-sounds and it is perhaps noteworthy that letter-sound knowledge was now the same for all 3 groups. However, the scores for the Group 1 control children for segmenting middle and final phonemes in words exceeded the scores for the Group 2 children. A similar pattern of results was found from the post-test measures taken 9 months after completion of the intervention programme.

It could be argued that the accelerated learning of the initial letter sounds by Group 2 children, coupled with the activities which concentrated on the application of the initial letter-sounds taught, may have had the effect of overriding the sight-word reading work being taught by the teachers alongside the phonics strand of the reading programme. It could further be argued that the Group 3 children were able to aspire to the cipher reading stage of reading development (the orthographic stage in decoding) (Gunning, 1996) whereas the children in Groups 1 and 2 would only be able to operate at the phonetic cue reading stage (Ehri and Wilce, 1987). Ehri (1994) describes how phonetic cue readers detect some constituent sounds within pronunciation, perhaps only the initial or final letters forming the access route into lexical memory, namely the alphabetic stage. As the teaching of letter-sounds for both Groups 1 and 2 had concentrated on initial letter sounds both in the normal teaching programme and in the intervention programme for Group 2, it would appear plausible to suggest that these children, performing as phonetic cue readers, would be expected to detect the initial letter sounds rather than the final letter sounds.

Evidence of Groups 1 and 2 operating as phonetic cue readers and Group 3 operating as cipher readers was provided by the non-word reading test.- a

measure of children's ability to apply phonic decoding strategies to unfamiliar words out of context. It is reported that the teaching technique experienced by young beginning readers affects the strategies they use for later reading (Barr, 1974/75). Children from Groups 1 and 2 (as phonetic cue readers) tended to recognise the initial letter-sounds and produce real words with which they were familiar e.g. for 'ged' might produce 'good', 'kug' might produce 'king', 'ruk' might produce 'rainbow'. Group 3 children who had been encouraged to pay attention to the left-to right sequence of letter-sounds in words either correctly read or attempted to read the actual non-words and made nonword errors rather than real word errors. These children (as cipher readers) were significantly superior in reading non-words correctly and produced less refusals than Groups 1 and 2 would be more able to attempt unknown words independently.

The performance of the children in Group 3 supports the view expressed by Ehri and Wilce (1987) that the superior decoding skill of cipher readers transfers to spelling performance. The mean spelling ages of the 3 groups were compared 9 months after completion of the intervention programme when Group 3 was found to be ahead of Group 1 by 8 months and ahead of Group 2 by 10 months supporting the view that the skill of breaking spoken words into phonemes is for spelling and can be taught (Chew, 1997). The results also support Chew's view that the analysis of spoken words into phonemes for spelling is more related to teaching methods than age, developing early in children who receive instruction early and later in children who have to work out the broad principles by learning to read an alphabetic script logographically (1997). In this study, one aspect of the blending process was modelled through the use of magnetic letters where children had to break down a spoken word to rebuild it, what Chew refers to as 'making sounds visible' (1997, p. 176).

The study by Ehri and Wilce (1987) proposes that cipher readers develop with alphabet knowledge, phonemic segmentation skill, internalization of the orthographic rules of English and understanding of how spellings correspond to pronunciations. Adams (1990) discusses the relationship between reading and spelling skills and writes that for children to learn how words actually are spelled, they must also learn to read. Adams also indicates that Treiman's analysis of spelling errors implies that explicit instruction in word analysis and consonant blending is a necessary complement to children's independent orthographic awareness. It was found that at the end of Primary 1 and the beginning of Primary 2, group 3 children produced more transitional-type spelling errors than groups 1 and 2 who did not differ from each other.

### Conclusion

The superior performance of Group 3 children in reading, spelling and phonemic awareness and in producing transitional-type spelling errors suggests that it should be possible to isolate the skills acquisition and application process responsible for that superior performance. It is hypothesised that this is related to the instructional process of accelerated teaching of the sounds of letters in left-to-right sequential initial, middle and final positions together with explicit direct training in blending the letters together to form words and breaking spoken words into phonemes for spelling. The Group 3 children were able to use independently their knowledge of the alphabetic code to decode unknown words thus establishing an orthographic memory for such words. It is further advanced that this method of phonics teaching and application enabled the Group 3 children to aspire to become cipher readers (Ehri and Wilce, 1987). For Groups 1 and 2, awareness of the blending process was viewed as a post-initial skill (Feitelson, 1988) resulting in these pupils operating as phonetic cue readers (Ehri and Wilce, 1987).

“Reading, for phonics-taught beginners, is not the ability to analyse spoken words into phonemes without reference to print but the ability to synthesise separate phonemes taught as separate phonemes and uttered in response to separate graphemes into spoken words. The blending of the sounds into the 15 phonemes per second of normal speech usually triggers comprehension” (Chew, 1997, p. 177).

## CHAPTER 8

### Comparison Of The Various Methods Of Teaching Phonics To Establish The Most Effective Way Of Using Phonics In The Teaching Of Reading.

*"What does phonics instruction consist of?"*

(Macmillan, 1997, p.77).

#### INTRODUCTION

It has already been noted that although nearly all teachers subscribe to teaching phonics, the quantity and pace of phonics instruction given varies widely as does the target population (Cato et al, 1992). The Ofsted Report (1996) indicates that phonic teaching appears to be limited to initial letter sounds with no systematic teaching of phonic knowledge and, in many cases, the target population appears to be children experiencing reading difficulties. However, in Scotland, phonics methods continue to be used to teach children to read (Macmillan, 1997). The previous studies have shown that teaching phonics is included in the reading programmes of the Scottish schools examined and, for the most part, a gradual analytic method is used extending over the first three years of schooling. In this chapter, it is proposed to compare the various methods of teaching phonics being examined to try to determine not only what teaching phonics should consist of (Macmillan, 1997), but also the most effective way of using phonics (DES 1991).

The results of the two studies analysed support the view that the phonics method which endorses explicit, direct teaching of sounding and blending appears to be the most effective in providing the children with a strategy for reading unfamiliar words and for segmenting spoken words into phonemes for spelling. It was therefore decided to carry out a study in a school using an accelerated, synthetic phonics method including explicit, direct teaching of sounding and blending at the start of schooling before graded reading books with

continuous text were introduced. One school uses such a phonics programme starting with the children in the reception class, namely Woods Loke Primary School. A part of the Woods Loke Programme was used in the training study described in Chapter 7.

The first focus of this chapter is to compare the effectiveness of the intensive, synthetic phonics method with explicit, direct teaching of sounding and blending used in Woods Loke with :

1.1 the gradual analytic phonics method being used by the teachers with the control group (Group 1) in the training study (Study 5, Chapter 7)

1.2 the accelerated analytic phonics method used for a limited time with the experimental group (Group 2) in the training study, thereafter being replaced by the gradual analytic phonics method used with the teachers (Study 5, Chapter 7)

1.3 the synthetic phonics method incorporating explicit, direct teaching of sounding and blending used for a limited time with the experimental group in the training study (Group 3), thereafter being replaced by the gradual analytic phonics method used with the teachers (Study 5, Chapter 7).

The second focus of this chapter is to examine the long term effects of the different phonics methods on reading comprehension at the end of the third year of schooling. Comparisons will be made between the effectiveness of introducing an intensive, synthetic phonics programme in Woods Loke as a pre-reading programme prior to introducing continuous text reading with:

2.1 a class of children (Class 5) introduced to graded reading scheme books from the start of schooling prior to being taught by a gradual, analytic phonics method (Study 3 and Study 4, Chapters 5 and 6 ) and

2.2 the children from class 4 who were taught by an accelerated, analytic phonics method in parallel with graded reading scheme books, and who were

encouraged to apply the blending process when encountering unfamiliar words in the books (Study 3 and Study 4, Chapters 5 and 6).

### Study 6

#### COMPARISON 1

##### Methods of Teaching Phonics

1. The stated aim of the Phonics Handbook used at Woods Loke Primary School is “to provide a system of teaching children to read that is thoroughly phonic based. This means that the children are taught all the 40+ sounds of English, not just the alphabet sounds. With this knowledge they are taken through stages of blending sounds to form words and thence to reading” (Lloyd, 1992, p. 1). Adopting this systematic, structured programme, children are explicitly taught to identify and blend all the 40+ sounds in words as pre-reading skills before reading connected text in books for themselves. In other words the method being used is synthetic phonics described in Chapter 3. The children are, however, encouraged to search through books to identify target sounds being taught to gain an awareness of the connection between sounds, letters, words and books. Children are taught how to form the target letters by tracing in the air, saying the sound, feeling the shape of the letter, tracing over dotted letters and writing each letter. The five key stages of the programme are as follows:

1. Learning the letter sounds
2. Learning letter formation
3. Blending
4. Identifying sounds in words
5. Spelling irregular words

and the 40+ sounds are taught in the following sequence:

1.	s	a	t	i	p	n
2.	ck	e	h	r	m	d
3.	g	o	u	l	f	b
4.	ai	j	oa	ie	ee	or
5.	z	w	ng	v	oo	oo
6.	y	x	ch	sh	th	th
7.	qu	ou	oi	ue	er	ar

Using this sequence, it should be noted that letters which could get easily confused are not close together e.g. b and d. The letters g and d occur after c to help link the formation of the c to the d and g. The first set of letters soon combine to form simple words for the children to practise blending words together and reading them.

Burkard (1996, p.4) highlights three distinctive features of the Lloyd programme:

1. "Pupils are never taught to 'predict' words on the basis of syntactic, semantic or pictorial clues". They are not encouraged to use any guessing strategy.
2. "Books are not introduced until pupils master a fairly wide range of phonological skills". As far as possible, reading material is controlled to enable children to read independently and attend to the meaning of what is being read, without resorting to using a guessing strategy. Children's literature with uncontrolled vocabulary is not used in the beginning stages of reading continuous text as it compels children to use a guessing strategy to read unknown words.
3. "Pupils are taught to analyse the phonetic structure of words in the first term of reception". Children are taught to identify individual phonemes in words and

are taught to blend and analyse phonemes, particularly useful for spelling. (Burkard, 1996, p. 4).

Letter sounds are taught at the rate of six letters per week thus the pre-reading skills can be completed during the first term of formal schooling. Sheets displaying the target letter sound provide the starting stimulus for the teaching. Each sheet has a suggested storyline, an action, a picture to colour, words to read and a line on which to practise writing the target letter. By doing an action for each letter sound, children are using “body movement, ears, eyes and speech to help them remember” (Lloyd, 1992, p. 3). Flash cards of the letters taught are held up daily for the children to pronounce the sounds and perform the associated action. For reading words which accompany the sound sheets and word boxes using the blending process, the teacher models and the children imitate the process to enable them to blend the sounds and hear the word when they have said the sounds. Gradually, children are encouraged to blend the word silently in their heads before pronouncing the word. About 1 hour per day is spent on this multi-sensory programme.

1.1 the gradual analytic phonics method used by the teachers with the target children in the training study is fully described in chapter 4

1.2 the accelerated analytic phonics method used for a limited time with Group 2 children is fully described in chapter 7, and

1.3 the synthetic phonics method incorporating explicit, direct teaching of sounding and blending used for a limited time with Group 3 children is also fully described in chapter 7.

## COMPARISON OF WORD RECOGNITION SKILL YEAR 1

### PROCEDURE

In September, 1995, in the first term at school the children from Woods Loke and the children in the training study were of similar chronological age and

did not differ in performance on a measure of vocabulary knowledge (British Picture Vocabulary Test, Dunn and Dunn, 1982). The groups also performed similarly on letter sounds knowledge, emergent reading ability (Clay 'Ready to Read' Word Test, 1979) and phoneme segmentation skills measured using the Yopp Singer Test (Yopp, 1988) (see Table 44).

Table 44 Mean performance of Woods Loke children and training study children on chronological age (CA), vocabulary knowledge (BPVS) standardised score, letter sound knowledge (LK) emergent reading (ER) and phonemic awareness ability (PA) at September 1995, standard deviations in brackets

Phonics methods used	CA (years)	BPVS (standard score)	LK (% correct)	ER (% correct)	PA (% correct)
Woods Loke synthetic	4.79 (.09)	97.5 (10.77)	9.6 (19.3)	2.7 (13.3)	5.3 (20.7)
control group analytic	5.0 (0.3)	94.3 (12.5)	8.0 (18.7)	3.7 (16.2)	2.7 (11.4)
group 2 accelerated analytic start	5.0 (0.3)	94.6 (15.2)	5.9 (16.9)	1.8 (10.4)	1.79 (10.29)
group 3 limited synthetic start	5.0 (0.3)	95.5 (14.4)	8.6 (21.2)	3.5 (13.4)	1.77 (9.13)

The children were then retested at the end of the school term in December 1995, by which time the Woods Loke children had been taught their 40+ sounds, and the 10-week training programme described in chapter 7 had been completed. At this stage, the children were also tested on the standardised test of single word reading, the British Ability Scales Word Reading Test (Elliott, 1977). It can be seen from Table 45 that for word recognition the Woods Loke children using the intensive synthetic phonics method are 6 months ahead of the children using the limited synthetic phonics intervention method and are 10 months ahead of children using both the gradual and accelerated analytic phonics methods.

**Table 45** Mean performance of Woods Loke children and children from the Traaining Study on chronological age (CA), BAS Word Reading Test (BAS) letter sound knowledge (LK) emergent reading (ER) and phonemic awareness ability (PA) at December 1995, standard deviations in brackets.

Phonics method used	CA (years)	BAS (years)	LK (% correct)	ER (% correct)	PA (% correct)
Woods Loke synthetic	5.01 (.10)	5.89 (.51)	85.4 (18.2)	23.5 (14.7)	64.72 (3.44)
control group analytic	5.24 (.29)	5.04 (.47)	30.3 (24.0)	8.1 (18.3)	15.9 (30.22)
group 2 accelerated analytic start	5.23 (.26)	5.03 (.29)	37.03 (26.8)	10.3 (15.9)	11.02 (23.14)
group 3 limited synthetic start	5.3 (0.25)	5.38 (.25)	51.8 (21.7)	25.5 (17.7)	28.49 (33.22)

The children in the intervention programme now reverted to the normal gradual analytic phonics method used with the teachers with letter sounds being introduced at the rate of one per week while they continued with the readers from the graded reading scheme. The Woods Loke children were now able to tackle reading continuous text from a selection of graded reading scheme books. The children were then retested in March 1996. It can be seen from Table 46 that for word recognition the Woods Loke children using the intensive synthetic phonics method are now 11 months ahead of the children using the intervention limited synthetic start phonics method and are 17 months ahead of children using both the gradual and accelerated start analytic phonics methods. Furthermore, both letter sound knowledge and phonemic awareness skills of the Woods Loke children are almost at ceiling.

**Table 46** Mean performance of Woods Loke children and children in Training Study on chronological age (CA), BAS Word Reading Test (BAS) letter sound knowledge (LK) emergent reading (ER) and phonemic awareness ability (PA) at March 1996, standard deviations in brackets.

Phonics method used	CA (years)	BAS (years)	LK (% correct)	ER (% correct)	PA (% correct)
Woods Loke synthetic	5.3 (.10)	6.67 (.40)	98.6 (3.12)	78.1 (14.5)	98.9 (3.01)
control group analytic start	5.4 (.28)	5.3 (.74)	49.6 (24.7)	22.5 (24.4)	29.8 (39.16)
accelerated analytic start	5.5 (.26)	5.3 (.62)	50.5 (26.8)	25.5 (27.7)	14.2 (31.23)
limited synthetic start	5.54 (0.24)	5.74 (.67)	62.2 (25.3)	44.1 (25.3)	50.75 (41.93)

#### STATISTICAL COMPARISONS

##### Post-Test Measures, December 1995

Reading on BAS Word Reading Test A one-way ANOVA was carried to examine whether there were differences between the groups on reading age. A main effect of group was found  $F(3,113) = 24.6765$   $p < .000$ , Newman Keuls tests indicated that the intensive synthetic phonics group performed significantly better than all of the groups ( $p < .05$ ) and the limited synthetic phonics group performed better than both the accelerated analytic phonics group and the gradual analytic group, who did not differ from each other ( $p > .05$ ).

Letter sound knowledge A one-way ANOVA was carried out to examine whether there were differences between the groups on letter sound knowledge. A main effect of group was found  $F(3,113) = 29.84$   $p < .000$ . Newman Keuls tests indicated that the intensive synthetic phonics group performed significantly better than all of the groups ( $p < .05$ ) and the limited synthetic phonics group performed

better than both the accelerated analytic phonics group and the gradual analytic group, who did not differ from each other ( $p > .05$ ).

Emergent reading A one-way ANOVA was carried out to examine whether there were differences between the groups on emergent reading. A main effect of group was found  $F(3,113) = 8.31$   $p < .000$ . Newman Keuls tests indicated that the intensive synthetic phonics group and the limited synthetic phonics group did not differ in performance but were significantly better than both the accelerated analytic phonics group and the gradual analytic group, who did not differ ( $p > .05$ ).

Phonemic awareness ANOVA tests were carried out to examine whether there were differences between the groups for phonemic awareness. A main effect of position and interaction of group and position was found,  $F(3,113) = 16.29$   $p < .000$ . Newman Keuls tests on the interaction showed that for initial phoneme position the limited synthetic phonics group performed significantly better than the other 3 groups, the intensive synthetic phonics group and the accelerated analytic phonics group did not differ and performed better than the gradual analytic phonics group ( $p < .05$ ). For middle phoneme position, Newman Keuls tests indicated that the intensive synthetic phonics group and the limited synthetic phonics group did not differ in performance but were significantly better than both the accelerated analytic phonics group and the gradual analytic group who did not differ ( $p > .05$ ). For final phoneme position, Newman Keuls tests indicated that the intensive synthetic phonics group performed significantly better than all of the groups ( $p < .05$ ) and the limited synthetic phonics group performed better than both the accelerated analytic phonics group and the gradual analytic group who did not differ ( $p > .05$ ).

### Post-Test Measures March 1996

Reading on BAS Word Reading Test A one-way ANOVA was carried out to examine whether there were differences between the groups on reading ages. A main effect of group was found  $F(3,111) = 28.1145$ ,  $p < .000$  and Newman Keuls Tests showed that the intensive synthetic phonics group performed significantly better than all of the groups ( $p < .05$ ) and the limited synthetic phonics group performed better than both the accelerated analytic phonics group and the gradual analytic group, who did not differ ( $p > .05$ ).

Letter sound knowledge A one-way ANOVA was carried out to examine whether there were differences between the groups in letter sound knowledge. A main effect of group was found  $F(3,111) = 26.07$   $p < .000$  and Newman Keuls tests showed that the intensive synthetic phonics group performed significantly better than all of the groups ( $p < .05$ ) and the limited synthetic phonics group performed better than both the accelerated analytic phonics group and the gradual analytic group, who did not differ ( $p > .05$ ).

Emergent reading A one-way ANOVA was carried out to examine whether there were differences between the groups on emergent reading. A main effect of group was found  $F(3,111) = 30.63$ ,  $p < .000$  and Newman Keuls tests showed that the intensive synthetic phonics group performed significantly better than all of the groups ( $p < .05$ ) and the limited synthetic phonics group performed better than both the accelerated analytic phonics group and the gradual analytic group, who did not differ ( $p > .05$ ).

Phonemic awareness ANOVA tests were carried out to examine whether there were differences between the groups for phonemic awareness. A main effect of position and interaction of group and position was found,  $F(3,110) = 33.55$   $p < .000$ . Newman Keuls tests on the interaction showed that for initial phoneme

position the limited synthetic phonics group performed significantly better than the other 3 groups, the intensive synthetic phonics group and the accelerated analytic phonics group did not differ, and both groups performed better than the gradual analytic phonics group ( $p < .05$ ). For middle phoneme position, Newman Keuls tests indicated that the intensive synthetic phonics group performed significantly better than the other 3 groups, and that the limited synthetic phonics group and the gradual analytic phonics group did not differ in performance but were significantly better than the accelerated analytic phonics group ( $p < .05$ ). For final phoneme position, Newman Keuls tests indicated that the intensive synthetic phonics group performed significantly better than all of the groups ( $p < .05$ ) and the limited synthetic phonics group performed better than both the accelerated analytic phonics group and the gradual analytic group, who did not differ ( $p > .05$ ). By this stage, Woods Loke children were superior to all the other children at all three positions.

### COMPARISON OF READING COMPREHENSION YEAR 3

#### The long term effects of using different phonics methods in the teaching of reading.

The second focus of this chapter is to examine the long term effects of the different phonics methods on reading comprehension at the end of the third year of schooling. The above Tables have demonstrated the superior performance of the intensive synthetic phonics group for word recognition, emergent reading, letter sound knowledge and phonemic awareness skills, particularly in March after the children had been reading continuous text following upon learning the 40+ sounds. However, the question remains as to whether accelerated, intensive, synthetic phonics teaching with sounding and blending merely enhances word recognition skills or whether it also enhances reading comprehension. It was shown in Chapter 6 that, at the end of Primary 3, the reading comprehension

performance of the children from class 4 of the first study( who were taught by an accelerated, analytic phonics method in parallel with graded reading scheme books, and who were encouraged to apply the blending process when encountering unfamiliar words in the books) was significantly better than that of all the other 11 classes. This superior performance was maintained when chronological age was taken into account.

In this Section, a comparison is made to examine the long term effects of phonics teaching, both synthetic and analytic, where blending practice was an important component in the phonics programme. This is contrasted with an analytic programme that did not feature explicit teaching of blending.

In June 1995, the three classes were matched for chronological age and vocabulary knowledge (English Picture Vocabulary Test, Brimer and Dunnn, 1962). The Primary Reading Test (France, 1981), which assesses reading comprehension through assisted cloze procedure, was used to measure reading. Table 47 shows that at the end of Primary 3, the children taught by the intensive synthetic phonics method at the outset were ahead of the children taught by accelerated analytic phonics with blending practice by 3 months, and were ahead of the children taught by gradual analytic phonics by 9 months.

Table 47 Mean performance of pupils on chronological age (CA) vocabulary knowledge (English Picture Vocabulary Test (EPVT) and reading comprehension ( Primary Reading Test) (RA) at June 1995 (end of Primary 3) standard deviations in brackets.

Phonics method used	CA (years)	EPVT (standard score)	RA (years)
gradual analytic	7.6 (0.3)	106.1 (7.5)	7.5 (1.3)
accelerated analytic with blending practice	7.7 (.27)	105.9 (7.16)	8.1 (1.0)
accelerated intensive synthetic	7.6 (0.1)	104.3 (11.3)	8.3 (0.9)

One-way ANOVA test showed that there were differences between the groups on reading comprehension. A main effect of group was found,  $F(12,247) = 6.97$   $p < .000$ . Newman Keuls tests showed that the children taught at the outset by intensive synthetic phonics performed significantly better than both the children taught by accelerated analytic phonics with blending practice and the children taught by gradual analytic phonics; the children taught by accelerated analytic phonics with blending practice performed significantly better than the children taught by gradual analytic phonics ( $p < .05$ ).

## DISCUSSION

### 1. Comparison of methods of teaching phonics

It has been shown in Chapter 7 that while accelerated teaching of letter sounds in the initial position of words does not, in itself, enhance reading ability, the accelerated teaching of letter sounds in initial, middle and final positions did enhance reading ability. However, it was shown in the present Chapter that the amount of synthetic phonics teaching is also important, as the children who spent one hour a day on a synthetic phonics programme read much better than those children who received half an hour per week. The two synthetic phonics groups also differed in that the extensive group covered the 40+ sounds, whereas the limited synthetic group covered 19 sounds. This supports Fisher et al, 1978 (cited in Adams, 1990, p. 288) that the amount of time spent on phonics per se is a strong predictor of reading achievement. It is suggested that the superior performance of the intensive synthetic phonics group is related to the amount of synthetic phonics teaching carried out as the method establishes both the alphabetic principle and explicit awareness of phonemes (Adams, 1990, Johnston, Anderson and Holligan, 1996). Adams (1990) points out that although

teaching single consonants is fundamental in establishing the alphabetic principle, the teaching of twenty six correspondences is not enough. The sequence of the 40+ sounds described in the intensive synthetic phonics method as they occur in initial, middle and final positions in words is of cardinal importance.

In this Chapter, the intensive synthetic phonics children, spending more time on explicit direct teaching, are not only significantly ahead of the other children in reading, but are also significantly ahead in letter sound knowledge and phonemic awareness skills, scoring near ceiling in both cases. This would appear to support the view that phonemic awareness should not be considered a precondition to be met before successful reading and spelling instruction can begin (Wimmer et al, 1991; Chew, 1997). In fact, Chew (1997) points out the problems of breaking a whole spoken word into its constituent parts, which is more difficult than breaking a whole printed word into its constituent parts. The intensive synthetic phonics teaching described in this chapter supports Chew's view that such phonics teaching "makes each phoneme visible by mapping it to a printed symbol" and that once children have been taught the letters which make "phonemes visible" it becomes easier for them to use print to carry out phonemic analysis (1997, pp176/177). It is further suggested, therefore, that the significant success of the limited synthetic phonics teaching group in the training study could be attributed to the use of magnetic letters for forming words. The procedure for using the magnetic letters would not only contribute to the understanding of the blending process for which it was intended, but would also contribute to the concept of making phonemes visible (Chew, 1997).

Furthermore, while the intensive synthetic phonics method accelerates letter sound learning, it also teaches children to segment and synthesise the letter sounds in printed words by drawing attention to the letters in all of the positions in

words (Johnston and Watson, 1998). It has been pointed out that phonemic awareness and letter knowledge are co-requisites for the development of reading and that training in either on its own will not be effective (Share, 1996). Questions were asked in Chapter 7 whether any one phonics method was more likely to increase phonemic awareness ability and so enhance reading skill and whether teaching children letter sounds in the absence of direct phonemic awareness training enhances reading skill. This study has shown that the use of intensive synthetic phonics teaching, with its emphasis on the blending process, effectively develops both letter knowledge and phonemic awareness concurrently with developing reading ability.

2. Reading Comprehension. The long term effects of using different phonics methods in the teaching of reading.

“Skilled reading seems to take place on two levels. One level has to do with word recognition and the other with the understanding of sentences and paragraphs” (Cronin et al, 1998, p. 1). Research has also shown that one of the most critical factors underlying fluent reading is the ability to recognize letters and spelling patterns and whole words with ease and automaticity upon which the goal of all reading instruction depends, namely comprehension (Adams, 1990). The pace of teaching the intensive synthetic phonics programme includes multi-letter grapheme units, mastering long vowel and silent-e- patterns in one syllable words, mastering reading and spelling of common vowel digraphs in one-syllable words and reading simple two-syllable words. The earlier the phonics programme includes these components the more opportunity children have of advancing beyond the phonetic cue reading stage to cipher reading (Knight, 1997). The superior performance of the intensive synthetic phonics group dramatically increased in March, one term after these children had been reading connected text and applying the skills learned in Term 1. It has been shown that

comprehension seems to rely not only on word level factors but also relating words in sentences (Cronin et al, 1998). In the intensive synthetic phonics method, most of the children can write a page on their own by the end of the first year i.e. about three to five sentences (Lloyd, 1992). Therefore, it is suggested that the systematic intensive synthetic phonics method is more conducive than either limited synthetic phonics or gradual analytic phonics to developing automaticity of word recognition and orthographic processing skills, word knowledge assisting in the development of orthographic processing skills (Ehri, 1994).

Within the same time span, the children taught by the gradual analytic method are still learning initial letter sounds and are probably reading familiar words in print by sight using phonetic cue reading, described in Chapter 1 as the novice alphabetic phase (Ehri, 1995). Unfamiliar words in print are read by guessing, constrained by the initial letter, or by mistaken lexical access misreading as a sight word with the same visual cues, neither phonological or orthographic recoding being possible (Ehri, 1995). Where blending has been encouraged e.g. with Class 4 and with the limited and extensive synthetic phonics groups, children can read familiar words in the mature alphabetic phase, spellings may influence phonemic analysis and word reading appears effortless. Sequential decoding of new words is used for phonological recoding and analogizing to specific words is used for orthographic recoding. Although it seems reasonable to suggest that all of these children are operating at the level of word recognition rather than at the level of understanding sentences and paragraphs, the Class 4 children and the limited and extensive synthetic phonics children are at a more advanced level of word recognition than the gradual analytic children. This could imply that comprehension will vary by such differences at the levels of word recognition (Cronin et al, 1998) as orthographic processing skills are

developing. Thus, although the comprehension skills for the gradual analytic children are age equivalent in Primary 3, comprehension skills for Class 4 children performing at a more advanced level of word recognition, are 5 months ahead of chronological age. Comprehension skills for the extensive synthetic phonics children performing at the level of understanding sentences and paragraphs and using orthographic processing skills, are 9 months ahead of chronological age. These results for comprehension mirror the results for word recognition, supporting the above view that comprehension will vary by differences at word recognition levels (Cronin et al, 1998).

The process of comprehension occurs during the interaction between the text and the reader. Indeed, a number of interactions are involved, the crucial one being that interaction between text and reader which assigns processing capacity (Stanovich, 1984). The children taught by the intensive synthetic phonics method are reading more fluently than any of the other children, therefore somewhat less processing capacity is needed for word reading and this releases processing capacity for comprehension. Conversely, with the children who are performing at much less advanced levels of word recognition, more processing capacity is assigned for this process thus reducing that which would otherwise have been available for comprehension (Stanovich, 1984).

It has been shown that children who learn to read by an approach which includes phonics tuition are better readers and spellers than children who learn by non-phonetic methods, and there is evidence that they have equivalent or even superior comprehension skills (Adams, 1990; Connelly, Johnston and Thompson, 1996). However, Macmillan (1997) points out that without evidence which supports its effectiveness, no practice should be adopted. It is suggested that the results quoted in this study have provided evidence supporting a systematic, intensive, synthetic, phonics method which includes explicit direct teaching of the

blending process as being the most effective phonics method for teaching children letter sounds, increasing phonemic awareness ability and enhancing reading, spelling and comprehension skills. The ability to apply the blending process in tackling unknown words encountered when reading connected text can release the child from the dependency culture promoted by the look-and-say whole word access method (Byrne, 1996). If a child expects the teacher to tell him what each new word says, he has no reason to “hypothesise the alphabetic principle” which is essential to becoming an independent reader (Byrne, 1996, p. 6).

## CONCLUSIONS

The series of studies reported herein has shown that phonics is taught in most schools in Scotland systematically but gradually over a three-year period using a gradual, analytic method.

### 1. Longitudinal observational study

In the first observational study, 11 of the Primary 1 classes (excluding class 4) started the gradual phonics programme in the second half of Term 1 (described in Study 2, Chapter 4). It was found that this led to a slow start in reading, notwithstanding the phonemic awareness programme which was used and which preceded the introduction of phonics. When the children had been in school for 7 months (March of Primary 1) they were reading at a level six months below their chronological age. However, at the beginning of June of Primary 1, just over two months later, a dramatic improvement was found, with the children now reading at a level only one month below their chronological age. At the same time at the beginning of June, the spelling level at which the children were operating was 3 months below their chronological age (Study 3).

This dramatic improvement in word reading coincided with the written exercises given to the children, which involved a left-to-right sequential process with regular CVC words and picture clues. These activities were designed to encourage children to deduce the blending procedure for themselves.

It was also found in the study 2, that the teacher of Class 4 accelerated her analytic phonics programme as an alternative to the pre-phonics phonemic awareness activities. Her phonics programme was started at the beginning of the school session, simultaneously with the graded reading scheme books. Moreover, as the programme progressed, children were encouraged to apply the process of

phonological sequential decoding (i.e. blending) during oral reading rather than to apply a guessing strategy to tackle unknown words.

At the end of March of Primary 1, the class 4 children were reading almost three months above their chronological age. Moreover, as the introduction of the phonics programme had started at the start of the school Session, the written exercises with CVC words used with the other classes were introduced earlier with the class 4 children. As described in Study 2, these activities were designed to achieve the goal of children 'discovering' the blending process through active learning. The class 4 children were thus able to combine the implicit presentation of the blending procedure through the written exercises with the explicit blending taught early on in the reading programme. By the beginning of June of Primary 1, the class 4 pupils were reading and spelling at a level 6 months ahead of their chronological age (Study 3, Chapter 5).

Advocates for the child-centred movement might well argue that in using the CVC workbook exercises, the children are reproducing symbols for sounds to complete words and, without explicit instruction, are discovering and learning the blending process and the alphabetic principle through the development of writing (Frith 1985). However, the spelling error analyses do not support this argument. The children in the eleven classes tended to produce spelling errors in the phonetic (1) and (2) categories, either producing only the initial letter of the spoken word or the initial letter and following vowel, mirroring the implicit instructional methods used. Moreover, these findings occur notwithstanding the early phonemic awareness training already mentioned. The spelling errors for the children in class 4 reflected the explicit instructional methods which included the blending process, with mature spelling errors of the transitional-type predominating. It must also be remembered that the children in class 4 did not receive the early phonemic awareness activities.

This superior performance of the class 4 children for word reading and spelling over the children in the other eleven classes at the end of Primary 1, would appear to support the views of Stuart and Coltheart (1988) and Beech (1987) that is not necessary for children to read via a logographic whole word, rote memorisation, approach at the earliest stage of reading. The use of a lexical whole-word method is not a *natural tendency* but is the result of the teaching method used (Chew, 1997). It has been shown that the superior performance of the Class 4 children appears to provide evidence that the early pre-phonics programme of phonemic awareness training carried out with the children in the other eleven classes did not enhance their reading skills. Research studies have shown that most of the effective phonemic awareness training programmes have included letters in the training (e.g. Bradley and Bryant, 1983; Fox and Routh, 1984. In the Bradley and Bryant (1983) study, it is notable that only the condition where letters were used as part of the programme was effective, sound categorisation training on its own was not effective.

The teachers continued to work through the gradual analytic phonics programme from Primaries 1 - 3. By Term 2 of Primary 3, two years after the first test measures were taken, children in the eleven classes were now reading at a level 4 months above their chronological age and spelling was 2 months below chronological age. The Class 4 pupils were reading at a level 12 months above their chronological age and spelling was 6 months above chronological age. They had worked through the programme at an accelerated pace.

At the end of Primary 3, the children were tested for reading comprehension. The children in the eleven classes were reading at 8 months below their chronological age while the class 4 pupils were reading at 4 months above their chronological age, - a difference of 12 months in favour of the class 4 pupils. Through the period of observation, from Primary 1 to Primary 3, the

spelling performance of Class 4 was ahead of chronological age at all times, whereas the mean spelling age for the eleven classes for the period remained below chronological age, albeit with the difference diminishing gradually (see Fig.8.) It was concluded that this superior performance in word reading, spelling and reading comprehension was due to the fact that the accelerated phonics programme was more explicit than in the other classes and included the children being taught to apply the blending process in the oral reading situation. As the class 4 children did not participate in the preparatory phonemic awareness activities, it is suggested that these could not have contributed to the successful performance of the children.

## 2. Experimental Training Study

An experimental training study was directed to examine the effect on reading and spelling attainment of introducing explicit phonics teaching with sounding and blending. (Study 5. Chapter 7). It was found that the children in the research condition being taught by this method, which included explicit training in the blending process, performed significantly better in word reading and spelling than the children in the other two research conditions. Thus in March of Primary 1, the sounding and blending children were 4 months ahead of the accelerated letter-sounds children and were 5 months ahead of the children learning by the normal gradual analytic programme. At the start of Primary 2, the sounding and blending group were 9 months ahead of each of the other two groups for reading and were 9 months ahead of the normal gradual analytic children and 8 months ahead of the accelerated letter-sounds children for spelling.

It was concluded that teaching letter sounds in initial position, whether at a gradual or an accelerated pace did not in itself enhance reading ability. Explicitly teaching children how to blend letters together to form words led to very significant gains in reading and spelling skills as phonetic cue reading would have

been minimised (Ehri and Wilce, 1985). Moreover, the children's phoneme segmentation skills were enhanced and they were able to understand how spellings systematically correspond to pronunciations. Thus, the children receiving this type of explicit phonics instruction were able to operate as cipher readers (Ehri and Wilce, 1987, Gough and Juel, 1991).

### 3. Comparison study

From the above conclusions of the observation and experimental studies, a comparison study was carried to examine the effects on word reading and reading comprehension when children are taught from the outset by an intensive, synthetic phonics method (described in Chapters 3 and 8). In March of Primary 1, it was shown that children at a school in England were significantly ahead of the children in the experimental training study for word reading. They were ahead of both the gradual analytic taught children and the accelerated letter-sounds children by 17 months and ahead of the sounding and blending children by 12 months.

At the end of Primary 3, children being taught by the intensive, synthetic phonics method in the English school were 10 months ahead of a matched gradual analytic class from the observational study and were 3 months ahead of the class 4 pupils.

It is therefore concluded that young children can read phonologically from the beginning and if a strong emphasis on phonics is used children will use this strategy from the start (Stuart and Coltheart, 1988). It has been shown that explicit synthetic phonics with blending is more conducive than other phonic methods for successfully teaching beginning readers. It directs children to select a sounding and blending strategy to decode unknown words and enables them to recognise letters, spelling patterns and read whole words fluently and automatically.

Stanovich emphasises the importance of early success in reading in his 'Matthew effect' argument, providing evidence that in beginning reading the 'rich get richer while the poor get poorer' (1986). In his interactive compensatory model of the reading process, if there are problems with word recognition, more processing capacity will be allocated for this purpose with a resulting drop in capacity being available for accuracy, automaticity and comprehension, thus perpetuating the 'Matthew effect' (Stanovich, 1984). Stanovich argues for early intervention if cumulative and cyclical failures in learning are to be prevented. Marie Clay (1979) developed a reading recovery programme carried out with individual children who, after one year of initial whole-class teaching in beginning reading, have still not started to read. However, Chapman et al (1998) in an unpublished study which examined the effectiveness of Reading Recovery have shown that the programme does not seem to be effective in meeting its primary goal of raising to average the levels of reading performance of Year 2 children who show early signs of reading difficulty. Prior to entering the Reading Recovery programme, these children showed deficiencies in phonological processing skills. It is therefore suggested that the intensive synthetic phonics method described in this study would identify children who were showing signs of developing reading difficulties after 10 weeks in school. Thereafter, much earlier intervention measures could be taken to prevent any observed initial failure becoming cumulative (Stanovich, 1986).

#### What is the significance of these findings?

The above findings do not appear to support the view that reading develops naturally in a fixed sequence of stages with each child passing through one stage before moving on to the next stage (Marsh et al 1981; Frith, 1985). The findings tend rather to support the view that the instructional method adopted by

the teachers has an influence on how reading is developed (Connelly, 1994). In particular, the findings appear to suggest that the method of phonics instruction can be a powerful vehicle for moving children rapidly through to a cipher reading stage (Ehri and Wilce, 1987; Gough and Juel, 1991). Although the word "systematic" could be attributed to all of the above methods described, the most successful method has been shown to be the systematic intensive synthetic phonics method with explicit teaching of the blending process. It is also proposed that this successful method of phonics instruction overrides both the whole word rote-memory stage (Marsh et al, 1981; Frith, 1985), and Marsh's discrimination net guessing stage. It is suggested these are products of instructional methods, which have only served to perpetuate their existence. Therefore, if the teaching method by-passes these stages in formal schooling, phonetic cue reading might be minimised (Ehri and Wilce, 1985) and as soon as children process all of the letters and sounds in words, as in Ehri's mature alphabetic phase, they will rapidly become cipher readers (1995).

Byrne (1996) argues that the alphabetic principle is unlearnable if the strategy available to the child is the pronunciation of whole written words. Byrne points out that the purpose of reading instruction needs to explicitly change the child's ideas about the function of print e.g. when children come to school they may think that reading consists of reading pictures (Goodman, 1986). Children need to know that the function of print includes alphabetic letters and letter groups representing phonemes and syllables. The findings in this investigation showed that the early period of the gradual analytic phonics method perpetuates the use of picture clues. Byrne also argues that if the child believes that alphabets are logographies and if the child has no strategy for tackling unknown words, the teacher always telling him what it says. "there is no reason why the child need hypothesise the alphabetic principle" (1996, p. 6). The look-and-say

whole word method is perpetuating both a guessing strategy if no teacher is available and a dependency culture if a teacher is available.

Byrne suggests that teaching the sound values of letters can initiate the learning of more than one level of how print represents speech. Furthermore, he suggests that although the children in his study had been trained to be phonemically aware they could not grasp the alphabetic principle until the relations between the critical letters and sounds had been specifically taught (Byrne and Fielding-Barnsley, 1989). Byrne and Fielding-Barnsley show that instructional methods which include directly teaching the alphabetic principle rather than relying on the children discovering it for themselves, will induce the children to select the sounding and blending strategy to decode unknown words (1991, 1993) which is a crucial part of the process of learning to read (Harrison, 1997). In applying his knowledge of the alphabetic principle to decode each unfamiliar word the child is starting to establish an orthographic memory of these words (Share, 1995). The findings of this investigation have shown that the systematic intensive synthetic phonics method trains beginning readers to use their knowledge of the alphabetic principle to decode unknown words thereby progressing to fluent reading through recognising letters, spelling patterns and whole words effortlessly and automatically (Adams, 1990).

The findings reported in this investigation support the claims that reading and spelling skills are closely associated (Adams, 1990). It has also been suggested that spelling may help the development of reading (Ehri, 1989). Ehri and Wilce (1987) found that training in spelling improved the ability of beginning readers to read words. Harrison (1997) quotes a 5-year longitudinal study conducted by Mommers (1987) in Holland, one of the conclusions from which was that it was the ability to spell which predicted decoding speed and ability. The critical connections enabling beginning readers to access specific words in their

lexical memory are those connections linking spellings to pronunciations. The readers' knowledge of letter-sound correspondences together with other orthographic knowledge linking print to speech form the connections which link the letters to the pronunciation of words. The sequence of letters corresponds to the sequence of blended phonemes in the pronunciation, to which the whole spelling is connected (Ehri, 1992). Therefore, a knowledge of grapheme/phoneme relationships and how to segment pronunciations into phonemes is a necessary pre-requisite for spelling. This study has shown that teaching children by a systematic intensive synthetic phonics method which integrates the teaching of spelling and writing, provides the children with such knowledge. From the spelling errors which were analysed, children being taught even by the limited intensive synthetic phonics method, produced more transitional errors than children taught by a gradual analytic phonics method. That is, the explicitly taught synthetic phonics children were demonstrating an awareness that spelling involved both grapheme/phoneme relationships and also orthographic knowledge (Morris and Perney, 1984). Adams (1990) describes how both reading and spelling are contingent upon an orthographic processor, reading being an input route, spelling an output route. Again, this demonstrates the crucial importance of the need for the instructional method to include explicit direct teaching of the alphabetic principle.

As shown in the diagrams in Chapter 1, when spellings are connected to pronunciations, such connections trigger meaning. "The visual-phonological connections that readers have formed for a word make that spelling a visual symbol for its pronunciation. This means in effect that readers "see" the pronunciation when they look at the spelling, and this event creates direct links between the spelling and its meaning" (Ehri, 1992, p. 115). This would appear to provide an explanation as to how readers can look at a spelling and automatically

activate the network of connections thus enabling instant access of the specific word from lexical memory, at the same time circumventing all of the other words contained therein (Perfetti, 1992).

In his discussion on current cognitive theories of spelling and the possible implications for teaching, Seymour suggests a model for a curriculum starting with a strong emphasis on the phonological basis of spelling. He suggests a foundation for forming letters and producing sequential written output, preferably labelling the letters by their sounds (1995). This present study has shown that synthetic phonics teaching incorporates just such a foundation for the development of spelling.

#### Child-centred education and instruction

One of the key tenets of child-centred education is that children will discover for themselves the relationship between letters and letter-sounds (Watt, 1990). Child-centred philosophy as it relates to the development of reading is epitomised in the New Zealand method which has been used for over two decades. While the attention of children is drawn to initial letter names, they are expected to deduce the relationship between letters and letter-sounds for themselves (see Chapter 3). It is noteworthy, therefore, that in the New Zealand Herald of 20<sup>th</sup> December, 1997, concern is expressed that more than 40% of year 2 children had reading problems and older children experiencing difficulty did not know what to do when they came across an unfamiliar word, other than to look at the first letter of the word and make a guess as to what it was. Ryan and Openshaw (1996) describes the current reading curriculum in New Zealand as one which perpetuates the use of guessing and it has been argued that good readers don't guess; poor readers are more likely to guess because they are less able to decode and have no option but to rely on context clues (Nicholson, 1986). A guessing strategy discourages word analysis and learning the alphabetic code

and will be counter-productive in promoting fluency and comprehension (Buckard, 1996). Children using their *acquired* knowledge of the alphabetic code to decode an unknown print word are establishing an orthographic memory for that word. When children can independently use this knowledge they can further their own learning by actively *participating* in the reading process. Share (1995) refers to this as a self-teaching process (1995).

Another key idea of child-centred education is the concept of integration, described in Chapter 2. One example of the explicit synthetic phonics method which has been shown to be effective is that of the Lloyd pre-reading programme (1992) described in Chapter 8. This programme was designed to be multi-sensory, integrating seeing, hearing, feeling and doing, reading, spelling and writing. It could be argued that once children have *acquired* the alphabetic principle through the explicit teaching method used in such an integrated pre-reading programme, they can go on to 'discover' the meaning of what is being read. Processing capacity can be released from the redundant laborious decoding task for children to *participate* in active interaction with text (Stanovich, 1984). As mentioned earlier, "it is a fundamental assumption of child-centred educationists that learning should have *meaning* for the child" (Entwistle, 1970, p. 142). Furthermore, children are able to independently generate real letters in writing to communicate their own meaning to others without teacher support, thus releasing them from any form of dependency culture hitherto being encouraged.

A compromise between the two philosophies of explicit direct teaching and child-centred learning and discovery is offered. An instructional approach, in the form of systematic intensive synthetic phonics described in this study, can be used for the skills *acquisition* element of learning to read. The *application* of the skills enable children to *participate* in the reading process and actively interact with text to 'discover' its meaning constituting the child-centred element. Such

two metaphors for learning, the acquisition metaphor and the participation metaphor, have been identified in a very recent paper by Sfard (1998, p. 11) where she concludes that “an adequate combination of the *acquisition* and *participation metaphors* would bring to the fore the advantages of each of them, while keeping their respective drawbacks at bay”. This could perhaps be changed to read that an adequate combination of synthetic phonics instruction and child-centred discovery “would bring to the fore the advantages of each of them, while keeping their respective drawbacks at bay”.

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APPENDIX 1Studies 3,4,5 and 6The British Abilities Scales Word Reading Test (BAS) (Murray et al. 1977)

Starting at the first word and working from left to right across one line at a time, continue until the child has made 10 successive failures.

the	up	on	go	he
at	jump	you	box	fish
one	cup	van	if	out
said	water	bird	wood	running
window	ship	clock	men	dig
ring	gate	money	thin	light
coat	brick	oil	heel	paper
carpet	skin	knock	switch	sport
building	writing	glove	army	harvest
travel	climb	ladies	calf	leather
believe	idea	chain	lawn	collect
invite	enemy	favour	drab	guest
territory	behaviour	massive	error	beard
groceries	encounter	statue	ceiling	transparent
universal	experience	dough	tentacle	obscure
character	exert	diameter	curiosity	environment
mosquito	nomadic	velocity	lethal	divulge
chaos	emphasise	jeopardy	aborigine	criterion

APPENDIX 2Studies 3,4 and 5Graded Word Spelling Test (B) (Schonell, 1955)

see	cut	mat	in	ran
bag	ten	hat	Dad	bed
leg	dot	pen	yet	hay
good	till	be	with	from
time	call	help	week	pie
boat	mind	sooner	year	dream
sight	mouth	large	might	brought

APPENDIX 3

Studies 3,4 and 5

Graded Word Spelling Test (Schonell, 1955).

List of sentences used for dictating words. Pupils stopped after 8 consecutive words are wrong. Tester dictates the word, says the sentence, then asks the pupil to "write" .... repeating the word.

<u>Word</u>	<u>Sentence</u>	<u>Word</u>
see	I can see out of the window	see
cut	Tom cut his finger	cut
mat	Please wipe your feet on the mat	mat
in	We are in the school	in
ran	I ran home for my tea	ran
bag	Mum has a new shopping bag	bag
ten	We have ten fingers and ten toes	ten
hat	A policeman wears a hat	hat
Dad	Dad is taking us for a picnic	Dad
bed	I like to read in bed	bed
leg	I have a plaster on my leg	leg
dot	We do dot-to-dot pictures	dot
pen	The teacher uses a red pen	pen
yet	We haven't had lunch yet	yet
hay	My pony eats hay	hay
good	Our story was good today	good
till	The money goes in the till	till
be	Tomorrow will be .....	be
with	I go home with my friend	with
from	I had a present from my Gran	from

<u>Word</u>	Sentence	Word
time	The time is .....	time
call	I had a call from my friend	call
help	We should help each other	help
week	There are seven days in a week	week
pie	We had steak pie for lunch	pie
boat	A big boat sailed out to sea	boat
mind	Mind your head on the ceiling	mind
sooner	John came home sooner than Mary	sooner
year	This is our first year in school	year
dream	I had a lovely dream last night	dream
sight	My eye-sight is not very good	sight
mouth	The dentist looks into your mouth	mouth
large	I bought a large ice-cream cone	large
might	I might be getting a new coat	might
brought	The postman brought a letter	brought

APPENDIX 4Studies 5 and 6

Letter knowledge, names and sounds Pupils were shown a sheet of the following 26 letters of the alphabet in lower case print.

Letters appearing on test sheet:

a o e i u

k g q c x

m n b p d

j s t v r

f l y z h w

APPENDIX 5Studies 5 and 6Emergent Reading (Clay, 1975)List of 15 high frequency single words from List A of 3 lists

I

Mother

are

here

me

shouted

am

with

car

children

help

not

too

many

away

APPENDIX 6Studies 5 and 6Phonemic Awareness Test (Yopp Singer, 1988)

Practice items (3) Tell the child "I'm going to say a word and I want you to say all the sounds in the word. First of all, can you say the word 'ride'? Good. Now can you tell me the sounds in 'ride' "? Depending on the answer, say either "Good" or "the sounds are /r/ /i/ /d/". (Long /i/ vowel).

(2) Try another practice word following the same procedure using the word "go".

(3) Try another practice word following the same procedure using the word "man".

Test Saying each of the words in turn from both columns, ask the child "Can you tell me the sounds in ....?"

Column 1

fine  
she  
grew  
zoo  
do  
at  
lay  
me  
by  
three  
no

Column 2

top  
wave  
in  
red  
that  
keep  
job  
ice  
race  
dog  
sat

Note: Each child hears all of the words in each column. Alternate starting column of words i.e. if one child hears column 1 followed by column 2, the next child hears column 2 followed by column 1 and so on.

APPENDIX 7Studies 5 and 6Generating rhyme

List of 12 words read out one at a time For practice, nursery rhymes were discussed to make the rhyming task clear. Two or three practice words were used. Pupils were asked to supply one word which rhymed with each of the 12 words which were pronounced one at a time. (non-word rhymes were accepted as correct).

hop

tall

hen

dog

man

coat

tail

door

tree

jump

tin

nest

APPENDIX 8Study 5Key words used for the 19 letter sounds introduced to the 3 Research groups

Group 1, whole word presentation, no emphasis on letter sounds

Group 2, emphasis on initial letter sounds of alliterative words

Group 3, emphasis on letter sounds in initial, middle and final positions in words.

<u>Session</u>	<u>Key words</u>				
1.	snake	sun	sand	nest	spots
2.	apple	ants	jam	man	hat
3.	tennis	top	tin	cats	nut
4.	ink	ill	hill	sit	lip
5.	pig	puff	pop	spin	cup
6.	net	neck	nip	hand	man
7.	castanets	click	clock	cat	kitten
8.	egg	elf	end	well	hen
9.	hop	hot	help	happy	hill
10.	rag	rip	rabbit	car	drip
11.	meal	mat	mug	swim	bump
12.	drum	dog	wedding	dig	red
13.	gurgle	glug	gold	beg	hug
14.	on	off	lost	octopus	hot
15.	umbrella	under	up	sun	cup
16.	lollipop	lick	melt	lemon	bell
17.	fish	fun	flag	soft	fluff
18.	bat	ball	bib	rabbit	crab
19.	jam	jelly	jug	jumper	jet

APPENDIX 9

Study 5

List of CVC words used in magnetic letters task with Research Group 3 and which were included in letter games for all pupils to be exposed to the same print vocabulary.

<u>Session</u>	<u>Magnetic letters displayed</u>	<u>Distractors</u>	<u>Words to be produced</u>
7	s a t i p n	none	tap pan ant
8	s a t i p n	1	pan pin tap
9	t p n c e h	1	pen hen pin
10	a t c e h n	1	hat cat net
11	c a h e m s n	1	can man hen
12	c e h r a t	1	cat car hat
13	m n a t e d	1	man net ant
14	d o c g t a m	1	dog cot cat
15	c u g p m r o	1	cup mug rug
16	g e p i l n r	2	pig leg pin
17	a c g f i n r	2	can fan car
18	m u c g a p l j	2	cup mug jam
19	b t a i n u d f r	2	bat bin sun

Extra CVC words included in the letter games.

bag, bed, bin, bus, fan, fox, rat, tub, van, web, zip.

APPENDIX 10Study 5

Non-word reading Non-word reading cards are placed face down in front of each child. Child is told that on each card is a word which has been made up. Child is asked to select one card at a time and to read the word aloud. No help is given. Each card is removed when the child has/has not read it and placed on a separate pile.

List of non-words on cardsPronunciation

hig	rhyiming with	big
sul	do.	dull
lom	do.	Tom
fik	do.	lick
ped	do.	bed
dal	do.	pal
ruk	do.	duck
pos		poz
mip	do.	lip
lan	do.	pan
foy	do.	boy
jek	do.	neck, j sounding soft /j/
lar	do.	bar
ged	do.	bed, g sounding hard /g/
kun	do.	bun
dep	do.	rep
gok	do.	lock, g sounding hard /g/
bis		biz
kug	do.	mug
nal	do.	pal

APPENDIX 11

Spelling errors

Spelling errors loosely classified according to Morris and Pemey's classification scheme (1984).

<u>Category</u>	<u>Description</u>
Phonetic (1)	Pupil only produces the initial consonant/vowel of the dictated word:

Expected response	see	cut	mat	in	ran	bag	ten	hat	etc.
Response given	s	c	m	i	r	b	t	h	etc.

Phonetic (2)	Pupil produces the initial consonant and the following vowel/consonant of the dictated word:
--------------	--

Expected response	see	cut	mat	ran	bag	ten	from	dream etc
Response given	se	cu	ma	ra	ba	te	fr	dr

Transitional	Pupil makes attempt to spell the whole word from beginning to end producing an erroneous word or non-word.
--------------	--

Expected response	Example of responses given in transitional-type category
see	sea sey seu sew siy sce sE
cut	kut
mat	mad matt
in	ni
ran	
bag	pag bga bog bab dag
ten	
hat	
dad	dadd dab dag daddy
bed	beb deb bep
leg	lag lec leeg
dot	bot Dot
pen	den ben

(contd. on p.281)

Expected response	Examples of responses given
yet	yit yeet
hay	hae hee haw hag hea hey hai haa hAi haey hei
good	goid goot goed goob gOd gud
till	til tal
be	de bee biy bey
with	wif with whith
from	form
time	tiym tlm tiem tym taym tieem tinme
call	col coal coll cail kaol calle
help	hlep hepl helq hellp heelp
week	wek wec weec wic wiek weeck
pie	pay pi pai pae pY pae pey piy puy paiy
boat	bot bote boet buot bout baot
mind	miynd miend maind mined
sooner	soner soyner soynur suner soonr soinur soonur soonar sooner soneer
year	yeer yeur yeir
dream	dirm drem dreem draem drim
sight	site siyt siht
mouth	
large	larj
might	mite miht myt miyt
brought	brot brout
mistake	mistak mistAk mistyk mistaye mesteak
pair	pear paar pAr pare
while	wile
skate	skat
stayed	stead
yolk	yoke
island	lland
nerve	nerv
join	
fare	fair (contd. on p. 282)

Expected response	Examples of responses given
iron	
health	helth
direct	direkd
calm	cam
headache	