

**INTERCHANGE**

**No 39**

**Methods of Teaching Reading:  
Key issues in research and implications  
for practice**

Research and Intelligence Unit

ISSN 0969-613X

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Edited and produced for The Scottish Office Education and Industry Department by the RIU Dissemination Officer at The Scottish Council for Research in Education, April 1996.

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# Methods of Teaching Reading: Key Issues in Research and Implications for Practice

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## Reading standards and the reading process

**T**he Scottish Office Education and Industry Department commissioned this review of current research in reading in a climate of continuing concern about reading standards and debate about the reading process and methods of teaching reading. I have attempted to be objective, but what one person sees as balanced, another may see as prejudiced. In my view, while it is possible to attempt to be objective, it is not possible to begin from a value-free position, nor to arrive at such a position. My use of the first person is, in part, an acknowledgement of this.

What are the key issues? Clearly that of reading standards is one. However, I share the consensus view of colleagues in the reading research community in the UK and USA, that researchers are not able to make reliable judgements on changes in reading standards over time. Definitions of literacy are neither agreed nor stable, and statistical techniques are not available to provide us with reliable data on reading standards.

Martin Turner's leaking of local authority test data in England and Wales to the press (*The Daily Telegraph*, 30 June 1990) helped to start the current debate on reading and the teaching of reading. He singled out two theorists, Frank Smith and Kenneth Goodman, as particularly responsible for progressive methods and a resulting decline in standards. In some respects, Turner's critical article (1990) may have turned attention away from something much more significant – that Smith's and Goodman's views were already under regular attack. Both Smith and Goodman had much to say about the teaching of reading, but Goodman was the more influential in proposing a distinctive model of the reading process.



## New research into the reading process

Goodman's widely quoted model of reading as a psycholinguistic guessing game (1976) has many critics. Stanovich (1986) and Adams (1990) are amongst the most authoritative and convincing of these. Their criticisms may be summarised as follows: Goodman's model of the reading process is weak on detail, and it leads him to some mistaken conclusions – that good readers depend on context for word recognition, and that they make less use of letter information than poor readers as they read.

## Challenges to Goodman

Current views of the reading process turn Goodman's model on its head. They stress that when it comes to word recognition, it is the good reader who has less need to use context in order to decide upon a word. The poor reader cannot recognise a word straightaway, and needs context to aid word recognition. This takes up valuable processing capacity, which reduces the capacity for comprehension.

Goodman argued that fluent readers are more efficient users of visual cues, and need to use very few of them. However, advances in eye movement technology have shown that fluent readers not only fixate most words (apart from very short ones such as ‘of’, ‘to’, ‘and’, ‘the’) and do so very rapidly, but also appear to process the individual letters in each word, even when the word is highly predictable. Fluent readers *are* more efficient than poor readers, but they do not use less visual information. They sample the text more quickly, and use fewer resources to do so.

### ***The Stanovich model***

Keith Stanovich’s ‘Interactive-Compensatory Model’ of the reading process (1984) is now more widely accepted among reading researchers than Goodman’s model. Stanovich points out that reading involves a number of interactions with the text. One of the most important of these is the reader’s allocation of ‘processing capacity’ to the text. Fluent readers need less processing capacity for word recognition, freeing more capacity for comprehension. If there are problems with word recognition, more resources are allocated to that part of the reading process, at the expense of some of the capacity for comprehension.

Another important term in accounts of learning to read is what Stanovich called the ‘Matthew effect’ (1986). He argued that there was clear evidence of a ‘rich get richer while the poor get poorer’ effect in beginning reading. Children’s initial success in acquiring vocabulary knowledge and reading fluency led to further success, because reading broadens the vocabulary and increases knowledge. On the other hand, those who fail continue to fail.

Current research suggests that fluent readers need rapid word recognition but argues against a return to ‘look and say’ strategies.



*How can methods of teaching reading be adapted to take these ideas into account?*

### ***What is the significance of these challenges to Goodman’s model?***

To many cognitive psychologists, good readers are clearly distinguished from poor readers by more rapid, automatic, context-free and accurate word recognition. How to help readers to achieve this, however, is a complex and challenging issue. Appreciating the importance of rapid word recognition should not lead to a ‘whole-word’ or ‘look and say’ approach to beginning reading. Neither should it lead us away from emphasising the importance of reading for meaning and enjoyment, using the best available resources. Many of the challenges to Goodman’s model arise from his inadequate account of word recognition, yet much of what he has written remains important and valuable.

### ***Implications***

- The following skills are necessary for a child to become a proficient reader:
  - automatic, rapid letter recognition
  - automatic, rapid word recognition
  - the ability to use context as an aid to comprehension

- the ability to use context when necessary as a conscious aid to word recognition.
- Current research does not imply a return to ‘look and say’ approaches, nor a shift away from the importance of reading for meaning and enjoyment.

### **How do fluent readers recognise words?**

The answer to this question is more complicated than used to be thought. Experimental psychologists have abandoned the ‘dual-route’ theory of word recognition. This theory described two routes to word recognition: a whole-word route and a sounding-out route. It was simple and attractive, but wrong. We now know that fluent readers do not process words as ‘wholes’. In normal reading, they process individual letters during each fixation. They make use of knowledge of spelling patterns, word patterns and the constraints of syntax and semantics to produce a phonetic version of the text (though this is usually produced after, rather than before, words have been recognised).

The human brain operates hundreds of parallel processing systems. (Computer models can only begin to approximate to this.) In the brain, these systems make decisions by prediction and gradual confirmation. It is a cumulative process, based on fuzzy logic and statistical thresholds. This is perfectly compatible with much that Kenneth Goodman wrote, and is worth bearing in mind when considering some of the attacks on him over the past fifteen years.

### **What do beginning readers need to know about language?**

There is little disagreement among teachers and researchers that in order to learn to read, a child needs a number of abilities and various types of knowledge. Most importantly, a reader must be able to understand discourse, or speech. The ability to comprehend in one’s mother tongue is much more complex an achievement than is commonly recognised.

Comprehension of speech requires the ability to interpret a semi-continuous stream of phonemes that reach the ear at a rate of up to 1000 per minute. It is necessary to recognise word boundaries, to understand the meaning or referent of the words and to perceive and understand the grammatical relations between the words. The information in the sentence must first be related to a discourse context, then to one’s own world knowledge. By the age of six, most children can do this remarkably well.

To be proficient in all this is a remarkable achievement. A child who is limited in any of these abilities is bound to face extra difficulties in learning to read. In particular, a reader for whom English is a second or third language may have problems at first. Learning to read is a complex challenge, but it is far more difficult for a learner who lacks knowledge in any or all of the following areas:

- the vocabulary and grammar of the language to be read (I refer here to procedural rather than declarative knowledge, ie knowing how to use the language effectively);
- discourse structure (eg narrative structure);

Children need a range of skills and abilities to learn to read.



*How can you ensure that beginning readers have these basic skills?*

- cultural conventions (eg knowing that it is bad manners to steal porridge);
- general knowledge (eg knowing that a straw house will be weaker than a wooden house).

### **Intelligence**

How important is intelligence in learning to read? The general conclusion from a number of studies is that in the early years IQ and reading are only weakly related. If they are weakly related at age six, but more strongly related at age 11, this suggests a most important insight for teachers – that it is not essential to be intelligent in order to learn to read. It may even be that learning to read affects measured intelligence at age 11, although another reason for the increased correlation is that the IQ measures used at age 11 include more of a verbal component.

### **Pre-school activity**

The time spent by parents in pre-school literacy activity with their children seems to be critical. Adams (1990), in her landmark review of research into beginning reading, calculated the time spent by a ‘mainstream’ middle-class parent in such activity, and the time spent by the child watching the literacy-focused television programme *Sesame Street*. She estimated that by the age of six, her son had spent up to 1700 hours having stories read to him and 1000 hours watching *Sesame Street*, and that many children would have had twice the story-telling time given to her son. By contrast, she estimated that in the first year of schooling, her son’s teacher would have provided 360 hours of literacy instruction, less than 18 hours of which would have been individual tuition.

Another important aspect of language development involves encouraging children to tell stories themselves, especially when this is linked with dramatic play. Research showed that dramatic play in the pre-school class was linked with increases in later reading comprehension and appreciation of literature.

### **Implications**

- Children learning to read need:
  - vocabulary knowledge
  - knowledge of the grammar of the language to be read
  - knowledge of discourse structure (eg narrative)
  - knowledge of cultural conventions
  - general knowledge.
- Average or above average intelligence is not necessary in order to learn to read.
- Pre-school literacy activity extends imagination, widens vocabulary, increases knowledge of grammatical and discourse structures, teaches cultural conventions and problem solving.
- Pre-school dramatic play can extend development.

Pre-school literacy activities seem to be critical.



*How might opportunities for such activities be extended?*

## What do beginning readers need to know about print?

### **Letter knowledge**

Since the 1960s, solid research has shown that the ability to recognise and name the letters of the alphabet upon entry to school is the best single predictor of reading achievement at the end of the first year of literacy instruction. However, it also shows that simply teaching children the alphabet does not guarantee that they will rapidly develop literacy skills.

### **Other concepts**

Letter knowledge is only one of a number of print-related concepts which are of value to the beginning reader. Marie Clay's 'Concepts of Print Test', developed as part of her research into beginning reading and reading failure (Clay, 1979), requires the reader to show knowledge of aspects of a printed text such as:

- orientation (being able to place a book the correct way up);
- recognising that print carries the verbal message;
- understanding that print is read from left to right;
- locating the first and last parts of the story;
- recognising that the top line of print is read first;
- understanding that the page number is not part of the story.

### **Environmental print**

Another very important aspect of pre-school print awareness is usually called environmental print. However, Philip Gough and his co-workers have argued compellingly (Gough, Juel and Griffith, 1992) that 'whole-word' recognition in environmental print is based more upon associations between sounds and letters or letter strings than between sounds and visual cues. They argue that, in English, it is inaccurate and misleading to assume that words are ever processed and stored as 'wholes' without attention to letters or letter strings. Rather, they argue that from the start, children learn to associate letters and letter strings with parts of words.

### **Implications**

- Simply teaching the alphabet does not guarantee literacy skills.
- Concepts of print are important, but testing this can predict reading ability only in very young children.
- 'Whole-word' recognition is a misnomer. Words are not recognised as 'wholes'; even 'look and say' responses use alphabetic knowledge (ie are logographic).
- Environmental print is important in early stages of print awareness, but is inadequate for establishing generalised decoding procedures later on.

Letter knowledge and other print-related concepts are valuable to beginning readers.



*How can beginning readers be helped to acquire all these concepts?*

Most children need support and encouragement to learn to read.



*How do you motivate your pupils and help them to progress through the stages of learning to read?*

### How do children learn to read?

For most (though not all) children, learning to read does not occur spontaneously. It occurs after encouragement, support and intervention, much of which comes from the teacher. The stages on the way to autonomy are:

1. *Logographic*: this is an imprecise stage. While the child may be able to recognise the word 'fun', that word knowledge is unanalysed. The learning is alphabetic, in that it involves a recognition of the letters in the word, but at first the child does not grasp the phonological aspect of the alphabetic principle;
2. *Phonologic, or 'phonological awareness'*: this refers to the child's ability to manipulate mentally the sounds that make up words. In this area of reading research, Peter Bryant's work with Lynette Bradley is of great significance (Bryant, Bradley, MacLean and Crossland, 1989). Their substantial evidence pointed to a causal link between awareness of rhyme and later success in reading, Bryant's other studies with Usha Goswami (Goswami and Bryant, 1990), on how children use their phonological awareness to construct analogies, are equally important.
3. *Phonemic*: this is the ability to recognise and manipulate the smallest chunks of sounds that make up words (a subset of stage 2). Children develop some phonological awareness months or years before phonemic awareness.

A vital part of the process of learning to read involves developing the ability to work out and recognise previously unrecognised words. In order to do this, the child needs a number of abilities. Phonological awareness (stages 2 and 3 above) is one of the most important of these abilities. It does not involve print; it is about recognising, segmenting and manipulating sounds. For example, a person needs to have phonological awareness in order to identify which of these words does not rhyme: 'cat', 'bat', 'leg'.

### **Analogical reasoning**

How do children make use of their phonological awareness? After first operating at an alphabetic stage, during which they recognise words using letters or letter groups but not sound-symbol connections, children develop their ability to connect the sounds in part of a word with the letter or letters which go with that sound. They become able to use this knowledge in a new context by analogy. Analogical reasoning is very important in this process. It works initially with two phonological units:

- the first phoneme in a word (often referred to as the 'onset');
- the remainder of the word, the part that rhymes (often referred to as the 'rime').

How the sounds and words are segmented is of critical importance for both learning and pedagogy. Goswami and Bryant argue that at this stage children cannot make full phonemic discriminations throughout a word. However, they

are able to distinguish between onset and rime, and that enables them to make their first analogical decisions. To begin with, children found it easier to draw analogies using information in the latter part of a word (the rime). For example, if they knew how to say 'beak' they could deduce how to pronounce 'weak'. But five-year-olds were not yet able to learn how to make more complex analogies, such as how to say 'bean' if they knew 'beak'.

This led Goswami and Bryant to suggest that early analogies are based on the rime, and are made only when a spelling unit (such as '-eak') corresponds with a speech unit. We can see immediately why sensitivity to rhyme would be valuable to a child who is beginning to decipher print through the use of analogy. If children's first segmentation attempts are based on the rhyming parts of words, it is not surprising that this aspect of phonological awareness is a good predictor of early reading success.

### ***Developing phonological awareness***

Most researchers agree that phonological awareness is not spontaneously acquired by all children. Furthermore, a number of studies suggest that teaching phonological awareness is especially helpful for 'at risk' readers. The approaches which have been used to develop phonological awareness include:

- pre-print: involving the children in a variety of activities and games which include rhyming, poetry, singing, tapping, clapping; segmenting sentences into words and making judgements about words and word length; rhymed stories; placing together objects which begin with the same sound; rhyming speech ('speak in rhyme, all the time'); dancing to syllabic rhythms; speaking like a 'Dalek' (one-syll-a-ble-at-a-time); identification of (but not using the terms) onset, rime, phonemes within a rime.
- print-related: using plastic letters to show how changing one letter in a word can make an analogous word (beginning with a word the child knows).

There seem to be compelling reasons for the first stage of segmentation teaching to use onset-rime divisions. The next teaching stage then involves linking spelling patterns to sounds which the child is able to discriminate. Too much emphasis on letter-phoneme relationships at the earliest stages might be premature and profitless.

### ***Implications***

- In order to work out unrecognised words, children need phonological awareness.
- Developing phonological awareness seems to be related in many children to their familiarity with rhymes.
- Phonological awareness can be taught.
- Learning to recognise unknown words through analogies seems to occur in three stages.

Studies show that language games can help 'at risk' readers.



*Which of the approaches listed do you use with your pupils?  
Are there other similar activities which might be helpful?*

- Teaching children sound-symbol relationships helps to develop rapid, automatic letter and word recognition.

### The reading-writing-spelling connection

One of the tenets of the ‘whole language’ movement is that reading and writing should be taught at the same time. This is also widely accepted in cognitive psychology. Research has supported the view that developments in reading, writing and spelling are closely connected, though, as we shall see, some skills develop in clusters. A major study conducted by Mommers (1987) in Holland supports this point.

Research shows that learning to spell early may give children an advantage in reading development.



*Does your school's policy on teaching spelling need to be changed in the light of this evidence?*

#### **Mommers' study**

Mommers reported that two factors predicted success in reading as measured at the end of the school year. One was an auditory factor, which was essentially phonological awareness. The other, more powerful, predictor was a general factor which Mommers called conceptual knowledge. He concluded that although developing phonological awareness and teaching phonics is important, developing concept formation is also essential for reading progress. Mommers also found that spelling ability predicted later decoding speed (and thus reading ability), rather than the other way round.

The implications of this are profound, suggesting that learning to spell early on gives Dutch children an advantage in later reading development. Indeed, spelling ability after four months of reading instruction was a better predictor of reading ability than was the ability to decode words.

#### **Rego and Bryant**

More recently, Rego and Bryant (1993) came to parallel conclusions in their study of how children learn to spell. They reported a ‘remarkable specificity’ in different areas within reading and spelling: there was a strong predictive relationship between phonological skills and later ability in invented spelling, but a weak relationship between phonological skills and later ability to use context in reading. They argue that both sets of skills play an important part in reading, but that they develop differently. The implication from this is clear: both sets of abilities should be a part of the pedagogy of reading.

#### **Implications**

- Developing conceptual knowledge is important for reading progress.
- Spelling ability is a better predictor of later reading ability than is the ability to recognise words.
- Teaching phonological awareness should include work on segmentation of words as well as rhyming activities.

## The content and organisation of reading instruction

Does the teaching method used determine how rapidly or successfully children learn to read? The results of UK-based research are equivocal. Nearly all the early large-scale studies have been questioned on methodological grounds, and the British tradition of paying little attention to research findings in making curriculum decisions has not encouraged such research. HMI reports on methods of teaching reading in England and Wales have been confident in tone, but based in part upon impressionistic data (personal notes kept within OFSTED) which is not, at the time of writing, available to the rest of the academic community for inspection, and which is not easy to interpret.

### *How to assess achievement?*

Suppose that Inspectors reported an emphasis on ‘real books’ in English and Welsh schools which coincided with low reading attainment in a number of these schools. Could we be sure of causality? It might be not that a ‘real books’ approach was leading to low reading standards, but that poor pre-school reading skills (vocabulary, concepts of print, phonological awareness, etc) were causing the teachers to seek an approach to reading in which failure was minimised, children’s literature was valued, and children were not demoralised by spending nine months on ‘Book One’ of a reading scheme. Unless ‘value added’ research methods were used, the Inspectors would have little evidence on which to base assertions about underachievement in reading. Even if they had such data, there are at least four sources of variation within schools – school, teacher, method and materials – any or all of which could have contributed to the children’s attainment.

One enormously important matter in school effectiveness research, upon which researchers largely agree, is that a child’s background (intelligence, pre-school learning, home circumstances, parents, etc) contributes approximately 85% to what is achieved in school. The other 15% is contributed by schooling. Of this, about 5% is generally held to be a school factor, 7% a teacher factor, and as little as 3% a method factor. In this respect the Bullock report (1975) was perhaps correct: the teacher is more important than the method.

### *Implications*

- It is difficult to assess a school’s reading attainment without ‘value-added’ research designs.
- Underachievement could be attributable to the effect of the school, teacher, methods or materials, in any combination.
- Research suggests that the teacher does affect children’s learning. Work on teachers’ professional development might be as important as improvements in methods or materials.
- Phonics and ‘real books’ are compatible elements of an approach to teaching reading.

The Bullock report suggested that the teacher is more important than the method when it comes to teaching reading.



*Do you agree?*

Several new reading schemes have been launched in the UK.



*Which features of the scheme you use help children learn to read effectively?*

### **Reading schemes**

In a review of the latest US reading schemes, Hoffman (1994) found all five new schemes were very similar. All included:

- opportunities to read connected text, not simply workbooks;
- a 'pluralistic' approach to literature;
- unabridged literature;
- opportunities to develop reading practice;
- integration of reading with speaking, listening and writing;
- systematic development of phonological awareness.

Other new features consisted of greater use of 'real books' as an integral part of the schemes, and multiple rereadings of stories. Strictly controlled vocabulary was much less evident, and while the number of running words in most schemes was reduced, the number of different words was increased. Texts with repeated patterns of rhyme and rhythm were more than doubled.

What has been happening in the US has many parallels in the UK. Seven major reading schemes were due to be launched during 1994-5, and they appear to have much in common. In all these schemes, the teacher's role is crucial. What is potentially enormously valuable in the use of 'big books', for example, is that the teacher and other children in the class can offer a model to a learner of how to read, and indeed how to understand a book. The value of 'big books' is identical to that of DARTs activities in the later years of reading development (Lunzer and Gardner, 1984): both make public, or externalise, the internal processes of reading, which a less fluent reader can observe and learn.

### **Hearing children read**

What does current research say about teachers hearing children read? This practice, though regular and widespread, has been questioned by experts who are uncertain of its benefits. Hazel Francis (1987) suggests that there is a need for clearer understanding of its pedagogical goals. She hints that teachers, in their desire to avoid unpleasant experiences for children, hold back from correcting, and thus from explicit teaching. Others see this as limited and limiting. Francis suggests that the teacher adopt a range of goals for different occasions rather than a single strategy, such as:

- listening with encouragement and occasional prompting or word-supply (the modal procedure);
- focusing on silent reading and inference;
- emphasising accuracy more than fluency.

Teachers are faced with a dilemma. They know that explicit teaching is valuable with (for example) letter-sound relationships; equally, they are aware that children learn only when they are ready, when what is presented is easy to understand and is offered in the right way. Only a small percentage of children learn to read spontaneously. Once they have learned, children can reinforce that learning independently if they are motivated to do so. It seems that a variety of opportunities to learn, regularly presented, is needed. Story times, small-group

Experts question the effectiveness of the way teachers hear children read.



*How might you revise your strategies for hearing reading, based on the goals suggested here?*

reading sessions and periods of individual instruction offer such opportunities, and all of these are important.

### **Implications**

- New reading schemes are likely to emphasise:
  - reading connected text, not simply workbooks
  - a ‘pluralistic’ approach to literature
  - unabridged literature
  - developing reading practice
  - integration of reading with speaking, listening and writing
  - systematic development of phonological awareness.
- Explicit teaching of different text genres, including non-fiction books, is valuable for beginning readers.
- If children learn best through observation and modelling of behaviour, the teacher’s role in using ‘big books’ and organising and guiding small-group instruction is critical.
- Rereading of familiar books is essential to the development of confidence and fluency.

### **The role of parents and other care-givers**

Parents make a vital contribution to children’s literacy development. Once children are in school, however, what is the role of parents, school volunteers and other care-givers in helping children to learn to read?

#### **Toomey**

Toomey (1993) argues that there is little evidence that sending books home and encouraging parental involvement will, of itself, lead to reading improvement. He reported studies which showed that without help and guidance, most parents were much less likely than teachers to praise, to pause (and therefore to encourage guesses or self-correction) or to give clues if children were hesitant. He suggested that resources were needed to ensure that parental support was channelled effectively.

One final point: what applies to parents at home applies equally strongly to volunteer reading helpers in the classroom. Other studies have shown that the helpers needed:

- regular feedback and support from professionals;
- active training through modelling and role play;
- instruction in what the class teacher was attempting to achieve in literacy teaching.

### **Implications**

- Teachers, parents and other care-givers need to know more about when and how to help and to intervene.

Parents may need guidance if they are to help their children with reading.



*How might this guidance be provided?*

- The 'pause-prompt-praise' strategy seems useful in reading support contexts.
- Parents and classroom helpers need training, feedback and support. They need to understand the class teacher's aims in literacy teaching.

It has been suggested that only a formal programme of individualised reading recovery maintained its advantage for pupils after one year.



*How do you react to these findings about reading recovery?*

### Children with reading difficulties

Researchers agree that early intervention is essential to prevent cumulative and cyclical failures in learning. Marie Clay's reading recovery programme is designed to offer this, though as Clay has repeatedly stressed, reading recovery is not a 'method'; it is a programme of individualised instruction, tailored to meet the needs of each child. The programme is expensive: it requires a child to receive half an hour of individual instruction per day for up to 20 weeks, from a teacher who has taken a year-long training course. Naturally, school administrators ask whether, as Clay insists, such expensive training is necessary. Head teachers also wish to know whether this expensively trained teacher could teach a small group, rather than an individual, with equal success.

Pinnell (1994) has suggested answers to these questions. She found that only one programme produced statistically significant effects across all schools and on all post-test measures. This was individualised reading recovery. It was also the only treatment which maintained its advantage one year after the original study had been completed. These results suggest that one-to-one instruction, even when delivered by experienced teachers, is not enough to steer children who are moving towards reading failure back on track.

There are many ways of interpreting the results of this study. Pinnell herself accepts that the year-long training offers teachers an opportunity to observe and reflect on their own practice and that of other skilled teachers in a way which has not previously been available to them. This might well lead to a deepening awareness of, and a more mature reflection on, professional skills and procedures. It could be such awareness, rather than the reading recovery procedures, which produced the effect.

### Implications

- The largest study of reading recovery showed that sustained success in remediation was attainable only with full one-year teacher training and individualised pupil instruction.
- Administrators might consider putting funds into teacher development as well as into extra staffing or additional classroom resources.

### Conclusions

I feel certain that this review will not please all its readers, since, as I indicated at the outset, it will appear uneven or partisan in places. Nevertheless, I recognise that those who formulate policy need information in a form which is more condensed yet more digestible than that in which it originally appeared. I hope that this review, even with its possible faults, serves this purpose.

*The views expressed in this paper are those of the author and do not necessarily reflect those of The Scottish Office Education and Industry Department who funded the study.*



#### Full report

Further details of this review of methods of teaching reading are in the final report — *The Teaching of Reading: What teachers need to know* — which will be published early in 1996 by UKRA, Unit 2, Station Road, Shepreth, Nr Royston, Herts SG8 6PZ. Price £10.00 incl p & p (£8.75 for UKRA members).



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If you have views on *Interchange* and/or wish to find out more about RIU's research programme, contact the Research and Intelligence Unit (RIU), The Scottish Office Education and Industry Department, Room 1-B, Victoria Quay, Edinburgh EH6 6QQ