Research insights into extending reading

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Recent surveys of both primary and secondary education by Her Majesty's Inspectorate have drawn attention to, among other things, the need for a wider view of the teaching of reading. It is no longer felt acceptable to confine the teaching of reading to the lower primary years, and many teachers of older children are becoming aware of their responsibilities in this area. As a comparatively new area of concern, this extension of reading requires a sound conceptual background if it is to be developed adequately in classrooms. One source of such a conceptual background is the information available from the findings of educational research, and it was felt that a review of such findings may be of interest and value to teachers concerned with extending reading. This review will be divided into two areas, which correspond, broadly speaking, to theory and practice. The nature of the skills involved in extending reading will be considered and methods of teaching these skills will be assessed.

The nature of the skills

There appear to be three main skill areas involved in extending reading: using context, comprehension, and locating and using information. Each of these areas will be dealt with separately.

The use of context

The evidence that the use of context plays a large part in fluent reading is now extensive. Experiments have shown that not only does the presence of a context speed up the recognition of words, but that many words can be read without actually being attended to by the reader. One interesting research study of this idea is that carried out by Paul Kolers (1973). He presented French-Canadian bilingual subjects with such texts as the following:

Son cheval, suivi by two hounds, en marchant d'un pas égal, made resound the earth. Drops of ice se collaient a son cloak. A wind strong soufflait. Un côté of the horizon s'éclaircit; et, in the whiteness du crépuscule, he saw des lapins sautillant au edge of their burrows.

The subjects were asked to read the texts out loud. Several interesting phenomena were observed. First, the subjects had no apparent difficulty in reading these texts. The mixture of the two languages did not interfere with their fluency or understanding. Second, they made several types of mistakes. One type was a translation mistake, where the reader would unconsciously translate from one language into the other. This occurred most often with the first word of a new language following a sequence in the old (in the example, readers would often say *suivi de* for *suivi by*), and with the last word of a language sequence before the change to the new language (in the example, *sautillant au edge* would often be read as *sautillant at the edge*). Another type of mistake was in the ordering of the syntax of the text. Some of the phrases, because they are literal translations, have a clumsy order: for example, *made resound the earth* and *A wind strong*.

The subjects would often read them in their more usual form, again apparently unaware that they had made oral reading errors.

These mistakes suggest that the readers were searching for the meaning of what they read rather than simply concentrating on the pronunciation of each successive word. This view is supported by other studies and strongly suggests that the nature of reading is not primarily the recognition of individual words but the prediction of meaning on the basis of limited amounts of information.

Where precisely does this prediction come from? One source is clearly the semantic message the reader gets from the text. It has been suggested that the fluent reader is, in fact, responding to the deep meaning structure of a sentence rather than its surface manifestation as words, and that this surface manifestation is used only to check the accuracy of the perception of deep structure (Smith, 1978). Another powerful source for predictions in reading is clearly the syntax of the sentences being read. It has been shown by Clay (1972) that even quite young readers can recognize mistakes in their oral reading when they cause a mismatch in the grammar of the sentence.

On the basis of this kind of evidence it begins to be apparent that reading is not primarily about the recognition of individual words but rather to do with the recognition and anticipation of meaning. Goodman's (1967) view of the reading process as a psycholinguistic guessing game is substantially supported by research evidence.

There is evidence by Weber (1970), however, to suggest that the use of context in this sense, while it is a skill which all readers possess through virtue of their basic language ability, is also a skill whose application varies with age, motivation and reading ability. Hence it may well be that it is a skill which can be improved by teaching. To fit with the evidence, the materials used to teach context skills would have to be such that they allowed children to make use of the full range of developing linguistic skills already at their disposal at any given time; that is, the children would have to be able to recognize the patterns of language used in them. This does not necessarily mean that all reading teaching has to be based upon children's spoken language but that consideration must be given to making the language structures as natural as possible.

Developing the ability to use context, therefore, would appear to be of vital importance in the extension of reading, and a growth point in the child's mastery of the process, towards which specific teaching needs to be directed.

The nature of comprehension

One area of controversy about the nature of comprehension has been whether it should be regarded as a collection of separate skills or as a single unitary skill. This has tended to become a debate on the validity of various statistical techniques and much of the literature on it is simply concerned with the application of various statistical tests to sets of data. The abstruseness of the debate is unfortunate because the outcome is of vital importance to teachers. If one believes that comprehension consists of a set of separate skills then one's teaching programme may well consist of activities aimed at developing specific skills, such as reading for details, reading for the main ideas, reading to evaluate, and so on. If, on the other hand, one believes that

comprehension is of a more general nature, then the activities one uses will be more general, although it is clearly possible to teach specific skills through general activities, and may in fact be preferable in terms of motivation and skill transfer. The latest evidence on this has come from the Schools Council Effective Use of Reading project (Lunzer & Gardner, 1979). Looking at the design of this research will enable us to extract several general points of interest.

Basically, the project team took a passage of text and formulated questions about it to cover all the skills which they felt comprehension may include. They then gave this as a test to large numbers of children and marked the children's answers on each set of questions. They claimed there was no evidence, from their results, that it was possible to distinguish between the various skills they had hypothesized. In other words, it looked as though there was a single general skill operating rather than several discrete ones.

What they are saying, in fact, is that children who come out best in the questions involving, say, literal comprehension, will also come out best in questions requiring inferences, or questions of vocabulary, or questions requiring evaluation, and similarly children who do poorly in one section will generally do poorly in others. Having obtained evidence that this is generally so in their sample of children, this is interpreted as meaning that the superiority of these children is due to their superior mastery of a unitary skill of comprehension. This skill is defined as the ability and willingness to reflect upon what is read.

However, it would seem that there are some flaws in this research design. First is the elementary point that the research team have asked a whole range of questions about the same passage. It is probably inevitable that thinking about the answer to one set of questions on a passage will influence a child's responses to another set of questions on the same passage. There is thus an artificial mixing of skills before the results are analysed. This problem has been avoided in other studies which have used separate passages to test separate skills. This approach leads to a battery of short passages each with its set of questions. This is rejected by the Schools Council project team on the grounds that short passages do not represent a realistic reading task. This is, of course, true, but in providing full story-length passages, they seem to have fallen into the other trap of allowing skill interference. The ideal compromise here would seem to be to test each set of skills using a separate long passage. However, this would clearly make the testing a prohibitively long affair. It would be possible, nevertheless, to use a greater variety of testing material, especially 'functional' material such as timetables, forms, bills and signs. The skills necessary to comprehend these materials may be different from those necessary for the comprehension of narrative materials.

This brings us to the second flaw in this research which is common to most research studies in this area. What the researchers have done is hypothesize the existence of certain skills which they have then tried to test. Their results, then, relate only to the skills they initially hypothesized. These need not be the skills which children actually use; the latter may be quite different (McBride, 1975). Comprehension may be a great deal wider than any researchers have so far hypothesized and may vary depending on the material being read. There is, as yet, no way of knowing.

The third, and perhaps most basic, flaw in this research lies in the inference made that a high correlation between scores on the various sections of the test necessarily indicates that the skills are indistinguishable. A similar argument could be made with regard to tests in mathematics and English. It is a fact that pupils who score highly in mathematics tests also generally score highly in English tests, and similarly with low scorers. But one cannot argue from this that there are no separate skills involved in mathematics and English. The skills may be interrelated in the sense that they correlate highly with a general ability factor, but they are still distinct skills. This may well be the case with the skills of comprehension. Again, there is as yet no way of knowing, and there is no definitive evidence concerning the nature of reading comprehension. Until more definitive evidence is available, the teacher can do no more than adopt a compromise position in his or her teaching. One such position may be to teach through general reading activities, for example group discussion activities, but to be alert to children's progress in specific skills and teach these directly if the situation seems to warrant it.

Information skills

The area of study skills, including the use of the library, has perhaps been the least fully researched area in the teaching of reading. What has tended to be assumed is that the skills of locating and using information will develop naturally upon mastery of the mechanics of reading. The fallacy of this assumption has been demonstrated by several researchers (e.g., Perry, 1959; Burgess, 1964). It has been shown that students at all levels of education, irrespective of ability, generally have a poor command of the skills of finding and using information. There is little correlation between the mastery of basic reading skills and the ability to apply them effectively.

These findings suggest that there is a need for systematic teaching in primary and secondary schools of information skills. The limited research available (Sayer, 1979) relating to teaching in schools confirms this lack of systematic teaching.

Guidelines for the way in which this teaching should proceed are not, at present, based upon research findings, since there have been very few evaluations of actual teaching programmes. At the moment guidance is largely confined to armchair analyses of the skills involved. The first requirement is a systematic formulation of the skills necessary for efficient handling of information. One such formulation, admittedly still 'armchair', follows. It is based upon work done by a British Library project on information skills in secondary schools (Winkworth, 1977). The formulation divides the information process into six stages, and specifies the skills necessary to complete each stage successfully.

Stages in the information process

Stage I. Define subject.
Identify purpose for acquiring information.
Use encyclopaedias to obtain general survey of subject
- alphabetical order;
- volume letters;
- cross references, etc,

Stage 2. Locate information.
(a) In library.
Use catalogue, subject index, etc. to locate material on specific or general headings decided upon.
Locate material on shelves.
(b) In materials.
In books use title and preface as guide to contents, and contents and index to locate topics.
In non-book materials use appropriate skills to locate material.
Use reference tools efficiently, e.g. encyclopaedias, dictionaries, atlases, timetables, telephone directories, etc.
Use periodicals, magazines, newspapers efficiently.
(c) Outside school.
Use communication skills in surveys, interviews, questionnaires.
Gather information from field trips.

Stage 3. Select information.
Identify purpose for acquiring information.
Formulate questions requiring information to be answered.
Skim to see if materials contain answers to questions.
Restudy and select relevant information.

Stage 4. Organize information.
Take notes, grouped under headings derived from formulated questions.
Note down sources of information - compile bibliography.
Define uncommon words - use dictionary.

Stage 5. Evaluate information.
Evaluate accuracy and authority of source - check date of publication and author‘s status.
Understand what information means.
Distinguish between:
fact and opinion,
fact and fiction,
relevant and irrelevant,
essential and non-essential.
Compare information drawn from more than one source.
Relate information to what is already known.
Draw inferences, make generalizations, conceptualize.
Reach tentative conclusions.

Stage 6. Communicate results.
Organize information under main headings, determine sequence.
Make outline.
Decide on format of report - attend to style and vocabulary.
Write report.
Proof-read and revise.

Stage 1 highlights the need for children to have a precise idea of what information they wish to find. Too often children approach this with only a vague idea of what they wish to find out: for example, 'I want to find out about dinosaurs.' This vagueness has two consequences. First, the child has no way of judging the relevance of information that he or she does find to what is really wanted. In this case, presumably any information about dinosaurs is of equal value. Second, the child has no way of knowing when the information-finding process can stop. Logically, everything there is to find out about dinosaurs would have to be found.

Stage 2 lists the skills of actually finding the information required, in a library, a book, or, a point often neglected, from outside sources. It has been claimed (DES, 1975) that these skills are fairly easy to teach as long as they are taught in a practical manner, that is, as tools for solving real problems. The tendency, according to Lunzer and Gardner (1979), seems to be that children know how to use a library, a book, etc. but, when put to the test, do not actually use these skills. There appears to be a large gap between what pupils can do, and what they do do. One way of bridging this gap may be to teach these skills in a practical way so that pupils can see their usefulness in making their work more efficient.

Stage 3 describes the skills involved in lifting the information off the page in a meaningful fashion once it has been located. It often happens at this point that the pupils copy out chunks of text without really understanding much of what they are doing. There seem to be two main reasons for this. One is that the pupils may lack sufficient command of the skills of comprehension to extract information from the text. A second is again that they may have no real notion of what they wish to find out from the text. This can be overcome if they are encouraged to formulate specific questions beforehand. They are unlikely to find answers to these questions neatly encapsulated in a few words, and so they are forced to process what they read at a deeper level. It is at this point in pupils' reading that the skills of skimming a text to gain a general impression, and scanning to glean specific points, are useful, and it is at this point that they can be taught, since the skills are of practical benefit.

Stages 4, 5 and 6 deal with what the pupils do with the information once they have found it and read it. One important step is to encourage them to use an organized approach to their sources of information. The compilation of bibliographies may, as well as enabling pupils to re-check information at a later date, also encourage the use of a wider range of sources. How often do pupils expect to find all the information they need from just one book? Searching through a variety of sources will give them a wider perspective on their study area, and may also confront them with conflicting information. This is where the ability to assess the information they find is valuable. They should be able to use various criteria to judge the truth, relevance and worthwhileness of information. Questions pupils may ask include the following:

- Is this information up to date?
- Is the author a person I can respect and believe?
- Is the information relevant to my purpose?
- Can I believe it?
- How does it compare with other information I have acquired, from whatever source?
- What conclusions can I draw from the full range of information I have available?

From here the pupils need to decide on some way of presenting their results. This will depend on the initial purposes of their inquiry, the nature of the information they locate, and the nature of their potential audience.

Having established the skills to be developed in the use of information, the next stage is to establish general principles for the teaching of these skills. The following five principles seem to command general acceptance in the literature (Reed, 1974):
1. Skills are best learned when they are needed by children for solving their problems.
2. They are best acquired through practical methods, rather than through merely being explained.
3. Instruction should be gradual, sequential, and cumulative.
4. Once a skill has been taught, children should put it to use to solve practical problems.
5. Skills should be taught by the teacher rather than by a librarian or English specialist, since only the teacher knows what is needed in his/her curriculum.

If these principles are adhered to in teaching they may well lead to a marked improvement in standards of information handling.

Methods of teaching

Clearly, in a short article, research investigation into all the many possible teaching methods cannot be adequately described. Only three teaching methods will be dealt with here, and these are chosen on the grounds of the interest which has been shown in them by teachers, although this interest has not always, as yet, been matched by research investigation. The three methods are reading laboratories, group discussion activities, and project work.

Reading laboratories

The most important single piece of research on the use of reading laboratories is again reported by the Schools Council's Effective Use of Reading project. The researcher tested classes of fourth-year juniors, and first- and fourth-year secondary school children before a term's experience with SRA reading laboratories, again immediately afterwards, and again six months later. He compared these results with those of children who had not used the SRA material. The findings seem unequivocal. The children using SRA made gains in many aspects of reading, and these gains did not decrease with time but were actually built upon and increased. Children using the SRA reading laboratories had clearly benefited both in the short and long term.

However, it is necessary to look fairly critically at this research to establish whether it really proves what it claims to prove. It cannot be disputed that the SRA laboratories had an effect on the reading of the pupils working with them, but what can be questioned is the use of the control groups, who did not make equivalent progress. These control groups are described as pursuing their normal curriculum programme. Now the evidence from the rest of the project suggests that the normal curriculum programme in secondary schools often involves very little attention to the teaching of reading. Reading is used but is rarely actually taught. In fact, this research is comparing the progress of groups of children who have received systematic teaching of reading with the progress of groups who have not. It is surely possible that it was simply the fact that direct teaching of reading was involved that led to the SRA group's superior progress. This does

not prove the effectiveness of SRA compared with other methods of teaching reading but simply effectiveness compared with no teaching. The case for SRA laboratories must therefore remain not proven.

Research evidence on the effectiveness of other types of reading laboratories or workshops is very difficult to find. Ward Lock workshops have received some slight attention, none of it particularly favourable.

In general, it would appear that these structured programmes do produce some results, but these are probably no better than could be produced by an enthusiastic teacher's own structured programme. Whether their use may actually delay the teacher's growth of knowledge and expertise in teaching reading, by offering an over simple solution, is a moot point.

Group discussion activities

Of the range of group discussion activities cloze procedure is the only one to have received much research attention. Several attempts have been made to evaluate its usefulness as a teaching rather than testing device. So far, the evidence has been inconclusive.

However, relatively few studies have actually looked at the use of cloze as a group discussion technique. They have tended to investigate its use as an individual exercise, which is surely not where its main value lies. Studies have also tended to look at the effects of cloze over quite short periods, commonly six to eight weeks. This again seems quite inadequate. Interestingly enough, recent research on cloze procedure (Reay, 1979) has begun to suggest that when cloze is used as a means of promoting discussion it can have beneficial effects on children's ability and willingness to think about their reading. To this end it seems preferable to prepare cloze passages by deliberately deleting words which will provoke discussion than by deleting on a numerical basis. A large proportion of numerical deletions tend to give such words as *the, and, but*. It has been shown by Rye (1979) that the length of time spent discussing deletions is increased if words are deleted on a grammatical rather than a numerical basis.

Other group discussion activities have received less research attention. An interesting study by Clarke (1977) has looked at the use of group sequencing as a teaching device in the subject of chemistry. It was found to assist pupils' understanding and increase their recall of an experiment when they were given its instructions in a jumbled order, thus requiring them to perform a group sequencing exercise before they were able to carry out the experiment.

Although group discussion activities are not as yet fully supported by research evidence, they would seem to be a very promising area of development. Neither of those discussed is, of course, a total solution to reading extension, but when employed in conjunction they can provide a very useful basis for developing reading/thinking skills, since they give structured contexts for discussion of individual interpretations of text. The group approach to reading seems more likely than reading laboratories to foster the depth of reflective reading many teachers would aim for.

Project work

The final area to be considered is the use of project work as a means of developing reading. On the face of it, project work ought to be an ideal means of developing skills in various areas, especially skills of locating and using information. Unfortunately, the evidence available (Maxwell, 1977) would indicate that what in fact happens in a large percentage of project work is no more than the aimless copying by children of large chunks of text.

One way of avoiding this would seem to be to work with children before they embark on a project in order to get them to formulate the specific areas in which they are interested, preferably in the form of specific questions to which they have to find the answers. If the questions they commence with take into account what they already know about the subject, the readership for which they intend to write, and the format their final report will have, this will give them a far more systematic basis for a project than will a vague 'Let's find out about . . .' Certainly research (Frase, 1977) has shown that the formulation of specific questions before reading a text can lead to a greater understanding, and increase recall of ideas relevant to these questions. This clearly works by focusing the reader's attention on to items which are of particular use to him or her. The reader can fit the information given in the text into a structure whose outline is already borne in mind; the reading is not then done in a vacuum.

It is this theory of information processing which accounts for the success of study strategies such as SQ3R, each stage of which, according to Tadlock (1972), has a sound research basis.

Project work would benefit, then, from time spent before the information-finding stage is reached, discussing the area to be looked at and specifying questions to be focused upon. It would also benefit from being regarded as a skills-practice activity. Various reports (e.g., Maxwell, 1977) have commented that project work is generally a fairly unsupervised and unstructured area of the curriculum. The 'skills and frills' division seems to put projects firmly into the frills part of the school day. This is a pity because project work has a lot more to offer than simply motivated time-filling. There is no reason why this motivation, which undoubtedly is one of project work's strongest assets, should not be more profitably used as a means of demonstrating to children the practical use of the reading skills they are acquiring.

Conclusion

This review of research into extending reading has inevitably been very selective, particularly with regard to teaching methods. In fact, however, there is a dearth of research on teaching methods really useful to teachers. This review will conclude by suggesting a possible explanation for this, and also a means of overcoming it.

There seems to be a feeling among teachers that research is somehow something separate from their everyday professional practices. The present organization of educational research is perhaps conducive to this feeling. Research tends to take place in special institutions and to be run by special people, and its findings tend to be reported by special means and in special language. This often means that the issues investigated by research are those defined by researchers and not

necessarily those of direct relevance to teachers. It is indeed only in very recent years that researchers have begun to examine in detail what actually goes on in classrooms.

Research studies of practical help to teachers would include, without doubt, detailed descriptions and evaluations of particular teaching programmes. These kinds of studies would, if reported in a readily accessible form, provide teachers with a real basis for comparison and development of their own teaching methods. The people best equipped to carry out these studies are, surely, teachers themselves. There is no reason at all why teachers should not report on programmes they have initiated and evaluated, if this is done in a systematic manner. The notion of the teacher as researcher is gaining currency nowadays, and fortunately there are agencies which will assist teachers in this process. (For teachers in the North West, for example, the Centre for Educational Research and Development at Lancaster University is always willing to offer advice and practical help to school-based research projects.)

It is becoming increasingly incumbent upon teachers, as professionals, to consider seriously the strengths and weaknesses of their own teaching practices in a systematic fashion, and the logical next step would seem to be for these evaluations to be reported in an appropriate manner, enabling fellow professionals to take into account the experience of others. This should have the twin effects of making research more relevant and appropriate to the needs of teachers and of allowing the progressive accumulation of a fund of knowledge and expertise. The extension of reading is only one area in which this would pay enormous dividends.

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