

Making reading for information more accessible to children with learning difficulties

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Maureen Lewis and her colleagues at Exeter report on a 2-year research project into the processes of children's interactions with texts, particularly non-fiction texts. Using case studies, they look at the problems children with learning difficulty face and the alternatives to passive copying. Some research strategies are proposed based on the activation of prior knowledge. The authors conclude that these are best deployed within the framework of regular class activity rather than in decontextualised situations.

The following scene might have occurred in many classrooms.

The learning support teacher arrives to find that Zoe, along with the rest of the class, has been asked to 'find out about whales and dolphins'. The child is working diligently. The outcome of her 'research' is the writing given in figure 1.

She cannot read this work back to her support teacher and has only the vaguest understanding of what she has written. Of course, we all recognise what has happened. Zoe has copied, word for word, from a book. Why is this? Our earlier research (Wray and Lewis 1992) has suggested that most children are aware that they should not copy directly from books. Many can give sound educational reasons for not doing this (such as 'you learn more if you put it in your own words'), and yet they continue to do so. There appear to be several reasons underlying this but figuring largely amongst them must be the nature of the task the child has been

given to do and the type of text with which s/he is asked to engage when reading for information.

The purpose for 'finding out' may not be clear to the child and how to begin to 'find out' may seem difficult and daunting. Having located a book on the required topic, the child might still find the text difficult to deal with. Children in primary classrooms tend to lack experience of the different genres of non-fiction and their organisational structures (Littlefair 1991, Winograd and Bridge 1986). They find the linguistic features (vocabulary, connectives, cohesion, register) more difficult to comprehend than those of the more familiar narrative texts (Anderson and Armbruster 1981, Chapman 1983, Halliday and Hasan 1976, Littlefair 1991, Perera 1984) and this textual inexperience affects their writing of non-fiction as well as their reading. In the case of Zoe, the problem was further compounded by the child's

Into The Blue
Of the many old species of oceanic Dolphins none makes a more striking entrance than *Stenella attenuata* the spotted dolphin. Under water spotted dolphins first appear as white dots against the blue. The black beaks of the adults are white-tipped and that distinctive blaze viewed head-on makes a perfect circle. When the vanguard of school is "echolocating" or on you-examining you sonically - the beaks all swing your way and each circular blaze reflects light before any of the rest of the animal do so. you see spots before your eyes.

Figure 1

poor literacy skills (relative to her age). Her diligent copying was the only strategy she had for coping with the demands of the task.

The Exeter Extending Literacy (EXEL) in the Junior School Project is a 2-year research project based at the University of Exeter School of Education and funded by the Nuffield Foundation. In the course of the project we have been working with groups of teachers throughout the country to develop a model to describe the process of children's interactions with texts, especially non-fiction texts. We call this model the EXIT model – *EXtending Interactions with Text*. Alongside this model, and integral to it, we have been developing classroom strategies with which teachers might help their pupils to become more skilful researchers. Although our work has been largely focused on 'average' children, several of the teachers who have worked with us are individual learning support teachers or teachers with responsibility for special needs in their schools. These teachers have reported that they have found the process model and its linked strategies very useful for their pupils. The complete model has ten stages, ranging from the activation of children's prior knowledge about a topic they are to research, to their final presentation of what they have found, in whatever format. However, it is on just two of those stages, which suggest ways of helping children with learning difficulties get *started* on research, that we now wish to report. These stages help make the reading task children are faced with more accessible by providing a logical scaffold that children can apply for themselves.

Moving children on

Zoe's support teacher has been working with the EXEL project and she decided to introduce Zoe to a different way of approaching her task. At the end of their hour together Zoe had produced a different piece of writing about dolphins and whales (see figure 2).

Let us examine how this support teacher moved Zoe on from passive copying to undertaking her own research. The first step was to close Zoe's library book. Zoe was then taken through two of the stages in the EXIT model and taught strategies to help her use these stages before

How they live
 Dolphins live in families and often there is about 7 in a family. There would be about 3 females in one family but only one female.
 1 Dolphin live for about 25 years
 But ~~with~~ Pilot whales can live for 50 years. Killer whales have been known to live longer.

Figure 2

she returned to looking for information in books. These stages, with their linked teaching strategies, are given in figure 3.

Activating prior knowledge ('What do I know?')

There is now a great deal of research which indicates the importance of children's prior knowledge in their understanding of new knowledge (for example, Anderson 1977, Anderson and Pearson 1984). Furthermore, it appears to be important that this prior knowledge be brought to the forefront of the learner's mind – that is, made explicit – if it is to be useful (Bransford 1983). Schema theory suggests that our brains are not a random ragbag of knowledge but that knowledge is structured and categorised into schema, organised cognitive 'maps' of the parts of the world we know about. The concepts that constitute a schema can be said to 'provide slots that can be instantiated with specific information' (Wilson and Anderson 1986). When we encounter new knowledge we incorporate it into our existing schema either by accretion (adding detail to the map) or restructuring (altering the map to fit the new information). If we have already activated our prior knowledge (schema) we are more ready to deal with new knowledge.

Many teachers already use discussion to activate prior knowledge but research has shown that this can be an ineffective way of enhancing comprehension unless it is undertaken carefully (Alvermann, Dillon and O'Brien 1987). If prior knowledge is to be made explicit, it may be helpful to record it in some way. This has the added

Figure 3: Helping children get started on research

Process stage	Question	Teaching strategies
1. Elicitation of previous knowledge	What do I already know about this topic?	Brainstorming; concept mapping; Know, Want, Learn (KWL) grids
2. Establishing purposes	What do I need to find out and what will I do with the information?	Question-setting; KWL grids; Question, Answer, Debit, Source (QUADS) grids

advantage of giving the teacher some record of the child's knowledge and, importantly, access to gaps in that knowledge and any misconceptions the child may hold.

Much interest has been apparent in recent years in the use of brainstorming, semantic mapping (Johnson, Pittelman and Heimlich 1986) and concept mapping (Champagne and Klopfer 1991) and these are all strategies we have used successfully within the EXEL project. They are, however, already familiar to many teachers (although they may be known by different names; concept maps are, for example, often referred to as topic webs). We wish therefore to concentrate here on another strategy that we have found specially useful with children with learning difficulties, that of Know, Want, Learn (KWL) grids.

The KWL grid was developed as a teaching strategy in the USA (Ogle 1986, 1989) and is a simple but effective strategy which both takes children through the steps of the research process and also records their learning. It gives children a logical structure for tackling research tasks in many areas of the curriculum, and it is this combination of a simple but logical support scaffolding that seems to be so useful to children with learning difficulties. A KWL grid consists of three columns as shown in figure 4.

Zoe's support teacher introduced her to the strategy by drawing a KWL as three columns in Zoe's jotter. She then asked Zoe what she already knew about whales and dolphins, and acted as a scribe to record Zoe's responses. What Zoe knew can be seen in the 'K' column of figure 5. In the introductory stages of teaching the

strategy, as for most new strategies and skills, teacher modelling is very important. Only when the child is thoroughly familiar with the strategy should s/he be encouraged to attempt it independently.

Not only did the activation of prior knowledge have a vital role to play in helping Zoe comprehend the texts she was to read, but it also gave her an active role in the topic right from the beginning. By being asked what she knew, her self-esteem and sense of 'ownership' of knowledge was enhanced and she was not faced instantly with the (for her) negative experience of tackling a text without knowing quite how she was to make sense of it. This activity prior to reading is not text avoidance but text preparation. As one teacher put it, the whole of our process model can be described as 'before the eyes meet the page, when the eyes are on the page and after the eyes leave the page'. Each of these plays a vital part in the process of understanding text.

The discussion between Zoe and her teacher was crucial at this stage and the activation of prior knowledge should always be an active social process. Sometimes we do not actually know what we know until it is triggered for us by discussion. This discussion could, of course, also take place in partnership with another child or in groups with other children rather than with a teacher.

Establishing purposes ('What do I want to know?')

The next stage helps focus the subsequent research. The usual formulation of the task, as in 'find out about', is far too broad to be useful and can be interpreted as requiring enough information to fill a postcard or to fill

Figure 4

What I Know	What I Want to Know	What I've Learnt
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Figure 5

<u>What I Know</u> clever / smart favourite food - squid related to whale live in the sea hunted by fishermen beautiful	<u>What I want to find out</u> how they live - p18 where they live why do people hunt them
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a book. Discussing and recording what she already knew was enough to generate further questions for Zoe – questions which she would be interested in researching. These were again scribed by the teacher (see figure 5). It is tempting here to talk about giving the child some ownership of the work she is to undertake.

In this case Zoe easily generated her own questions but there are also various question-setting strategies that can be introduced:

- Turning 'What I know' statements into questions; for example, 'Whales are hunted by fishermen' can become 'Why are whales hunted by fishermen?'
- Using question words such as *what, where, when, why, who, and how*.
- Using various graphic forms such as question trees, question hands and question wheels to add child appeal, with questions on each branch, finger and spoke.
- Using pictures or artefacts to trigger questions.
- Using Question, Answer, Detail, Source (QUADS) grids.

It may be necessary for the teacher to set questions at this stage. If, for example, there was incorrect information in the 'What I Know' column then the teacher

would wish to direct a question to lead to further investigation in that area. There may be content details dictated by the National Curriculum that the teacher regards as vital to include and these could form the focus of questions. There is the opportunity at this stage for the teacher to intervene as little or as much as their professional judgement deems appropriate.

On this occasion Zoe and her teacher decided to concentrate on just one question (they had only an hour together) and she was encouraged to brainstorm around her 'How do they live?' question. Again her teacher scribed and the resultant concept map can be seen in figure 6.

The sub-questions generated by this procedure were numbered to keep the process clear and manageable and at this point Zoe was ready to return to her library books to try to find the answers to her questions. Now Zoe also had key words which she could use to search the index and contents list. Sometimes her teacher wrote the word on a piece of card for her so that she could run it down the index or page and match the word. This gave her practice in scanning. We can see from the writing she had completed by the end of the session (figure 2) that she was working her way logically through the questions (she had completed 1 and 2) and not only

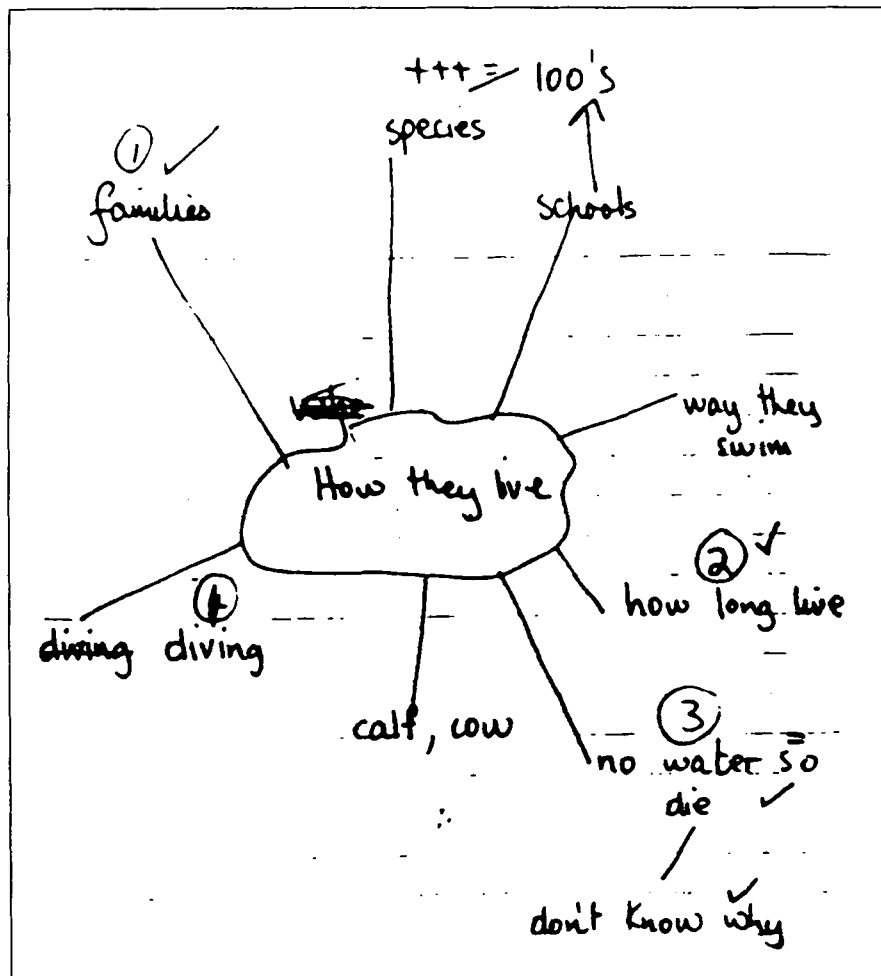


Figure 6

had she learnt something about dolphins but she had also had a powerful lesson on how to begin research.

Another important aspect of establishing purpose is in deciding what the information is for. Is it just to be for the child, is she to share it with a wider audience, is it to be part of a wider piece of research? The answer to such questions should be discussed explicitly before the actual research begins. The purpose will, for example, influence which questions seem appropriate. For example, if the research was just for Zoe, she could choose just those questions which interest her, but if it were to find information for a group project on conservation she may have needed to concentrate on the hunting of whales. Such information about purpose will also influence how the information is recorded.

From external to internal scaffold

Perhaps the usefulness of this process of making research accessible to less able children can be judged by whether the children, having been introduced to it by their support teacher, choose to use it spontaneously when their support teacher is not with them. Baker and

Brown (1984) have suggested that students do not gain any long-term benefits from study strategies until they start to incorporate these strategies spontaneously for themselves, signalling that they understand how and why they work.

An example of this happening is the case of James. He was introduced to the two process stages and the use of KWL by his support teacher when working on the topic of Ancient Greece. Notice how his listing of what he knows (figure 7) also enables his teacher to see his misconceptions (medals were not given at the Olympic Games in Ancient Greece) as well as things he does know. His KWL grid, scribed by his teacher, then served as the basis for his subsequent writing on the topic (see figure 8) which was a very extensive piece of work for James.

James had obviously found the strategy useful because the following week his support teacher returned to find that he had spontaneously used it again in his next piece of topic work. This time the class was finding out about the home life of Athenians. James had drawn three columns in his jotter and although he hadn't labelled them - why give yourself extra writing if writing is

What I Know	What I want to find out	What I learnt and need to know
Greece ✓ No clothes No women Medals? ✓	1 When it started & why 2 Where in Greece 3 How many countries 4 Prizes 5 Kinds of things things they did 6 Did they have medals	1 8776 B.C started because temple to God Zeus and an athletic festival, became the Olympic Games 2 City of Olympia 3 4 Gold crowns, money, jars of olive oil 5 Boxing, racing, long jump, javelin, disc throwing, wrestling, chariot racing, we racing wearing a-mour, 200 metre sprint, 2500 metre race 6 No medals 3 - Only Greece

Figure 7

a problem? – he had used the middle column to set himself four questions and was ticking these off as he gathered the information to answer them (see figure 9a). His subsequent writing indicates how the questions may also have suggested the structure of the finished piece (figure 9b).

Conclusion

Activating prior knowledge and establishing purposes are obviously only two stages in the process of becoming a researcher and they are stages that may be returned to at various points throughout the research process, not just at the start of the process. It is important that the work these children undertook was in the context of their class topics and was not as the result of some decontextualised attempt to teach them study skills. The concept of situated learning (Lave and Wenger 1991) convinces us that this contextualised approach to teach-

James Cole

The olympics long ago

It started a long time ago It started in 776BC Greece because there was a temple of seeds Zeus and an athletic festival that became the olympic games. only greek took plays in the olympic games. The prizes they had were Gold crowns, mugs, jugs of olive oil. the events that took place were boxing, racing, long jump, javelin disc throwing, wrestling, chariot racing wearing racing armour 200 metre sprint 2500 metre race.

Figure 8

one way they live

what they eat

what they eat

the close they were

Figure 9 a

Everyday life.

~~The greek now home were built~~
~~out of.~~ The greek now home were built with bricks and mud. The greek eat out of ^{bowls} bowls. a girls were not allowed out of the house very often the woman were never at dinner unless it was a family party they spend there time at a womans party. The close they wore were tunics most of the women wore tunics called chiton

b

ing is likely to be much more effective than decontextualised approaches.

As we have already mentioned, the process model is much fuller than the two stages we have described here, but we can see clearly how breaking a complex process down into manageable stages and providing supportive strategies that children can apply themselves can provide a helpful and rewarding way into research tasks for children with learning difficulties.

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