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Chapter 3

Scaffolding in action

Snapshots from the classroom

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Introduction

Scaffolding is a term that has great appeal for teachers. Many feel that it captures the essence of what they attempt to do when, for example, they discuss different observations during a concrete activity or challenge students to discuss various aspects of a topic. Through such activities, teachers believe they help their students to make sense of the concepts being taught. However, we know through experience that sometimes students have not really understood what we have so painstakingly taught. Perhaps there is more to scaffolding than we first realise?

Chapter 1 outlines the nature and features of scaffolding. Here I want to build on that description by emphasising that scaffolding is not at work in *any* form of teacher support. Rather, it is specific help that enables the learner to achieve a task which would not be possible without support. There is a finite goal, and scaffolding is a way of supporting a learner to achieve that goal. In this chapter, I

aim to tease out what scaffolding looks like in a typical classroom situation. In doing so, I am seeking to clarify in teachers' minds some of the differences between being 'helpful' in getting students to memorise a number of facts – a kind of surface knowledge – and being genuinely supportive in constructing knowledge with students.

Surface knowledge is the kind of knowledge that relies on immediate application. It is quickly forgotten. For example, cramming before an exam tends to produce surface knowledge. Deep knowledge, on the other hand, is knowledge that is internalised and connected to other knowledge to build understanding of new concepts or ideas. Douglas Barnes (1992:124) explains that some students seem unable to learn because the information they engage with is not internalised, and is therefore inaccessible when it must be applied in new contexts:

> *'... learning is seldom a simple matter of adding bits of information to an existing store of knowledge ... Most of our important learning, in school or out, is a matter of constructing models of the world, finding how far they work by using them, and then reshaping them in the light of what happens. Each new model or scheme potentially changes how we experience some aspect of the world, and therefore how we act on it. Information that finds no place in our existing scheme is quickly forgotten. That is why some pupils seem to forget so easily from one lesson to the next: the material that was presented to them has made no connection with their pictures of the world.'*

Opportunities for scaffolding

This chapter focuses on two distinct opportunities for scaffolding that help students to develop deep knowledge:

- 'designed-in' scaffolding
- 'point-of-need' scaffolding.

These opportunities reflect the complementary macro and micro focuses of scaffolding that are discussed in chapter 1.

The first kind of scaffolding is designed into a unit of work. In this kind of scaffolding, the teacher uses the unit-planning stage to consider both the outcomes to be assessed (knowledge, skills and understandings) and the students' previous experiences. This consideration occurs in the light of the cognitive and language demands of specific educational goals. The teacher then sets out a sequence of learning experiences – a macro scaffold – designed to support the students as they develop new understandings and skills.

Experiences that support students to develop new understandings can be located at any point in a teaching–learning sequence. At the beginning of a unit, for example, specific scaffolding strategies can be 'designed in' when the teacher is building field knowledge. For example, the teacher might make connections to existing knowledge by reminding students of a shared experience – "Remember when we went to the zoo ..." – or provide students with relevant experiences, for instance simulating a seaside environment by creating a sandy beach in a corner of the classroom with shells, starfish and other marine artefacts to introduce a unit on 'The Sea'. This particular simulation would not only provide a context for the study of the sea, it would support students who had no previous experience of the marine environment. Later, in the modelling and joint-construction phases of a unit, activities such as communicative games and text-type templates (commonly and inaccurately known as 'scaffolds') can be used to support students' understanding.

The other opportunity for scaffolding arises in the immediate context. Here, the scaffolding takes place 'at the point of need'. This *contingent* scaffolding (see page 5) relies on the teacher being able to identify a 'teachable moment' and maximise the learning potential of that moment. It involves talk, mostly in the form of questions and answers. The talk strategies that may be employed are elaborated, with examples, later in this chapter.

'Designed-in' scaffolding

In planning any unit of work, teachers need to consider explicit scaffolding strategies that can be used in the classroom. As the teacher begins a new unit of work, s/he needs to consider the key concepts that underpin the content of the unit, as well as the previous learning experiences of the students in the class. In many mainstream classes, the students' learning experiences will be influenced by factors such as exposure to English, socio-economic status and special needs. Questioning students to find out about their background knowledge and previous experiences will help the teacher to determine the students' current understanding. Once the starting point is set, other preparatory activities can be used to provide an initial framework for the new learning that is to occur. These activities might include:

- building word banks (critical for ESL learners)
- sharing stimulus experiences, for example photos or excursions
- completing written worksheets on 'What I Know' and 'What I'd Like to Find Out'.

As they design the different activities that will build field knowledge, teachers also need to consider areas of potential confusion or difficulty for the students. In anticipation of this difficulty, teachers can develop activities that will support new understanding. An adage to apply at this stage is 'Teach new content with familiar concepts and new concepts with familiar content'. For example, the familiar skill of classifying could be used to introduce new content in the area of transport. In this case, students might classify forms of transport into the categories of land, air and sea, then classify sea transport into subcategories such as wind-powered, fuel-powered, human-powered etc.

Planning and design of activities are a critical part of scaffolding. Mercer (1994) recommends that teachers consider the following questions in their planning:

- How practical is the task? (This relates to time, resources and age/ability-appropriateness.)

- How is the task organised, e.g. group work, pairs, teacher direction? (This provides different opportunities for students to engage with new ideas.)
- Is the task related to other work? (This draws on students' previous experiences to provide links to new learning.)
- How is the task introduced and explained? (This requires careful staging of the lesson/s and a variety of oral strategies to ensure students are following the development of new ideas.)

In teaching programs, factors such as practicality are based on the teacher's knowledge of the students and on available resources. While task organisation is part and parcel of planning, teachers should be aware of how student groupings and teaching style can create a 'classroom culture' that may help or hinder the efficacy of intended learning strategies. Pauline Jones' contribution (chapter 5 of this book) is recommended to teachers who are seeking to build critical self-awareness of how their class operates as a distinctive community or social group, even when students are engaged in activities that are commonplace in many schools.

Mercer's final two points are related. Relying on previous experience to explain the purpose of a task and how it is staged may be sufficient to provide all the support the students need. But it may also be 'hit and miss', with some students making the connections and others completing the tasks but remaining bewildered as to the connection between the task and the overall goals of the unit. Consider the following example.

> A class is studying a unit on endangered species, and on the role humans play in contributing to the extinction of animals. A lesson focuses on the giant panda. The students have looked at what a panda eats (mostly bamboo). In the next lesson, the teacher provides two, almost identical, pictorial worksheets which look at the various uses of bamboo. The task requires the students to work in pairs to 'spot the difference' between the two worksheets, then fill in a sheet that lists all the ways in which bamboo is being used. The students then move quickly to the next activity – a picture-sequencing activity that relates to what is being done to save

pandas. Even though the students may be able to complete both tasks successfully, there is no explicit relationship between the reduction of bamboo forests (due to human impact) and the subsequent impact on a major food source for pandas.

The example above highlights the importance of sequencing in the design of learning experiences. It also highlights importance of helping students to make explicit the connections, both backwards to previous experiences and forwards to unit goals. These opportunities are cues for contingent, or 'point-of-need', scaffolding.

'Point-of-need' scaffolding

However carefully lessons may be planned and sequenced, it is very likely that, in the course of any particular lesson, the opportunity will arise for the teacher to take the students along a particular path in their thinking which helps them establish key concepts or ideas. This scaffolding is usually achieved by asking certain kinds of questions, listening carefully to students' responses and then using a variety of strategies to clarify and extend their thinking.

Neil Mercer (1994:99) suggests that teachers can provide this kind of classroom scaffolding in the following ways.

- Set particular themes and elicit responses that draw students along a particular line of reasoning.
- Cue responses through the form of the question (e.g. "a term that starts with 'a' ...").
- Elaborate and go on to *redefine* the requirements of an activity.
- Use 'we' to show the learning experience is being shared.

Point-of-need scaffolding is commonly used to support students in developing technical vocabulary. The strategies that build this scaffolding are:

- repetition of student remarks
- recasting – acknowledging the student's remark and then modifying it so that it is more technically appropriate
- appropriation – transforming the information offered by the students. This works at a deeper level than recasting. In this strategy, the teacher takes up the *idea* behind the student's remark, offering it back in a more technically appropriate way (Newman, Griffin & Cole, 1994).

Scaffolding in practice

The following example demonstrates both of the types of scaffolding identified above. It was recorded in a History class comprising Year 7 (12- to 13-year-old) boys during the first week of the school year. In this lesson, the History teacher apprentices his students into the discourse of History, and what it means to be a historian. As part of the process of apprenticing his students into the way historians work (historical methodology), the teacher has decided to relate this new abstract concept to students' own experiences. He does this through use of analogy – likening the role of a historian to that of a detective searching for clues. In establishing this parallel, he establishes the scenario of a detective investigating the death of Lady Diana, Princess of Wales – an event the students are very familiar with, due to its extensive media coverage. In doing so, the teacher creates a framework that enables the students to understand the process of historical inquiry. This is 'designed-in' scaffolding. As the lesson unfolds, the opportunity for 'point-of-need' scaffolding arises.

In the extract below, the teacher's use of 'point-of-need' scaffolding strategies to develop technical vocabulary is evident. The excerpt, shown in table form (Table 3.1), separates the teacher's talk from the students' talk to demonstrate how the teacher guides the students to new understandings. The teacher's paraphrasing and reflection of the students' contributions finally results in a recontextualised version of their own ideas. This type of scaffolding provides strong and timely support for the students as ideas are being developed.

Table 3.1: Building the concept of historical inquiry

Key: repetition – **bold**; recasting – ***bold italics***; appropriation – **bold underline**

(see top of p 37 for descriptions of these terms)

Teacher	Student/s
	Um, they like, try to work it out; they could have, like, educated guesses.
Educated guesses. How do they make **educated guesses**? What sort, other than witnesses? What do they start to do?	
	Start, like, writing down the names and working out things like ...
All right, OK. They, if you like, **double-check on the witnesses and they look for what they call collaborative evidence**. OK. What else do they use other than collaborative evidence? In Diana's death, what did they use? They talked about it ad infinitum on the news ...	
	Look in the car.
They look at ***objects***.	
	They examine.
They **examine**, let's call it, **the scene of the crime**. OK. How do they do that? Ask ... what sort of things do ... they looked at the car. So why are they looking at the car? Who, who was in the car? What do they use?	
	Um, computers.
Yeah, they can ... yeah, in actual fact, they can use witnesses for a ***computer reconstruction*** to explain what happened in the tunnel as they careered through it – a car that explains ...	
	How it happened.
What else? Who does it?	
	Police scientist.
Police scientists, yes. ***Forensic scientist, forensic experts***, etcetera etcetera.	
	They hypothesise.
They **hypothesise**. Yeah, they do that, too. What other references do they use?	

Teacher	Student/s
	Check with the paparazzi.
Yes, they try to ... they **look at photos**. What else ... **scientific evidence** ... what else?	
	Fingerprints.
They took the blood-alcohol level of the driver and all that sort of thing. So all that scientific evidence to try and piece it together. What sort of **sources** would an historian use? Because we're now talking about an event that is something that's taken place. We may have eyewitnesses, we may not. So, other than eyewitnesses, what else does an historian use?	

Look carefully at the highlighted terms and phrases that the teacher has used in this brief episode of interactive talk. He has established that the detective draws upon the following sources of information:

- eyewitnessses (established in the previous sequence)
- educated guesses
- collaborative evidence
- objects
- computer reconstruction
- forensic scientists
- hypothesising

and that all of these sources represent forms of *evidence*.

The extract above provides clear evidence of both 'designed-in' and 'point-of-need' scaffolding:

- In planning the lesson, the teacher has thought through the key concepts that needed to be in place for an understanding of the process of investigation (in this case, it is establishing the concept of evidence).

- With a predetermined objective in mind (i.e. to build the idea that scientific evidence is critical to the solving of a crime), the teacher has carefully supported the development of appropriate technical vocabulary through the kinds of questions asked, and the way the discussion is directed.

The role of teacher questioning in scaffolding

One of the ways that scaffolding at the point of need is achieved is through the kinds of questions the teacher asks.

Research into classroom interactions by Sinclair and Coulthard (1975) identified a pattern known as the IRF pattern, where 'I' stands for Initiation of an exchange, 'R' for response to the exchange and 'F' for feedback on the exchange. IRF represents the typical pattern of interaction between teacher and student. For example:

Teacher	*What is a cat?*	*(I)*
Student	*A mammal.*	*(R)*
Teacher	*Right.*	*(F).*

In most instances, the feedback response '*Right*' closes the door to further discussion. One way to scaffold students to deepen or enhance their understanding is to reformulate or extend the feedback interaction. This typically occurs through asking a follow-up question which requires the student to engage in further talk. This extension of dialogue between teacher and students provides a 'push' for students as they work within the zone of proximal development (see chapter 1). At the same time, it provides the opportunity for the teacher to support students in absorbing new information into their existing understanding. For example, an extension to the feedback response in the example above could be:

Teacher	*Right. What else do you know about cats?*

By asking this question, the teacher opens the door to elaboration – a kind of 'upping the ante' which demands the students extend their thinking in order to make a response. Gordon Wells (1999) refers to this concept as increasing the

prospectiveness of an exchange. With a dialogue in progress, the teacher now has the opportunity to guide the students in the co-construction of knowledge. In the case of the History lesson discussed above, the teacher has joined with the students as a more knowledgeable participant in constructing critical understandings about historical methodology by asking for further elaboration or reformulation of ideas.

Drawing students along a line of reasoning

As well as pushing the students to provide extended or reformulated responses, the teacher can also extend or reformulate responses from students (even single-word responses) and develop a line of reasoning which leads to a 'section summary' or 'metastatement'. This metastatement creates a kind of conceptual hook for the students, which may then be used to build new understanding. Thus the teacher supports students in extending their understanding.

In the extract below, we can see how the History teacher accepts the student responses in exchanges 3, 5 and 7, extends or reformulates them, then adds a summary statement or metastatement in exchange 9. In this way, the teacher creates a conceptual hook on which students can 'hang' their understanding of the study of history. Here, T = teacher, S = student/s.

1. T	*If we study change, we automatically have to do what?*
2. S	*Record.*
3. T	*Yeah, we've got to start looking at record books of the past. We've got to start looking at what else? If we study change, you've got to look at the past to be able to describe what changes have occurred. What else have we got to do?*
4. S	*Look at people, how people have changed.*
5. T	*Yeah, so in describing change we are in actual fact describing people. What do we do when we look at change?*

[Teacher accepts and reformulates student response, then asks a new question.]

6. S *In what way it's affected us.*

7. T *Yeah, right. In actual fact, how that change has affected us.*

[Teacher accepts and reformulates student response.]

8. S *The causes.*

9. T *Yeah, what causes the change. That's why I like that word as the strongest word to describe it. History is about the study of change and what causes it – how it has affected people's lives etcetera etcetera. Something like that – cause – that's what historians are looking at. Changes, what caused it.*

[Teacher makes a summary comment to create a conceptual hook about what the study of history is.]

This interactive talk, driven and extended by careful teacher questioning, has involved the allocation of valuable classroom time. But it is time that has been spent in establishing a fundamental understanding of what the study of history is about. It has provided a shared context on which the teacher can draw in further units of work.