

Putting scaffolding to work: The contribution of scaffolding in articulating ESL education

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ABSTRACT

In this paper we report on outcomes from recent research in which we have worked with the metaphor of ‘scaffolding’ to address questions about the nature of English as a Second Language (ESL) education. This work has involved a cyclical process: first, of drawing on developments in sociocultural theories of learning and on systemic linguistics in order to analyse and articulate the kinds of pedagogical practices that support ESL learners in their engagement with mainstream curricula and, second, in analysing pedagogical practices to build a more robust and enriched model of scaffolding as a way of further informing pedagogical practices. Our major purpose in this paper is to present the model of scaffolding that was developed from the research.

Introduction

Our particular concern in the research that we report on in this paper has been with the needs of second phase ESL students in the context of school education in Australia. Such students typically are those whose oral proficiency has developed sufficiently to enable them to cope with the day-to-day requirements of ‘getting around’ and surviving at school, but who continue to grapple with the language and literacy demands of academic study across the curriculum. The demands that such students face have long been acknowledged (Cummins 2000; Gibbons 2002). In recent years, however, the needs of such students in Australian schools have often been subsumed under the umbrella of broader concerns with literacy education (Hammond 1999; 2001b). In our work, we were concerned both to articulate (once again) the needs of such students and to address these by developing an enhanced understanding of the ways in which such students can be supported to participate fully and equitably in the mainstream curriculum. Thus, our concern is with ways of *supporting-up* such students, rather than *with dumbing-down* the curriculum.

The research itself was undertaken collaboratively by researchers at the University of Technology, Sydney (UTS) and the Multicultural Programs Unit with the NSW Department of Education and Training (Hammond et al 2001–2003). It involved a team of 30 participants, including researchers, ESL consultants and teachers, in a two-stage research design of exploration and model building, followed by action research and evaluation (van Lier 1999). In the first stage of exploration and model building, we sought to document and analyse pedagogical practices that were designed to support second phase ESL students in mainstream classes. We also sought to extend understandings of what it meant for the students to negotiate the demands of language and literacy across the curriculum, and of the role of scaffolding in this process. The second stage involved intervention through action research in each of the participating schools and evaluation of the impact of the action research. Through cycles of focused reflection and action, and with support from researchers and consultants, the teachers sought to intervene to improve teaching practices. The two-stage research design facilitated the recursive process of drawing on theory to inform practice, followed by analysis of practice to further build theory. This process has underpinned our attempts to work toward an enriched model of scaffolding and of ESL pedagogy.

Outcomes from this research are presented in this paper and also in the following paper by Michell and Sharpe (this volume). These two papers present complementary perspectives on the contribution that scaffolding and, more generally, sociocultural theories of language and learning are able to make to our understanding of ESL pedagogy. We argue that insights from such work have much to offer, not only to those working in ESL education, but also to those in 'mainstream' education.

We begin this paper by explaining why we were interested in the metaphor of scaffolding.

Theorising scaffolding

The term scaffolding is one that for some time has been in common usage in educational contexts in Australia and elsewhere (Hammond 2001a). As Mercer (1994) argues, the metaphor resonates with teachers because it seems to capture something that many regard as central to the core business of teaching. Despite the many and varied ways in which the term is used in current educational literature, it was a shared interest in the potential of scaffolding for articulating effective pedagogical practices that brought about the collaboration between UTS researchers and the Multicultural Programs Unit. A major aim of the research was to investigate what

scaffolding actually 'looked like' as it was played out in the day-to-day enacted curriculum, and to analyse its enactment more closely both in pedagogical and linguistic terms. To do this we drew on sociocultural theories of learning and of language, both to inform the development of programs and to undertake analysis of data.

SCAFFOLDING WITHIN A SOCIAL THEORY OF LEARNING

Although scaffolding was not a term actually used by Vygotsky, it is, we would argue, an inherent part of his theory of learning as collaborative and interactionally-driven. Here we reiterate some of the constructs within Vygotskian theory that were significant to our work in planning and implementing the research.

The educational basis for a child's development is encapsulated in Vygotsky's (1978) notion of the zone of proximal development (ZPD), by which he refers to the 'gap' between what learners can do unaided and what they are able to accomplish with help from a more experienced peer or adult. The most effective learning, Vygotsky argued, is that which occurs within the ZPD, that is when the challenge presented by a task is ahead of learners' actual or current development. It is only *when* support is required that new learning will take place, since the learner is then likely to be working within the ZPD. It is this task-specific support, designed to help the learner independently to complete the same or similar tasks later in new contexts, which we understood to be scaffolding. We therefore argued, as do others, that for classroom learning to be most effective, teaching and learning tasks should be ahead of students' abilities to complete alone, but within their ability to complete when scaffolding is provided (Mercer 1994). Effective scaffolding should also result in 'handover', with students being able to transfer understandings and skills to new tasks in new learning contexts, thereby becoming increasingly independent learners. This emphasis on students' learning potential, and not simply on their current abilities, and the consequent raising of expectations about what is possible, seemed to us to be especially significant for students learning through the medium of their second language, where cognitive and conceptual understanding may outstrip English language development or, conversely, where abilities in English may constrain subject-specific learning.

Vygotskian theory is primarily concerned with the mediation of culture, and, in the school context, this process involves the cognitive and linguistic socialisation of students as they are initiated by their teachers into what Mercer refers to as the 'common knowledge' that comprises educational discourse (Mercer 1995). From this we argued that effective

teaching is not simply the transmission of information from one individual to another, but is a collaborative and negotiated social process, whereby knowledge is constructed between, rather than within, individuals. As Gibbons (2002) has previously argued, an important implication of Vygotsky's theoretical perspective for the classroom is therefore the significance it gives to the teaching–learning relationship and its focus on the different but complementary roles of both teacher and students in the learning process.

A useful way of further elaborating what we saw as the crucial nature of a teacher's support can be found in the work of Mariani (1997). Mariani has argued that the most effective classrooms are those where there is both high challenge and high support for students. He contrasts this kind of classroom environment with those where there is high challenge but inadequate support (resulting in learner frustration), low challenge but high support ('feel good' classrooms where students operate in their comfort zones but where little learning occurs), and low challenge and low support (classrooms where boredom sets in and where behavioural problems are a likely outcome). Classrooms with high challenge and high support are those where scaffolding is most likely to occur, and where students are most likely to be working within the ZPD.

SCAFFOLDING WITHIN A SOCIAL THEORY OF LANGUAGE

In the research, we drew also on the work of Halliday and his colleagues in their focus on a socially oriented, functional theory of language (for example, Halliday 1978; 1985; Martin 1993; Eggins 1994; Halliday 1994; Hasan and Williams 1996; Christie and Martin 1997; Unsworth 2000). Halliday's systemic functional model of language is a model of language as a social semiotic, and is a functional theory in the sense that it is concerned with the ways in which language functions to make meanings in various cultural, social and vocational contexts. Central to the theory is its explanation of the interrelationship between contexts and patterns of language choice in the construction of meaning. The theory thus highlights the role of language in mediating the construction of knowledge, in and through the classroom interactions, which occurs between teacher and students, and between students. Through the notions of register and genre, and related insights into the relationship between spoken and written modes of language, this functional theory provided a strong framework for the deliberate and explicit focus on teaching language, teaching through language, and teaching about language (Halliday 1979) that was evident in the work of participating schools.

Halliday's model of language also highlights the importance of taking into account the context in which the language is to be used. We argue that language learning is not a simple linear process, but, in Baynham's words, is a 'functional diversification, an extension of the learner's communicative range' (Baynham 1993: 5). A model of language-in-context challenges the 'deficit' view which may be taken of ESL learners' English language development, because it views language development as a process of learning to control an increasing range of registers and genres, rather than viewing development in relative terms of 'more' or 'less' language. Our view is that ESL learners' success in school is largely related to the opportunities they have to participate in a range of authentic learning contexts and meaning-making, and the support – or scaffolding – that they are given to do so successfully in English.

As Wells (1999) has pointed out, the intersection between Vygotsky's socially oriented theories of learning and Halliday's socially oriented theories of language is a productive one. We have found that these complementary perspectives on language and learning provide a congruent theoretical frame within which to plan and also to reflect on, and analyse, pedagogical practices.

Toward an enriched model of scaffolding

As indicated earlier, our aim in the research was to investigate what scaffolding looks like in the enacted curriculum. In particular, we were interested in exploring how we recognise scaffolding in the unfolding of classroom interactions, and how scaffolding might be distinguishable from 'good teaching'. We were also interested in the metaphor itself, in how far it is useful to push the metaphor and at what point we needed to turn to a more general consideration of the contribution of broader sociocultural theories of teaching and learning.

In order to explore these questions, we have drawn on analyses of data from the six schools that participated in the research. As indicated earlier, the research itself involved stages of exploration and model building and of action research and evaluation. While analysis of data from both stages has informed the development of the model of scaffolding that is presented in this article, it was the work undertaken in the action research programs that was particularly informative. The specific issues that were addressed in those programs are summarised below in order to provide a flavour of the nature of this work.

Analyses of data from these programs have led us to conclude, as have others (for example, van Lier 1996; Wells 1999), that the hallmark of effective teaching lies both in teachers' abilities to plan, select and sequence tasks in their programs in ways that take account of different levels and

Table 1: Summary of action research projects

School	Research questions addressed in action research
School 1, Year 6, primary	What is the nature and potential of peer scaffolding in extending students' repertoire of spoken and written registers and in promoting learning of critical literacy?
School 2, Year 6, primary	What kind of scaffolding can engage and challenge students in their study of literature and can support development of skills of critical analysis?
School 3, Year 6, primary	How can students be supported to extend their control of spoken registers?
School 4, Year 7, secondary	What mathematical, linguistic, social and cognitive strategies do students need to solve mathematical problems? How can students be supported to verbalise mathematical thinking?
School 5, Year 7, secondary	How can students be supported to develop a meta-awareness of their own language and learning processes?
School 6, Year 7, secondary	What do students need to know and what do they need to be able to do in order for handover to occur in their learning?

abilities of specific groups of students, and in their ability to make the most of the teachable moment: that is scaffolding is located at both the macro and the micro levels. It is this combination of the pre-planned and the contingent that enables teachers to provide new learning challenges for their students, while at the same time providing necessary support for meeting those challenges. In developing the model of scaffolding that is presented in this paper, we have attempted to tease out the critical relationships within and between these macro and micro levels and to draw out implications for our understanding, more broadly, of effective pedagogical practices for ESL students. In focusing on the practical activities of the classroom as a source of theoretically relevant data, we share with van Lier (1994: 338) the view that the most useful pedagogical theory is that which is 'a reflexive dimension of practice'. All of the categories identified in our model were drawn from analyses of data, and it is this theorisation from authentic classroom activity that we believe represents the major contribution from our research to enriching ESL pedagogy.

In the model of scaffolding that is presented in the following sections, we have borrowed the notion of networks from systemic linguistics (for example, Halliday 1994). While systemicists have primarily developed networks to articulate choices that are available to speakers within systems of language, we have developed networks to tease out features that teachers may choose to include (or not – hence the \emptyset symbol in the model) at both macro and micro levels of teaching. Following conventions established by

Halliday and others, square brackets in our model indicate either/or choices (that is choose this option or the other option), while curly brackets indicate simultaneous choices (that is choose this option and at the same time choose the other option). Again following conventions within systemic linguistics, the move from left to right in the model represents a move from general to increasingly delicate features within classroom planning and teaching.

In presenting our model of scaffolding, we begin with the section of the network that articulates macro level choices, and follow this with the micro level section. As in other network systems, it is not the presence of individual features but, rather, the network as a whole with its articulation of relationships within, and between, macro and micro levels of teaching that is significant. We are conscious that the sequential discussion of macro and then micro level features within the model encourages a reading of these as separate systems and, in one sense, the distinction we have made between these levels is a somewhat false one. However, we have found it useful to consider the two separately since the realisations of each are different. We also believe that a sequential discussion is necessary to articulate the features *within* these levels before addressing the relationship *between* levels. We encourage the reader to turn to the Appendix, where the model is shown in full.

Scaffolding at the macro ‘designed-in’ level

To foreground the notion that macro-scaffolding is consciously planned by teachers, we have coined the term *designed-in* (Sharpe 2001). The realisations of designed-in scaffolding can be found in the ways in which classroom goals are identified; how classrooms are organised; and in the selection and sequencing of tasks. Based on discussions with teachers, and on the teaching and learning activities that we observed during the research, Figure 1 identifies features that appeared to be integral to processes of program/unit design.

It is important to point out that, although features at the macro level of program planning were present in all programs (and indeed could be expected to be present in any well organised program), the ways in which the teaching and learning processes were played out in individual classrooms differed significantly. Students’ needs and current knowledge varied considerably across the six schools that participated in the research, so it is not surprising that the ways in which teachers worked with students varied widely in response to the specific needs of their students, and in response to the broader sociocultural context of the school. For us, these very different enactments clearly reinforced the notion that scaffolding (like teaching in general) is a dynamic and situated act that is responsive to a particular set of circumstances in a particular classroom context. We do not wish to suggest by

this, however, that overall curriculum goals should be differentially selected for different groups of students – a process, we would argue, that must inevitably result in differential and structurally pre-determined outcomes that advantage some groups and disadvantage others. Rather, we suggest that the *routes* – and hence the *scaffolding* – by which these goals are reached are, and need to be, varied.

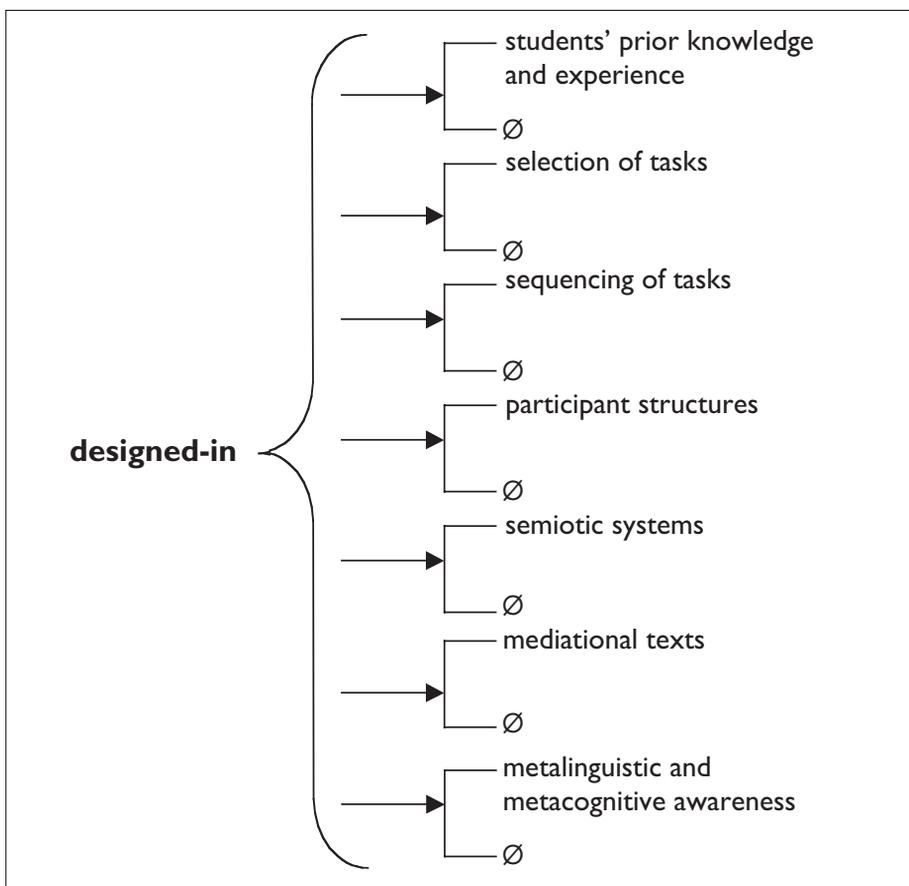


Figure 1: Scaffolding in action

The features identified in Figure 1 are here briefly discussed.

**LOOKING IN TWO DIRECTIONS: STUDENTS' PRIOR EXPERIENCE AND
 SELECTION OF TASKS IN RESPONSE TO CURRICULUM GOALS**

In Figure 1 we have drawn attention to students' *prior knowledge and experience* and *selection of tasks* as critical elements in a model of scaffolding. In our shared discourse with the participating teachers we conceptualised

programs as 'looking in two directions', alluding to the fact that all programs explicitly embraced both students' current levels of knowledge, their English language abilities, and the goals of the curriculum. While van Lier (1996) has described contingent interactions as having a 'janus-like' quality, this notion of effective teaching linking both to students' starting points and to the broader goals of the curriculum is also an appropriate one to describe the overall program.

As part of their program planning, teachers in the research classrooms established the extent of students' prior knowledge of specific curriculum content, and their knowledge of English relevant to that curriculum content. Often this process occurred in partnership between the 'mainstream' teacher and an ESL teacher. This starting point enabled teachers to build on students' commonsense knowledge of curriculum content to construct more educational and field-specific ways of making meaning relevant to the particular discipline area. Finding out what students already know, or reminding them of what they have learned before, is of course not an uncommon way to begin a new topic, but it is mentioned here since all of the teachers explicitly built this into their program designs. In a secondary maths class, for example, the solving of maths (word) problems by beginning with students' implicit understandings of how each problem could be solved became the basis by which the teacher introduced algebra as a system to solve similar problems.

In their program designs, teachers also considered the students' existing knowledge of English and the language demands of the specific key learning area. Thus, in looking in two directions, teachers not only considered relevant curriculum content, but also the language that would enable the students to engage with that curriculum content. In the maths class referred to above, students' abilities to engage with mathematical and scientific ways of thinking and problem-solving were dependent on the active teaching and learning of relevant language that enabled students to extend their existing and often 'commonsense' ways of talking about concepts to more mathematical and scientific ways of talking and thinking about those concepts.

A further important feature of all class programs was that teachers not only developed clear and explicit program and unit goals, but that they shared these with students. Thus, the students had a clear idea of the purpose of the overall program and of the specific units of work that they were studying. In addition, the teachers systematically explained to their students the purposes of individual tasks and how these tasks fitted with the overall goals of the program. As Wong-Fillmore (1985) has pointed out, explicitly locating new learning in students' prior experiences and signalling

what will follow is particularly important for students less familiar with the language and culture of the school, since it provides a significant orientation for new learning and new language.

ATTENTION TO TASK SEQUENCING

Making decisions about *sequencing of tasks* is a necessary part of planning any program. However, task sequencing in the action research programs was significant in that the learning outcome for each task served as the building block for the next. The careful planning of task sequences enabled students to move step-by-step towards more in-depth understandings of challenging concepts. Our analyses indicated that it was the relationship between sequential tasks, rather than choice of any one task, that was especially important in supporting the ESL learners and in providing the context in which scaffolding occurred. The sequencing of tasks thus became a larger activity, which took on a significance beyond the learning outcomes of each individual task.

The maths classroom referred to earlier serves as an example. Students in small groups first located and defined what they saw as key words in a language-based maths problem. This became a support structure (or scaffolding) for the next task that was to solve the problem. This served as the scaffolding for the next task where the group recorded step-by-step how they solved the problem. This written record in turn became the scaffolding whereby a reporter from each group was supported in the difficult task of explaining the problem-solving process to the whole class, in interaction with the teacher. The student's explanation, usually couched in 'everyday' language, served as the scaffolding for the teacher's use of more mathematical language. This whole sequence in turn became the scaffolding for the introduction of algebra. While there was learning evident in each activity in the sequence of activities, the sequence itself took on a broader significance in the learning process. Overall, such sequences represent a very different kind of learning process from that which is more typical in maths (and other) classrooms: the 'one shot' individualised attempts at problem-solving, the lack of explicit attention paid to language, and deductive and teacher-directed explanations and rules that students are expected to memorise.

A RATIONALE FOR PARTICIPANT STRUCTURES

A characteristic of each of the classrooms was the variation of the organisational structures (*participant structures*) within the unit of work. While the personality of the individual teacher played some part here, overall it was the nature of the task and the degree and nature of the scaffolding

within it that determined whether teachers chose to use individual, pair or group, or whole class structures. This is not simply a question of reaching a 'balance' of group and whole class work, but of making decisions based on the specific learning purposes of the task or activity. Through the use of different participant structures, teachers were able to provide different levels of support for different groups of students and were also able to 'push' their students to engage with increasingly complex concepts and understandings.

A further important consequence of systematic planning for shifts in participant structures was that teachers were able to monitor handover of responsibility of learning to students. Shifts between participant structures enabled more or less support to be provided for the whole class and for specific groups or individuals as needed. They also enabled groups or individuals, when ready, to work increasingly independently. Such deliberate and systematic choice of participant structures acknowledges the interrelated but differential roles of teacher and learner and calls into question simplistic constructions of the learning and teaching process as either 'teacher-centred' or 'learner-centred'. As we argue below, deliberate and systematic shifts in participant structures also enabled teachers to support students' development of different registers of language.

USE OF SEMIOTIC SYSTEMS AND PLANNING FOR 'MESSAGE ABUNDANCY'

Our analyses of data revealed that teachers supported students in developing understandings of concepts or tasks through providing access to similar information from a variety of sources. These sources included the use of different modes of language to build up a particular concept (for example, through the use of spoken language accompanying action, oral reflection on what was learned, student-written notes and blackboard writing), as well as the use of *additional semiotic systems*. In the classrooms we observed, these additional sources of meaning included wall charts, graphs, maps, photographs, diagrams, pictures and mathematical notation. Teachers also used combinations of visual and aural supports through use of videos, films and the Internet; visual, aural and tactile supports through demonstration and hands-on activities; and the use of physical movement and gesture.

While language played a central role in mediating learning, the use of other semiotic systems not only supported students' comprehension of the language, but also in themselves constructed meanings. For example, in a geography lesson, colour-coding was used to differentiate certain types of information in a literacy-focused task, thereby helping students to predict the kind of information they would be reading about. In the same class,

students watched a video while considering written questions about the information they were seeing. As they did so, the teacher directed students' attention to vocabulary that had been elicited earlier and written on the board as a semantic web. At the same time, students had individual maps on their desks, and a larger version of the same map appeared on an overhead projector, enabling the teacher to point to relevant features as the students watched the video. In a primary classroom where students were learning about government, students participated in a mini-parliament, with the arrangement of seating replicating and providing a visual image of the systems they were learning about, and serving as an explicit symbol of the kinds of talk that were expected.

The use of this range of semiotic systems and language modes, often simultaneously, meant that students had access to similar messages and information from a variety of sources or, to put it another way, they had more than 'one bite at the cherry' as they engaged with new knowledge and concepts. Gibbons (2003) has coined the term *message abundance* to refer to the ways in which a number of meaning-making systems are deployed in the teaching and learning of concepts. In second language classrooms, non-linguistic systems such as those described above are often seen as simply 'backgrounding' language and supporting comprehensibility (Goodwin and Duranti 1992). However, at many points in the lessons there was what could perhaps be better described as a symbiotic relationship between language and other modes of meaning, with the meaning potential of other systems being more explicitly foregrounded and integrated with the discourse. We believe that access to such message abundance is critical for ESL students.

THE USE OF MEDIATIONAL TEXTS AND ARTEFACTS

A feature of all the research programs, and one that is related to the notion of message abundance, was the use of what we refer to as *mediational texts and mediational artefacts*. By these, we mean texts or artefacts that were pivotal across sequences of lessons in that, in some way, they structured or mediated the learning and became an important point of reference across a unit of work. The use of these instrumental texts or artefacts usually resulted in significant talk occurring *around* them – often the mediational process was physically realised by students grouped around a text or artefact, leaning forward and towards each other – and by reference to this learning at other times across sequences of lessons. Through such talk the mediational texts or artefact provided a basis for new learning.

Examples of mediational texts included the reflection sheet that was used in the maths classroom. This text was pivotal to the effectiveness of the unit in that it provided a structure for the *process* of the small group discussion as well as later providing a linguistic and conceptual support for the individual reporting by students, and some basis for the systematic study of algebra. In an English program, a short story was the mediational text in that it provided the focal point for analysis of story, character and theme, as well as more abstract critical analysis of point of view and (present and absent) voices. An example of a mediational artefact occurred in the science unit, with the use of group experiments. Here the experiments provided an anchor that students and teachers referred to again and again in the sequence of lessons as they engaged with relevant scientific concepts.

DEVELOPING METALINGUISTIC AND METACOGNITIVE AWARENESS

As indicated earlier, a feature of all action research programs was the teachers' explicit recognition of the importance of language in learning, along with a deliberate focus on the teaching of language as part of the teaching of curriculum content. That is, teachers taught the content of their lessons (science, maths, literature etc) but, in addition, they focused systematically on the language related to that content, so that students' English language learning needs were addressed in the context of the construction of curriculum content.

It is relevant that most teachers' previous professional study had introduced them to aspects of systemic linguistics – in particular to notions of register and genre. In the collaborative work of the research team (researchers, consultants and teachers), we built on this knowledge of systemic theory to support teachers both in identifying students' English abilities and in selecting and sequencing tasks that addressed curriculum content and English language demands. Consistent ways in which this double focus of curriculum content and language teaching occurred included: reviewing previously learned work and building on those reviews to introduce new concepts and language; grounding the introduction of complex or abstract concepts by working systematically between concrete and more abstract linguistic realisations in classroom discourse; talking with students about appropriate language use in the context of curriculum learning; and building in opportunities for students to articulate what they had learned.

As well as 'embedding' curriculum language in tasks, teachers focused specifically on teaching about language at regular points. They drew students' attention to whole-text features, such as the rhetorical structures of particular genres, subject-based vocabulary and sentence-level grammatical patterns

relevant to particular curriculum content. This systematic teaching of language involved talk about language and the development of a language for talking about language (a *metalanguage*) that served to focus students' attention on the role of language itself in the learning process. The result was that, in the research classrooms, learning about language, in effect, constituted a second field of study.

An example of the double focus on curriculum content and language occurred in one of the primary schools that participated in the research. Here, the focus of teaching was on the plight of bears in captivity. The teacher and students investigated the topic by drawing on Internet information while, at the same time, analysing the language choices made by the writers of these Internet texts. Such analysis addressed the emotive vocabulary, use of rhetorical questions and the choice of powerful visual images in the texts. As a result of the support provided by the teacher in such work, the students were able to articulate the ways in which the Internet writers constructed highly emotive and powerful arguments against the keeping of bears in captivity. At later points in their work, the students were able to work either in pairs or independently, both to analyse the language and visual image choices made by writers in the construction of emotive texts, and to undertake their own writing of such texts. Our findings from programs such as this supported evidence from the broader literature that the development of metalinguistic awareness contributes to students' developing abilities to engage in effective construction and critical analysis of their own and others' spoken and written texts.

A related feature of the programs in the research was the explicit and shared nature of their program and unit goals. As indicated earlier, teachers discussed their goals with students. They talked to students about what they saw as strengths of both the class and individuals, and about areas where they felt the students needed further support. They encouraged students to reflect on and talk about what they had learned. As will be seen in the later discussion of contingent scaffolding, teachers commonly began lessons by articulating their purposes, and by linking the current lesson to the learning that had occurred in previous lessons. They typically reflected on the importance of specific tasks by linking them to the broader lesson or unit goals. In addition, discussion of purposes of lessons frequently emerged during discussions about language. Thus, as students' metalinguistic awareness developed, so too did their *metacognitive* awareness. Students who had participated in these programs were able to talk about their own learning processes in ways that were insightful and that enabled them to adjust their own behaviour if necessary as they interacted with their peers and with teachers.

A SUMMARY COMMENT ON SCAFFOLDING AT THE MACRO, DESIGNED-IN LEVEL

Our analysis of data from the action research programs showed that, in the planning and implementation of units of work, all teachers took account of all of the designed-in features that have been described in the sections above. We suggested earlier that many of these features could be expected to be present in any well-planned teaching program. However, we have sought to emphasise the often interrelated nature of these features in program planning, and the importance of each in addressing the needs of ESL students. By representing these features in a network model, we have also sought to highlight the relationship between the features. In the following sections we identify features of interactional scaffolding that emerged from analysis of data in our research, but we also draw on the network model to highlight the nature of the relationship between designed-in and interactional scaffolding. We begin the following section by addressing that relationship.

Scaffolding at the micro level: Interactional scaffolding

In the dynamic unfolding of lessons, teachers interacted with students contingently in response to the teaching and learning opportunities that presented themselves. Such interactions were anchored within the shared agenda of classroom talk, and thus, by their nature, were not pre-scripted or pre-planned. It was through such interactions that intellectual challenge and support were realised as students engaged with demanding curriculum tasks. It could therefore be argued that the *interactional* level constitutes the 'true' level of scaffolding. However, we would argue that the designed-in features, described earlier, provided the context by which such interactional scaffolding could occur. Without the existence of the designed-in features identified above, interactional support may become simply a hit and miss affair that may contribute little to the learning goals of specific lessons or units of work. Thus we see the designed-in level of scaffolding as enabling the interactional level, which, in turn, enables teachers and students to work within the ZPD.

Based on our data, Figure 2 summarises the most common features of the interactional level of scaffolding.

The features identified in Figure 2 are here briefly discussed.

LINKING TO PRIOR EXPERIENCE, POINTING FORWARD TO NEW EXPERIENCES, RECAPPING

As with designed-in scaffolding, interactional scaffolding was characterised in ESL classrooms by its janus-like nature. Interactions were often explicitly

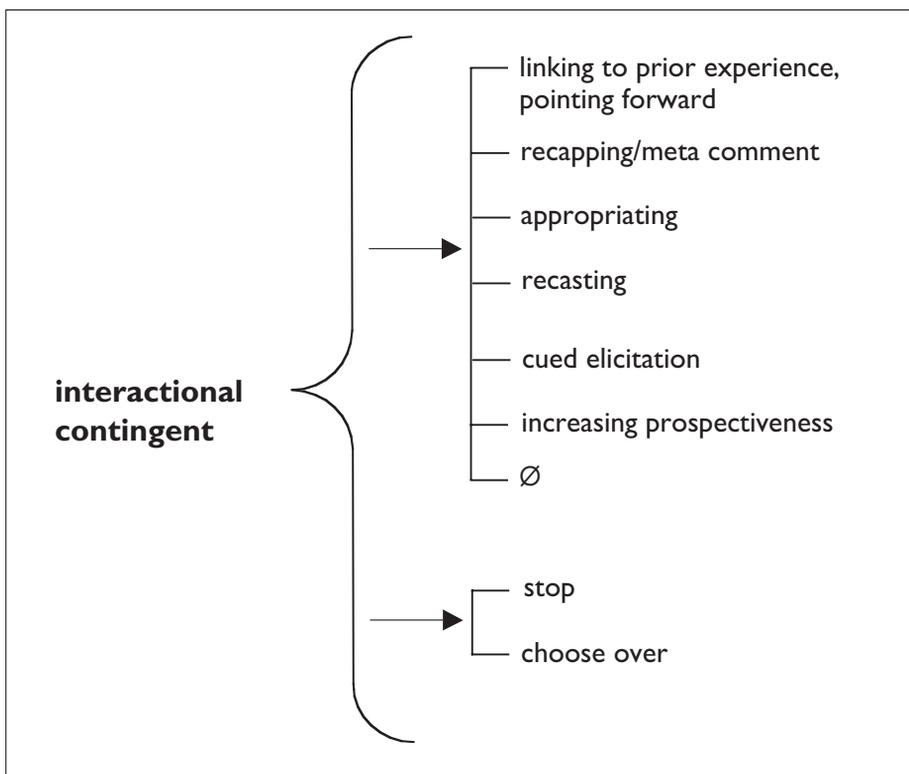


Figure 2: Interactional scaffolding

grounded in students' *prior experiences*. References were made, for example, to students' out-of-school and home experiences, and their in-school experiences. Teachers also frequently made reference to teaching and learning activities of previous lessons, locating new learning within this shared experience. Interactions, however, also *pointed forward* in terms of teachers linking these with the broader purposes of the lesson or the broader conceptual frameworks of the curriculum.

An example of the janus-like nature of interactions can be seen in the following extract from a unit of work on *Romeo and Juliet*.

Teacher: Okay, now what we're going to do, you all remember today we were going to go on with those scenes – you weren't meant to have them finished today – you all knew that. But what we were up to was a work in progress sort of thing. Now the first thing that we did last lesson was we had six of you up here and we had you doing something which we called alter-egos. Why did we do that? Why did we have alter-egos. Yeah?

Student: Tell you what they're thinking.

Teacher: What the character is really thinking. Okay? Very often in drama, as the author writes the lines, there's a subtext. And it's important to be able to understand and to convey the subtext. So before you get in and write your script, we thought it would be a good idea if we used that. Also because it's really useful to you from now until year 12 if you're going to be looking at any sort of dramatic text, play or dramas, to be able to find the subtext. Now can I have six people who did that scene up here again, so we can quickly remind everybody of what is it we were looking for ...

This short exchange occurred at the beginning of the lesson. Here the teacher looked back, in that she linked the present lesson with work completed in previous lessons (the written work in progress, and the alter-ego activities). In addition, she looked forward by pointing out the importance of being able to identify the subtext of any sort of dramatic text (from now until Year 12). Although lasting only half a minute or so, such exchanges were significant because they occurred regularly and because they served to build from previous learning, to reinforce purposes of tasks, and also to establish where and how individual tasks fitted into the larger lesson and unit design.

A further related feature was teachers' frequent use of *recapping* at the end, a series of exchanges with a 'summing up' of the major 'point' of the interaction. This recapping marked what was to be seen as significant learning, and it was variously related to curriculum (subject) knowledge, metalinguistic knowledge or to metacognitive ('what-helped-you-to learn') knowledge.

APPROPRIATING AND RECASTING STUDENT CONTRIBUTIONS

The notion of *appropriation* normally refers to a process whereby learners, for their own purposes, take up the discourse and other tools used by teachers – that is, learners appropriate from teachers. However, as Webster, Beveridge and Reed (1996) point out, appropriation in the classroom context is not always unidirectional, and we have used this term to refer to a process whereby teachers appropriate contributions (wordings, ideas, information) from their students and build this into the discourse.

Typically, appropriation of a student's contribution is accompanied by *recasting* of student wording into more registrally appropriate discourse, which is, in turn, returned to the discourse, so that students' contributions are progressively reshaped in the particular direction in which the teacher is leading them. Through this process, the student becomes a co-participant in the construction of a broader and more systematic codification of ideas and subject-specific discourse. An example of both appropriation and recasting

can be seen in the extract presented above. In response to the teacher's question about *why did we have alter-egos*, the student says *tell you what they're thinking*. The teacher appropriates the student's words, *what the character is really thinking*, and then recasts them as *there's a subtext*. Again the significance of such features lies not in individual instances, but in the regular and systematic way in which the teachers used such exchanges to build on, and extend, students' control of discourse.

THE 'INITIATION, RESPONSE, FEEDBACK' SEQUENCE: CUED ELICITATION AND INCREASED PROSPECTIVENESS

Many researchers have commented on the ubiquitous nature of the unmarked three-part exchange (initiation, response, feedback, or IRF) that typifies much classroom interaction (see for example, Lemke 1990; Wells 1996; van Lier 2001; Mercer 2002). Not surprisingly, IRF sequences were common in all the action research classrooms. However, data from these classrooms revealed that teachers deliberately used the IRF sequence in two major ways – to provide *cued elicitation* and to *increase prospectiveness*.

Drawing on Mercer (1995), we use the term cued elicitation to describe interactions where teachers offered strong verbal or gestural hints about expected responses. Cued elicitation occurred in the classrooms, for example, at the beginning of lessons where the teacher wished to do a quick revision of previous lessons, and thus it served to make information more memorable (Mercer 1995: 27). It also occurred when the teachers were working to ensure participation from all students. Thus specific students who would otherwise lack the confidence to participate in group or class discussions were provided with very strong support to do so. Our data also indicated that teachers were not simply using verbal or gestural hints to elicit 'prescribed' or expected responses, but rather that such cued elicitation was carefully targeted to specific students and was used for specific purposes.

In addition to providing opportunities for cued elicitation, the IRF exchange provides opportunities of a different kind. As Gibbons (2003), Mercer (2002), van Lier (2001), Wells (1996) and others have shown, the third move in IRF exchange has the potential to open up the discourse in ways which lead to more dialogic sequences of exchanges and which provide students with more interactional rights. Put simply, by opening up the third move, teachers open opportunities for students to say more and reflect aloud on their thinking and understanding. Teachers do this when they ask for clarification, probe a student's response, or ask them to explain a particular point in more detail (rather than simply evaluating and closing

down the exchange). Our data indicates that such features occurred frequently in classrooms. An example can be seen in the following exchange, where the teacher and students are discussing the different points of view that different characters may have in relation to the same events within the play *Romeo and Juliet*.

- Teacher: There's another one we could do, which comes up in one of the speeches you've looked at, which is the point of view of Juliet, and the point of view of her mother ... on the death of Tybalt and Romeo's guilt. Alright? The mother has a very different view about Tybalt's death, and Romeo's degree of blame, to what Juliet has. Yes, Ting?
- Ting: How about the nurse?
- Teacher: Yep, the nurse, what about her?
- Ting: Like she's the one who's been giving Juliet tips.
- Teacher: Yes, so?
- Ting: If Juliet has any problems, like, she asks the nurse, so the nurse (inaudible)
- Teacher: Okay, so Nurse would have opinions about what?
- Ting: About Romeo.
- Teacher: About Romeo at the beginning. Would they change?
- Ting: I think at the beginning ... I think when Juliet told the Nurse about Romeo. And at the end, the nurse just sort of disappears like, not much (inaudible)
- Teacher: Yeah, but you're right, where you're going is, the nurse's ideas when she's helping them first get together, she thinks it's all fun and romantic, but then in the end, when the mother puts her on the spot and she says, and Juliet says, what do you think nurse, what does the nurse say to her – can anybody remember? That's what you're thinking, Ting.

It is actually the student who initiates the topic of this exchange by asking *How about the nurse?* The teacher then uses the third move in the IRF sequence in an extended exchange to probe the student, thereby 'pushing' him toward responses that elaborate and justify his thinking and his point of view. Wells (1996) has referred to this process, whereby the responsibility for continuing the conversation is handed back to the student, as *increasing the prospectiveness*, a term we have used in our model of scaffolding to illustrate how the third move can prolong the talk, and lead to longer, and more productive, sequences of meaning. The effect of this is to slow down the

pace of the discourse and to give students a greater voice in the construction of classroom knowledge.

Conclusions: Strengths and weaknesses of the model

At this point, both in the article and in our research, it is timely to reflect on the contribution of the network model of scaffolding, and on its limitations.

On the positive side, we believe that the processes of data analysis and model building that we have undertaken in the research have taught us much about the nature of scaffolding. The broad theoretical understandings that we drew on as we began the research (and that are described at the beginning of this article) remain central to our understandings of scaffolding, and of teaching and learning more generally. However, the development of the network model enables us to be much more specific about what scaffolding looks like in the enacted curriculum. The model enables us to argue that specific designed-in features must be present for scaffolding to occur, and that at particular points in lessons and for pedagogically informed purposes, teachers will draw on either one or a combination of interactive features to provide both the challenge and the support that will enable students to work within the ZPD. At these times, we argue, scaffolding is occurring.

A further positive feature of the model is that, by developing a visual semiotic to articulate what we understand by the nature of scaffolding, we are also able to make the point, quite powerfully, that scaffolding is a complex process. The use of the network model therefore helps rebut reductive and simplistic notions of scaffolding (for example, that scaffolding is simply a photocopied sheet of paper, or some other ‘thing’ that can be handed out to students, as some of the educational literature would have us believe). It also helps us address questions about the relationship between scaffolding and any good teaching. In our view, scaffolding, unlike good teaching generally, is specific help that provides the intellectual ‘push’ to enable students to work at ‘the outer limits of the ZPD’.

A strength of the network model of scaffolding is that its development has been driven by analysis of practice. Each feature identified within both designed-in and interactive levels of the scaffolding model was identified from this analysis. As indicated earlier, all of the designed-in features were present in all of the action research programs. Their centrality in the overall development and implementation, reinforced through discussions with teachers, led us to identify these features as significant. While not all the interactive features were equally significant in all of the programs, they recurred in all programs with regularity. It was this pattern of regular recurrence that led to their inclusion in the network model.

In attempting to represent scaffolding through a visual semiotic, we faced a number of challenges – principally that of attempting to balance clarity with inclusiveness. To put this more simply, we have grappled with the challenge of developing a model that is accessible especially to teachers, while at the same time being sufficiently detailed to be useful. While we would hope that the resulting model has achieved a workable balance, we are aware of a number of limitations.

There remain questions about the inclusiveness and the delicacy of the model. We have included what emerged from the data as the most distinctive and significant features. Clearly, however, the resulting list is not exhaustive, especially in relation to interactional features. We would suggest, however, that disagreements about the inclusion of specific features, or omission of others, would not fundamentally undermine key principles of the model – of the importance of both macro and micro level scaffolding and of the importance of the relationship between these two levels in articulating effective pedagogical practices. Indeed, in our ongoing work we anticipate refining the list of features included in the model.

The issue of delicacy is also problematic. In various versions of the model we have tried to tease out further distinctions within and between features. This has enabled us, for example, to distinguish what we have termed ‘repair contingency’ (where the teacher undertakes teacher repair work when she realises that students have failed to grasp some important concept) from interactive contingency (where the teacher engages in intellectual push). However, in the interests of accessibility, we have reverted to a simpler version of the model. We continue to grapple with the issue of delicacy in the model and realise that further work is needed here.

Of perhaps more significance are the broader dimensions that have been omitted from the model. These include the perspective of students, and the importance of the affective dimension in the overall teaching and learning process.

As indicated earlier, our major focus in this paper has been on the teacher’s role in providing challenge and support for students. Thus the macro and micro level features included in the model represent primarily those features that were evident in teachers’ rather than students’ behaviours. It is worth mentioning, however, that data from our research indicated not only that students actively engaged in shared construction of knowledge with the teacher, but that they also actively supported other students’ learning. Analysis of the perspective of students in the teaching–learning process, we would suggest, requires further analysis and research.

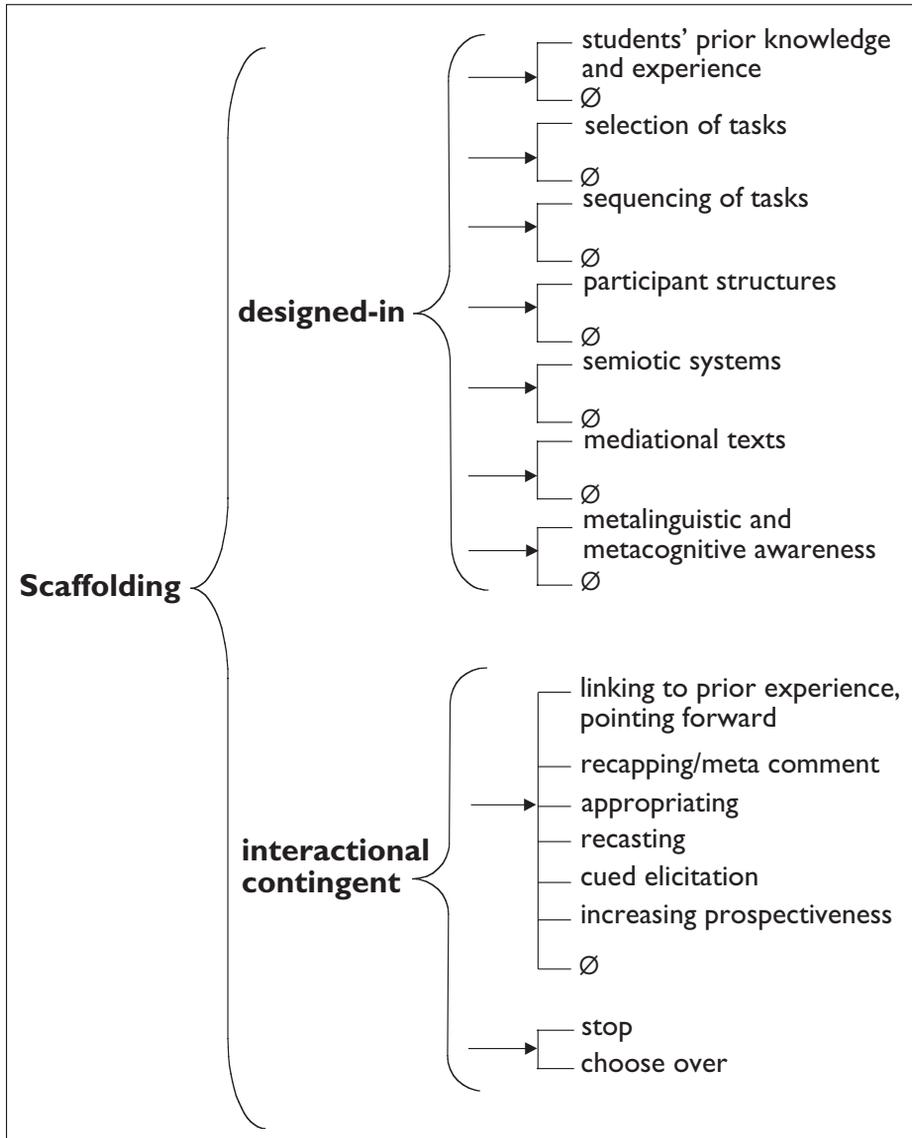
In addition, there is also need for closer analysis of the importance of the affective dimension. In our view, one of the most significant aspects of the interactional features in the action research programs is that students' voices were taken seriously, and that they were positioned as effective communicators and learners. It was clear that, in general, teachers were actively listening to the meanings students were making, rather than seeking a 'pre-scripted' single answer. As van Lier (1996) suggests, authentic and contingent responses both validate and respect students' contributions, and these were qualities we observed in our data. In addition, we noted that the interpersonal dimensions of interactions were often foregrounded: through the use of humour, choice of specific address terms, expressions of thanks and praise, and the use of modality to express politeness or tact.

Within the literature, generally, the affective dimensions of the teaching-learning relationship have been accorded far less prominence than the cognitive dimensions. Yet in Vygotsky's own work this aspect has a significant place: he argues that mediating artefacts enable humans to construct not only their powers of reasoning, but also their psyche (del Río and Álvarez 2002). In sociocultural terms, the cognitive and affective aspects of the learning environment cannot be separated, and we would argue, as does Cummins (2000), that this interrelationship is realised in the way that students are talked to and about. In the process of constructing knowledge, students' identities as learners are also being constructed. Dufficy's paper (this volume) addresses the dimension of affect and opens up a promising and important area for further research.

Finally, while we regard the visual semiotic that represents the network model as a strength, it also necessarily functions to 'freeze' the features that it identifies. A consequence of this is that the model fails to capture the dynamic nature of what happened in the action research classrooms. It thereby fails to capture the importance of sequencing of instruction: of the order in which interactive and contingent features occurred in classroom interactions; and of the ways in which they co-occurred. The dynamic unfolding of classroom interactions was pivotal in the complex and varied ways in which 'handover' occurred in these lessons, thereby enabling the students to become increasingly independent as learners. In our view, alternative ways of representing the interweaving of choices within the dynamics of classroom interaction, with particular emphasis on ways in which handover occurs, are necessary to complement the more static model of scaffolding that we have presented here.

Appendix

Scaffolding in action



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