Mediating Language Learning: Teacher Interactions With ESL Students in a Content-Based Classroom

PAULINE GIBBONS
University of Technology
Sydney, Australia

This research draws on the constructs of mediation from sociocultural theory and mode continuum from systemic functional linguistics to investigate how teacher-student talk in a content-based (science) classroom contributes to learners' language development. The illustrative texts show how two teachers, through their interactions with students, mediate between the students' current linguistic levels in English and their commonsense understandings of science, on the one hand, and the educational discourse and specialist understandings of the subject, on the other. Through this mediation, students' contributions to the discourse are progressively transformed across a mode continuum into the specialist discourse of the school curriculum. The data reveal ways teachers build linguistic bridges to span the two orders of discourse by showing how the interactions provide sites for L2 learning, in terms of the development of the new academic register. The illustrative texts suggest that in interactions that are effective in terms of L2 development, both teachers and learners are active participants in the co-construction of language and curriculum knowledge. The article also argues for the value of qualitative interpretive approaches and grounded knowledge in L2 research that is concerned with teacher development and educational improvement.

For students who are learning ESL in an English-medium school, English is both a target and a medium of education: They are not only learning English as a subject but are learning through it as well. In these content-based classrooms, the construction of curriculum knowledge needs to progress hand-in-hand with the development of English. This article focuses on how this process occurred for 8- and 9-year-old students in two mainstream science classrooms, where for more than 90% of the students English was a second (or subsequent) language (i.e., the teaching and learning of language took place in the context of the
regular school curriculum, not in a separate ESL classroom). The article explores in particular the way teacher-student interactions can enable L2 learning in the context of subject teaching and the role of the teacher and learners in this process. The texts show language learning as a socially mediated process whereby both teachers and learners are active participants in the co-construction of language and curriculum knowledge. The article draws on the constructs of mediation and mode continuum to provide a way of conceptualising how this process is played out in the classroom.

**MEDIATION FROM A SOCIOCULTURAL PERSPECTIVE**

The construct of *mediation* is central to the sociocultural theory of Vygotsky (1981, 1986; Lantolf, 2000) because it provides a means of studying social processes involved in situated language learning and use (Appel & Lantolf, 1994; Hall, 1995; Kramsch, 1993; Moll, 1994; Toohey, 2000; Wells & Chang-Wells, 1992). Reflecting Vygotsky’s notion that learning originates in the social mediation provided by interactions, such research in second language acquisition (SLA) questions the metaphors of input and output (see, e.g., Swain, 2000; van Lier, 2000). Sociocultural theory views language learners not as processors of input or producers of output, but as “speakers/hearers involved in developmental processes which are realised in interaction” (Ohta, 2000, p. 51). Recent research (Donato, 1994, 2000; Engerstrom & Middleton, 1996; Ohta, 1995, 1999, 2000; Swain, 2000; Swain & Lapkin, 1995; Wells, 1999) has shown how learning and language acquisition are realised through a collaborative interactional process in which learners begin to appropriate the language of the interaction for their own purposes. Much of this research has been concerned with learning through peer-peer interactions rather than through interactions between expert and novice, whereas this study examines how language learning is mediated by language use in the collaborative interactions between teacher and students.

Mediation is central to the study of collaborative interactions. Vygotsky (1981) argues that human activities and mental functioning are mediated and facilitated by tools, cultural practices, and artefacts, the most extensive tool being language. Mediation is a familiar concept in many social contexts: A lawyer, for example, mediates between a client’s account of an event and the language principles and categories of the legal world of the court (Maley, Candlin, Crichton, & Koster, 1995). Mediation of this kind can broadly be described as occurring in situations characterised by difference, difficulty, or social distance (Baynham, 1993). Such characteristics are inherent in most teacher-student relationships because in the great majority of school classrooms
there is considerable linguistic and conceptual distance between teacher and students, especially when they do not share the same language, assumptions, and life experiences.

Constructs related to mediation that are useful for investigating collaboration include zone of proximal development (ZPD), scaffolding, joint construction, and contingency. The site where social forms of mediation develop is the ZPD (Lantolf, 2000). The ZPD (Vygotsky, 1978) refers to the distance or the cognitive gap between what learners can do unaided and what they can do in collaboration with a more competent other. In Vygotskian terms, learning occurs through this assisted performance and in the context of joint activity: Human development, including language development, is thus intrinsically a social process and, in the broadest sense, educational. Newman, Griffin, and Cole (1989), who call the ZPD the construction zone, define it as “the changes that take place in socially mediated instructions” (p. 2).

The metaphor of scaffolding has been used by mother tongue and L2 educators to describe the nature of this assisted performance, which involves not simply helping to do but helping to know how to do (Brooks, 1992; Cazden, 1988; Lee & Smogarinsky, 2000; Maybin, Mercer, & Stierer, 1992; Mercer, 1994; Webster, Beveridge, & Reid, 1996; Wells, 1999). The term was originally used by Wood, Bruner, and Ross (1976) in their examination of parent tutoring in the early years. In the classroom it can be defined as the temporary, but essential, assistance that helps apprentice learners into new skills, concepts, or levels of understanding (Maybin et al., 1992, p. 186). In relation to teacher-student interaction, Maybin et al. suggest two criteria for determining whether a particular example of help can be portrayed as scaffolding: There must be evidence of a learner’s successfully completing the task with the teacher’s help and evidence of the learner’s having achieved a greater level of independent competence as a result of the experience. For unlike the lawyer’s aim, the teacher’s aim is ultimately to hand over knowledge and control to the students: In the sample texts discussed in this article, this process occurs through the interactional scaffolding that the teacher provides. This study contributes to the findings of other studies (e.g., McCormick & Donato, 2000) that focus on “the interactional mechanisms involved in the obtaining or providing of assistance during language learning tasks” (Ohta, 2000, p. 52).

In this article I use the term mediation to characterise the linguistic and discourse choices made by teachers in the content-based ESL classroom. The texts illustrate how two teachers, through their interactions with students, mediate between the students’ current linguistic levels (in English) and their commonsense understandings of science, on the one hand, and the educational discourse and specialist understandings of the subject, on the other. In other words, mediation involves communication
between two different orders of discourse: the current levels of learners’ knowledge and L2 abilities, and the broader knowledge and specialist language of the science community into which the students are being apprenticed.

MODE CONTINUUM FROM A SYSTEMIC FUNCTIONAL PERSPECTIVE

Describing mediation across orders of discourse, however, requires a means of characterizing the different orders. I use the construct of a mode continuum to describe the different orders of discourse observed in the classroom as the learners were assisted in moving from registers expressing their firsthand experience in oral language to those expressing academic knowledge in writing. A description of such registers draws on systemic functional grammar following the work of Halliday and other systemicists because of the need to study the discourse of teaching and learning from the perspective of linguistic theory that explains how language makes meaning. Theories of language and language learning that ignore its social context of use are of little help in an analysis of educational talk. From the perspective of mentalist accounts of language, which suggest that the talk children hear around them functions primarily as a trigger for language acquisition and a testing ground for their developing hypotheses, children have already passed many of the major milestones of language by the time they start school. Thus the language of teachers and caregivers may not be seen as having great significance in children’s language development.

Functional and interactional linguistic theories present the view that children have to learn to use language for a range of purposes and in a range of cultural and situational contexts. Thus even though, as innatists would argue, learners are “programmed,” or predisposed, to learn language, social theories of language and learning would suggest that whether they learn it, how well they learn to control it, and for what purposes they will ultimately be able to use it are dependent on the social and thus interactional contexts in which they find themselves. (See, e.g., the longitudinal studies of Halliday, 1993, and Painter, 1984, 1998, which track how the language of young children develops through the interactions and semiotic events in which the children participate.) Rather than viewing language as a finite set of rules that must be acquired, systemic theorists view language as a semiotic system—a set of choices from which speakers select according to the particular context they are in.

This semiotic interpretation of language, which views language as a set of resources rather than as a set of rules, makes it possible to consider the appropriateness or inappropriateness of language choices in a given
context of use. One of the most fundamental features of language from a systemic perspective is that it varies according to the context of situation. This context is characterised by three features: what is being talked or written about (field), the relationship between the speakers or writer and reader (tenor), and whether the language is spoken or written (mode). Language-in-use is determined by these contextual features, and together these three variables constitute what is referred to as the register of a text (Halliday & Hasan, 1985). In this study, the focus was on development of the academic register of primary school science, and to describe this development, I examined how mediation played a role in learners’ shifting along a mode continuum.

A mode continuum is most simply conceived in relation to mode differences between spoken and written language, which have been discussed thoroughly by, for example, Martin (1984), Halliday (1985), Kress (1982), Derewianka (1990), Hammond (1990), and Eggins (1994). In reality, however, and if the effect mode has on language choices is to be fully recognised, this distinction between spoken and written language is more accurately viewed as a scale or continuum. Martin (1984) suggests how aural and visual contact affect language and notes that

the more speakers are doing things together and engaging in dialogue, the more they can take for granted. As language moves away from the events it describes, and the possibility of feedback is removed, more and more of the meanings must be made explicit in the text. (p. 27)

In other words, the language itself must contain more information because it cannot depend on the addressee’s knowing exactly what occurred.

The four short texts in Table 1 exemplify a mode continuum. The register of each text changes because the context in which it was produced is different: Each text is more explicit than the one that precedes it. Text 1 was spoken by a student in a small group experimenting with a magnet to find out which objects it attracted. It demonstrates how dependent here-and-now language is on the immediate situational context: them and those have exophoric referents. Text 2, the same speaker telling the teacher what she had learned, is in the form of a recount. The increase in explicitness is the result of a context change: The teacher had not shared in the experiences, so more information is embedded in the text. Thus participants are now named: pins and magnet. Text 3, from the student’s written report, contains a generalisation and some field-specific lexis. Text 4, by way of comparison, is from a child’s encyclopedia. The language has become denser, and the process to which the child was referring in Texts 1, 2, and 3 is now collapsed into the nominalisation magnetic attraction.
The way in which the language is used in the four texts thus differs considerably. As they begin to refer to events not shared by listeners or readers, they take less for granted; the lexical density increases and becomes more field specific, the tenor becomes more impersonal, and the language increasingly takes on the characteristics of written language. These four texts illustrate what Martin (1984) refers to as "the general concept of contextual dependency" (p. 27), referring to the ways in which, as language moves away from the events it describes, more and more of the meanings must be made explicit in the text if the listener or reader is to recover them.

The continuum reflects the process of formal education itself, as students are required to make shifts within an increasing number of fields and to move from personal, everyday ways of making meanings toward the socially shared and more writtenlike discourses of specific disciplines. The development of literacy within any subject in the school curriculum involves learning the technical language, grammatical patterns, and generic structures particular to the subject. As the continuum suggests, these school-related registers tend to involve more writtenlike discourse, which tends to be less personal, more abstract, more lexically dense, and more structured than the face-to-face, everyday language with which students are familiar. Although more conversational texts tend to have high personal involvement, low explicitness of meaning, and interactive features, these more academic texts require a high explicitness of lexical content but allow for little interaction or personal involvement (Biber, 1986).

Vygotsky's (1986) notion of spontaneous and scientific concepts offers a related and somewhat similar perspective. Spontaneous concepts emerge from a child's everyday experiences (as in Text 1 in Table 1), are embedded within specific situational contexts, and are therefore not
systematic. Scientific concepts, on the other hand, are located within the structured and specialised discourse of the subject (as in Text 4), are more fixed, and are systematically related and logically organised (Kozulin, 1998). Thus, as Cummins (2000) points out in his discussion of language proficiency in academic contexts, “the academic tasks [ESL students] are required to complete and the linguistic contexts in which they must function become more complex with respect to the registers employed in these contexts” (p. 67).

Because fewer linguistic resources are required, a young L2 learner is likely to have fewer difficulties producing a text that is embedded in the immediate situational context than producing more context-reduced texts, which place a greater demand on the learner’s lexicogrammatical resources. Yet in the classroom, an oral reporting stage (like Text 2 in Table 1) is often not given much attention, and although school classrooms are usually rich in the provision of experiential learning activities, learners are frequently expected to write simply on the basis of these personal experiences, which represents a very large linguistic step (as can be seen by comparing Texts 1 and 3 in Table 1) that is beyond the linguistic resources of many young L2 learners. In the current study, a major focus is how teachers can support students in developing spoken, but less context dependent, language as a way into gaining control of the more formal and often written registers of the curriculum.

METHOD

This article is drawn from a larger study with a primarily interpretive approach. By interpretive, I refer to qualitative studies that take a semiotic approach, that is, one that focuses on the co-construction of meaning within a particular social setting (Davis, 1995; Hammersley, 1994). The major concern of that study was to identify factors in classroom discourse that enabled (or constrained) language development and to theorise this through instances of language teaching in situ (Gibbons, in press).

Context

The data in the larger study were taken from two classes of 9- and 10-year-olds in their fifth year of schooling in the same Australian school. One of the class teachers had previously worked as a consultant in ESL education and had then returned to the classroom, and the other had taken part in a number of professional development activities in the school that focused on teaching ESL students. Both teachers included
the teaching of language across the curriculum in their program planning and were familiar with the mode continuum as a means of conceptualizing language development.

The school was an urban school in a poor socioeconomic area, where at the time of the study 92% of the children were from language backgrounds other than English; this percentage was approximately the same for all classes. Of the total of 60 children in the two classes, many had been born in Australia but had entered the first year of formal education with little English; other students were first-generation migrants, including five children who had arrived in Australia within the previous year. Usually, children with little English very quickly become adept at using it in here-and-now contexts, where interactions occur face-to-face and often relate directly to what is occurring in the immediate situation, such as playing games in the playground. However, as Cummins (1984, 1988, 1996, 2000) and others (Collier, 1989; McKay et al., 1997) have shown, children who appear fluent in English in such contexts may still have difficulty understanding and using the registers associated with academic learning in school described above. The learning of these registers by ESL students was the particular focus of the study.

Data Collection and Analysis

In both classrooms data were collected during one complete unit of work or topic, consisting of 7 and 11 lessons of approximately 45–50 minutes. Data sources included audio recordings and transcriptions of 14 hours of discourse; environmental print around the classroom, such as posters, charts, and children’s work; field notes; and interviews with teachers and students. These varied sources facilitated data triangulation, although in this article the focus is on the transcribed discourse.

Handling the extensive amount of data that result from such an approach is often a major problem in research of this kind. In this study, the transcribed data were analyzed at two levels. The first documented every teaching and learning activity in the two classrooms and provided a holistic perspective on the total data set, indicating the kind of activity; the interaction pattern; where the activity fell on the mode continuum; and what children were learning about science, metalanguage, and their identity as students. This broad analysis indicated how the overall unit of work was organised and how it developed, and defined major patterns of discourse and learning. From this broad analysis there emerged a number of themes, which were taken up in the second level of analysis. This more detailed analysis drew on the construct of mediation from sociocultural approaches to learning and mode continuum from systemic functional linguistics. The texts discussed in this article are taken from
the second level of analysis and have been selected as representative of
the regular learning activities and typical discourse patterns identified by
the initial, more holistic analysis.

Because an overall aim of the study was to explore how the register of
science was constructed in the two classrooms, the analysis considered
the meanings that extended beyond a single lesson and examined how
these were built up over time. In any classroom, teacher and students
hear and produce language against an extensive background of accumu-
lated meanings, which researchers are in danger of ignoring if data are
collected on single visits. The theoretical need to observe ongoing
sequences of lessons has been demonstrated by a number of researchers
(Brilliant-Mills, 1993; Christie, 1995; Floriani, 1993; Heras, 1994; Lin,
1993; Mercer, 1995). In fact, a sociocultural perspective itself demands a
“holistic qualitative methodology” (Ohta, 2000, p. 53) that can explain
learning processes as they occur in interactive settings. Thus whole units
rather than single lessons were the macro units of analysis in the broader
study.

Focusing on a sequence of lessons is also necessary to avoid inaccurate
observations. Some of the science lessons observed consisted entirely of
students carrying out experiments in small groups whereas in other
lessons the teacher took a major role in initiating talk; the initiation-
response-feedback (IRF) pattern was very much in evidence. Observing
one or another of these lessons might lead to a conclusion that the
classroom was teacher fronted and teacher directed or, conversely, that it
was totally student centred. Neither lesson alone would have provided a
sense of what the teachers were doing or how knowledge and language
were being progressively built up.

By observing the classroom over a sustained period of time, I could
thus observe how a teacher handled all stages of learning, for example,
how a topic was introduced, if and how students’ prior learning was built
on, how new learning and language were developed through the
discourse, and what evidence there was that the students took up this
new learning and language.

The Teaching Program

Based on the science topic of magnetism, the teachers, with some
input from me, had planned teaching and learning activities that would
(in terms of the language that students would be likely to use) reflect
points along the mode continuum, the assumption being that the
activities would offer a developmental sequence of language learning
along that continuum. Broadly, three points can be identified as stages in
the program: doing an experiment in small groups using concrete
materials, reconstructing these personal experiences through reporting to the class (who had carried out similar but not identical experiments), and, finally, completing an informal writing task in science journals.

In the first stage, students carried out a series of experiments in small groups, with each group doing a different experiment. The second stage, the reconstruction of personal experiences, occurred through what I have described as *teacher-guided reporting* (Gibbons, 2001): Groups of students, with the help of the teacher, shared their learning with the whole class. It was at this stage that the teacher and students began to co-construct the more formal register of school science; the interactions that occurred here are the focus of this article. As Driver (1994) points out in her critique of inductive methods of teaching science, “theoretical models and scientific conventions will not be ‘discovered’ by children through their practical work. . . . guidance is need to help children assimilate their practical experiences into what is possibly a new way of thinking about them” (p. 49). Martin (1990) likewise states that

common-sense knowledge can be a very useful starting point for learning science, because it organizes the world in ways that can be clearly related to scientific understandings . . . at the same time it is clear that commonsense understandings differ from scientific ones and that schools have a crucial responsibility to induct students into the alternative scientific world views. (p. 84)

(In relation to issues of technicality and mode in science discourse education, see also Halliday & Martin, 1993; Martin & Veel, 1998.)

During teacher-guided reporting, the teachers modeled and focused on key lexis (e.g., *attract* and *repel*) or on significant grammatical structures, either through a brief explanation or in the course of jointly constructed interactions. Toward the end of these sessions the teachers helped students build up generalisations by directing their attention to the commonalities in the groups’ findings. Reflecting the principles suggested by Driver (1994), teacher-guided reporting thus allowed a space for the teacher to assist learners to construct principled understandings about the activities in which they had taken part. As expected, although students had little difficulty in talking about what they were doing in the face-to-face setting of the experiment, it was considerably more of a challenge for them to reconstruct through language what had occurred for the benefit of others. As already pointed out, they were being required at this stage to shift along the mode continuum toward more writtenlike language. The more explicit use of spoken language required in these reporting sessions provided a linguistic bridge into the final stage of the teaching sequence, when students wrote in their journals. Manipulating the contextual variables through these three stages resulted in a systematic increase in the lexicogrammatical demands
on the students that was intended to help them move along the mode continuum. This three-stage cycle was repeated several times during the unit of work.

FINDINGS

All the texts discussed below come from the teacher-guided reporting sessions, when, as described above, teachers and students together reconstructed what had occurred in the face-to-face context of the experiments and began to recontextualise it in the discourse of science. Through the teacher’s mediation, students’ contributions to the discourse of the classroom were progressively transformed into the specialist discourse of the school curriculum. The texts illustrate how the teachers’ mediating role played out and indicate how the teachers built linguistic bridges to span the difficulty, difference, or distance referred to earlier. Because in content classrooms the learning of science must go hand-in-hand with the development of an L2, classroom interactions are a major site for language development, so I focus on some of the ways teacher-student interactions can create discourse sites that enable use of the more scientific register. In the examples, teachers mediate language learning in several ways: mode shifting through recasting, signaling to learners how to reformulate, indicating the need for reformulation, and recontextualising personal knowledge.

Mode Shifting and Recasting

The teachers explicitly engaged in mode shifting at a macro level across different teaching activities, but mode shifts also occurred within the discourse by which these activities were realised, at the microlevel of ongoing and moment-by-moment interactions between teacher and students. In Text 1 (Figure 1), for example, mode shifting takes place when the teacher invites Charbel\textsuperscript{1} to talk about what his group had learned about the behaviour of two bar magnets in relation to the position of the poles. This text is typical of many exhibiting an ongoing process of recapping by the teacher, who re-represents or recontextualises learners’ experiences and the events they are talking about in a way that fits the broader pedagogic objectives of the curriculum. There remains, however, a close similarity between what students say and how their version of events is recontextualised. In such cases, the mode shifting occurs when the teacher recasts a student’s contribution.

\textsuperscript{1} Students’ names in the transcripts are pseudonyms.
FIGURE 1
Mode Shifting in Text 1

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Student</th>
<th>Situationally embedded</th>
<th>Everyday</th>
<th>Formal</th>
</tr>
</thead>
<tbody>
<tr>
<td>it sticks together</td>
<td>like that</td>
<td>they attracted to each other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>other</td>
<td></td>
<td>they stuck to each other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>you can feel . . . that</td>
<td>when they were facing one way</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>they're not pushing . . .</td>
<td>you felt the magnets attract</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>if we use the other side</td>
<td>and stick together</td>
<td>when you turn one of the magnets around</td>
<td></td>
<td></td>
</tr>
<tr>
<td>we can't feel pushing</td>
<td>or pushing away</td>
<td>you felt it repelling</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I refer to this type of mode shift as recasting, noting, however, that this is a somewhat extended use of the term as used by most SLA researchers (see, e.g., Lyster, 1998; Oliver, 1995). The teacher’s recast version in this case is thematically related to the student’s version, even though different thematic items are used: stick/attract, not pushing/repelling. The same semantic relations are constructed, and the same thematic pattern is repeated: it sticks together/they attracted each other; you can feel they’re not pushing/you felt it repelling. Equivalent words occupy the same or corresponding slots in a similar grammatical construction. Lemke (1990) refers to this as local equivalence: the marking of two expressions as equivalent within the thematic pattern being built up, further marked here by the use of emphasis. Here the teacher’s response closely follows the student’s grammatical construction, appropriating the student’s meanings while recoding the everyday wordings and recasting them as attract and repel. This recasting and extension of student-initiated mean-

---

2 Recasting has generally been used to refer to reformulations of child or L2 speaker’s utterances at the level of morphology or syntax. Here I am using it to refer to any piece of connected discourse where a teacher rewords student meaning in more registrally appropriate ways.
ing depends on the adult's contribution being closely related to, and thus following, the student's contribution. In other words, the teacher's modeling occurs after, and on the basis of, what the student has contributed and thus is semantically contingent upon it. Semantically contingent speech, fine-tuned to an individual learner, has been identified by researchers as an enabling factor in both mother tongue and L2 development (Snow, 1986; van Lier, 1996; Webster et al., 1996; Wells, 1985).

Further examination of the recast reveals that it consists of more than a single shift between two points on the mode continuum. The teacher's contributions themselves include instances of three distinct points along the mode continuum. For the purposes of examining the teacher talk, I characterise these points as *situationally embedded* (representing those parts of the discourse that contain exophoric reference and are bound up with and rely on the immediate visual context for their interpretation), *formal* (representing the standard lexis of school science), and *everyday* (representing the informal spoken language familiar to the children). These mode shifts result in considerable message redundancy, an important aspect of discourse in facilitating comprehension for L2 learners (see, e.g., Wong-Fillmore, 1985). Figure 2, based on Text 1, illustrates the mode shifting through which this redundancy is achieved.

The mode shifts evident in the teacher's discourse offer a microperspective on the way the discourse operates as a linguistic bridge between students' current language abilities and the demands of the school curriculum: The two middle columns of Figure 2 span these two orders of discourse. The bridging might be interpreted as the ZPD in action, an operationalisation of the notion in terms of L2 teaching and learning. Exploring the mode shifts within the discourse also offers a linguistic perspective on the construct of *comprehensible input* and indicates one discourse strategy by which it is achieved in classroom practice. Here the students can access three sources of meaning: the demonstration by the teacher, the description of the process using familiar language (*stick to, pushing away*), and the technical terms (*attract, repel*). In this sense it is a multimodal text, which provides considerable message redundancy for L2 learners.3 Clearly, however, comprehensibility here is not synonymous with simplification; rather, students are given access to key technical terms in a context where meanings are made transparent.

However, although such exchanges seem likely to increase the capacity of the discourse to facilitate language learning, researchers have suggested that implicit teacher recasts (i.e., recasts that simply reformulate all or part of the student's utterance with no additional meaning and

---

3 Although not the usual term, perhaps the notion of *message abundance* better captures what is happening here.
<table>
<thead>
<tr>
<th>Turn</th>
<th>Student</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>when we put it on one pole . . em faces the other one it doesn’t stick but when we turned the other one around . it sticks together</td>
<td>what were your results?</td>
</tr>
<tr>
<td>2</td>
<td>OK can I just clarify something? you’ve got two magnets? they’re in line/ when you put . the two together</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>yes Miss</td>
<td>like that (demonstrating) they attracted to each other/ they stuck to each other/ is that right?</td>
</tr>
<tr>
<td>4</td>
<td>(nods)</td>
<td>OK can you then tell me what you had to do next?</td>
</tr>
<tr>
<td>5</td>
<td>when we had em the things the first one like if you put it up in the air like that . the magnets you can feel . feel the em . that they’re not pushing?</td>
<td>when you turn the magnet around? you felt that</td>
</tr>
<tr>
<td>6</td>
<td>pushing and if we use the other side we can’t feel pushing</td>
<td>OK so when . . they were facing one way . . they/ you felt the magnets attract and stick together/ when you turn one of the magnets around you felt it . repelling . . or pushing away . . OK thank you well done Charbel</td>
</tr>
</tbody>
</table>

**Note.** The transcripts are set out in columns to enable a clearer focus on the significance of each speaker’s contribution (e.g., the changes evident in a student’s verbal behaviour or the teacher’s scaffolding). Reading across the columns shows the co-construction of the dialogue (e.g., the coherence and semantic relationship between speakers). Transcription conventions are as follows:

- approximate 1-second pause
- meaning group boundary
- marked emphasis
- procedural language, such as turn nominations and evaluative comments

without drawing the student’s attention to the reformulation) minimise the value of students’ utterances (Lyster, 1998, p. 55), for such results do not require students to adjust what they have said (Pica, 1988, 1994). Students appear to need time and opportunity for self-repair (van Lier, 1988, 1996). Thus when listeners signal a need for clarification, this may benefit L2 learning in two ways: by providing clues to assist learners in modifying and actively confronting communication difficulties (referred to here as signaling how to reformulate), and by inviting student- rather than teacher-generated repair (referred to here as indicating a need for
reformulation). The following two sections illustrate both these ways of signaling a need for clarification.

Signaling How to Reformulate

In Text 2 (Figure 3) the teacher signals a need for clarification and supplies a recoded version of the student's meaning only after the learner has had opportunities for self-correction. Julianna is attempting to describe how, when she placed a piece of aluminium foil between a magnet and a nail, the magnet still attracted the nail. Mediation by the teacher here is focused less on providing new language than on providing pointers for the student to reformulate her own wording. Again, the co-constructed nature of the text is significant: The teacher's scaffolding is contingent on the meanings the student is trying to construct.

FIGURE 3
Text 2

<table>
<thead>
<tr>
<th>Turn</th>
<th>Student (Julianna)</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>if you put a nail . onto the piece of foil . . and then pick it . pick it up . . . the magnet will . . . . . . . that if you put a . nail . under a piece of foil . and then pick . pick the foil up with the magnet . . still . still with the nail . . under it . . . it won't</td>
<td>what did you find out?</td>
</tr>
<tr>
<td>2</td>
<td>it won't/ it won't come out</td>
<td>it what?</td>
</tr>
<tr>
<td>3</td>
<td>it'll go up</td>
<td>what won't come out?</td>
</tr>
<tr>
<td>4</td>
<td>like if you put a nail and then foil over it and then put the nail on top . of the foil . . the nail underneath the foil/ Miss I can't say it</td>
<td>wait just a minute . . . can you explain that a bit more Julianna?</td>
</tr>
<tr>
<td>5</td>
<td>Miss forget about the magnet/ em</td>
<td>no you're doing fine I/ I can see</td>
</tr>
<tr>
<td>6</td>
<td>the magnet holds it with the foil up the top and the nail's underneath and the foil's on top and put the magnet in it and you lift it up . . . and the nail will em . . . hold it/stick with the magnet and the foil's in between</td>
<td>oh/ so even with the foil in between . the . magnet will still pick up the nail . alright does the magnet pick up the foil?</td>
</tr>
<tr>
<td>7</td>
<td>no</td>
<td></td>
</tr>
</tbody>
</table>

MEDIATING LANGUAGE LEARNING 261
Julianna's first explanation (Turn 2) is extended but extremely hesitant and unclear. At Turn 3 the teacher could have closed the exchange by recasting what Julianna is attempting to say (as she does eventually in Turn 11). Instead she increases the demands made on the student as interactant by asking a question in order to determine the process to which the student is referring: “it what?” (Turn 3; i.e., *it won't do what?*). When the student's meaning is still not explicit, the teacher asks a further question, this time to elicit the missing participant: “what won’t come out?” (Turn 5; i.e., *what thing won't come out?*). When this question does not result in a clearer explanation, she asks for further clarification: “can you explain that a bit more?” (Turn 7). The student's next attempt repeats much of the information of Turn 2 but is noticeably less hesitant. However, she stops with the very telling words “I can't say it” (Turn 8). The teacher encourages her to continue, this time by foregrounding the interpersonal: “you're doing fine” (Turn 9). Julianna's final attempt is considerably more complete and is the least hesitant, incorporating the key fact that the foil was between the nail and the magnet. Compared with the initial attempt (Turn 2), it is a far more explicit and comprehensible piece of information.

As is evident from the visual layout of the transcript alone, the student talks far more than the teacher throughout the sequence. The teacher hands over to the student the responsibility for clarification, which results in increasingly explicit information from the student, or what Swain (1985, 1995) has referred to as *comprehensible output*—compare, for example, Turns 2, 4, and 11. Swain also argues for the need for *stretched* language—learners must have opportunities to use language that stretches them to the outer limits of their capabilities. Here Julianna's linguistic resources are clearly being stretched; her comment “I can't say it” indicates just how much.

In Vygotskian terms, in relation to this task Julianna is at the outer limits of what she can do alone. Yet because of the precise and contingent nature of the teacher's scaffolding, the text is characterised by the student's, rather than the teacher's, reformulations. The teacher finally does the job of recontextualising the student's meaning in more concise wording, but not until the 11th move, offering a greatly increased opportunity for negotiation of meaning over what would have occurred in a three-part exchange. And as is well attested, such negotiation of meaning, particularly when achieved through requests for clarification in which learners must adjust what they have said, appears to facilitate L2 learning (Pica, 1988; Pica, Holliday, Lewis, & Morgenthaler, 1989). As Hall (1998) points out, language learning does not depend only on students' abilities, or on their knowledge and skills or motivation for learning, but is "tied to the teacher's motivation for and interest in providing her individual learners' with 'official participatory rights' to
engage fully in the opportunities for exhibiting and building on their knowledge and skills in their classroom practices” (p. 308).

In Text 2, the increase in negotiation of meaning is achieved by a small but highly significant adaptation of the usual three-part classroom exchange. Here, in place of the third, feedback move, the teacher asks a question designed to elicit additional information from the student, a feedback move that Wells (1993, 1996, 1999) refers to as a pivot to the next exchange. He describes how the division of labour typical of the IRF exchange, in which the teacher does most of the talking, can be redistributed through this move, with the student rather than the teacher taking responsibility for making what she says more comprehensible to her audience. In this way the teacher helps the learner extend her initial response in her subsequent move, thereby extending the exchange; in Text 2 the teacher does this not once but several times. As Cazden (1988) has also observed, a relatively minor change in the traditional IRF sequence can have significant effects on the process of the discourse as a whole. Consider, for example, what opportunities for language learning would have been lost if the teacher had recast what Julianna was trying to say at Turn 3. It is particularly significant that in the children’s journal writing after such talk with the teacher, the lexicogrammatical choices of the children reflected these negotiated and co-constructed texts, indicating at least some take-up of the language and suggesting the importance of the prior rehearsal of more written-like discourse afforded by the teacher-guided reporting episodes (for discussion of evidence of take-up in this context, see Gibbons, 1998, 2001).

**Indicating a Need for Reformulation**

In the exchanges shown in Texts 3 and 4 (Figure 4), the teacher indicates the need for reformulation in terms of a more registrally appropriate response, but, knowing that the learner can achieve it alone, she hands the responsibility over to the student. The examples illustrate again how a request for clarification—and perhaps the consequent extra time for formulating a response that this request allows the student—may in itself result in longer and more complete learner discourse.

As in Text 2, the teacher’s third move in Text 3 is not an evaluation or a reformulation but a further question that results in the student’s language being stretched. As a result of the teacher’s contribution, Beatrice makes more of her reasoning explicit in the discourse, assuming less shared knowledge on the part of her listeners: The adjunct still, for example, which requires some shared understanding of the context to be interpreted, is recoded more explicitly as a logical conjunction.
<table>
<thead>
<tr>
<th>Turn</th>
<th>Student</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Text 3</td>
</tr>
<tr>
<td>2</td>
<td>Beatrice: em we put three magnets together/ it still wouldn’t hold the gold nail</td>
<td>tell us what happened</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Beatrice: we/ we tried to put three magnets together . . to hold the gold nail . . even though we had three magnets . . it wouldn’t stick</td>
<td>can you explain that again?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Text 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>tell us what you found out</td>
</tr>
<tr>
<td>2</td>
<td>Michelle: we found out that the south and the south don’t like to stick together</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>now let’s/let’s start using our scientific language Michelle</td>
</tr>
<tr>
<td>4</td>
<td>Michelle: the north and the north repelled each other and the south and the south also . . repelled each other but when we put the/ when we put the two magnets in a different way they/ they attracted each other</td>
<td></td>
</tr>
</tbody>
</table>

indicating a causal relationship: _even though_. As pointed out earlier, this ability to use explicit discourse is usually required in the academic registers and written language of school. Similarly in Text 4, the prompt from the teacher, which again explicitly draws the student’s attention to register, results in an extended response that is more appropriate for the register.

**Recontextualising Personal Knowledge**

Text 5 (Figure 5) occurred toward the end of a teacher-guided reporting episode, when the teacher was focusing more explicitly on the language needed to talk about the students’ findings in more registrally appropriate ways, specifically here the wording of a generalisation. At this point students’ individual findings are also being recontextualised in terms of the broader principles and framework of science. On the board was a matrix (Figure 6), and as each student responded, the teacher marked the appropriate box with a tick.
<table>
<thead>
<tr>
<th>Turn</th>
<th>Students</th>
<th>Field: Language</th>
<th>Field: Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>let's try this what if I try the north pole and the south pole... of the magnet... who can tell...</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I want a sentence a nice sentence Carol Ann?</td>
<td>good... what if I try the south pole of this magnet and the north pole of that magnet... yes François</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Carol Ann: the north pole and the south pole attract</td>
<td>come on a sentence</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>good boy good François south alright and let's try the pole of this magnet and the south pole of the other magnet... Stephanie</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>François: the south pole and the north pole will attract</td>
<td>my goodness aren't they speaking well so I would like two ideas that we get from this... two general ideas what we call generalisations... who can give me something that will happen all the time not what just happened to us today... Gina do you want to try</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Stephanie: the south pole and the south pole will repel</td>
<td>good alright that will always happen so we'll say</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>south pole and south pole?</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>If you put the north pole and the north pole together em that will not... that will repel and if you put the south pole and the south pole together that will repel too</td>
<td>north pole and north pole?</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>alright... who can give me something else... Jennifer</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>south pole and south pole?</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>north pole and north pole?</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>alright... who can give me something else... Jennifer</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>right they attract each other... north pole and south pole attract each other... right</td>
<td></td>
</tr>
</tbody>
</table>

MEDIATING LANGUAGE LEARNING 265
As in Text 1, the context is a multimodal one, with the matrix being built up on the board providing another way of representing the information being constructed through the discourse. To show the nature of the mediating work being done by the teacher, the transcription is shown in two fields, representing talk about language and talk about magnets (science).

The teacher talk encapsulates two fields: science and language itself. The relationship between these two in the progression of the discourse is a significant factor in the teacher's scaffolding. The field of language here involves talk about language that is intended to help students understand both the concept of a generalisation (see, e.g., the use of emphasis in Turns 9 and 12) and its wording (“so we’ll say . . .”). The teacher shows students how to produce their understandings in more abstract ways—ways that are not dependent on a here-and-now context. As the dialogue progresses and students begin to master the structure of the generalisation without help, however, talk about language progressively drops out of the teacher's talk. Jennifer's response is a complete phrase that, though syntactically parallel with the previous response, contains different information and indicates how she has appropriated and transferred new learning. Scaffolding, provided by the talk about language, is a temporary support and, as the layout of Text 5 indicates, is progressively discarded as students show they can produce the target language alone.

Text 5 also illustrates that the pedagogical significance of texts—how they are read—cannot be uncovered without a consideration of their place within the ongoing discourse that has been built up over time. Any interactional sequence is simply an excerpt of a much larger piece of discourse, namely, the total discourse of the subject or topic to date, referred to by Edwards and Mercer (1987) as the *long conversation* of the classroom. Thus the meaning and nature of a particular interaction can only be understood in terms of the situational context and ongoing
discourse in which it occurs. Though in isolation this text has shades of a drill and practice, it is a far cry from an empty functional drill. Rather, it is an example of how, within the context of the long conversation, in which children's own observations have been a starting point, the teacher mediates for learners ways of recontextualising their personal learning, taking a further step toward the language of the science curriculum.

CONCLUSIONS AND IMPLICATIONS

Examining the process of mediation across a mode continuum in this classroom provided a way of focusing on the building of linguistic bridges between learner language and the target register, which must be integral to any ESL program in which new and unfamiliar ways of using language are also constructing new content knowledge. Describing these bridges in linguistic terms contributes to an understanding of what might constitute effective interaction in such a context. In these texts, as I have shown, teachers mediate language and learning in several ways: mode shifting through recasting, signaling to the students how they can self-reformulate, indicating where a reformulation is needed but handing this task over to the learner, and modeling alternative ways of recontextualising personal knowledge.

Central to such interactions is the notion of contingency, the way an adult judges the need and quality of assistance required by the learner on the basis of moment-to-moment understanding. Contingency requires interactants to be oriented toward collaboration: Contingent discourse is anchored within the shared agenda of the participants (van Lier, 1996) and requires what Wells (1986) refers to as a rich interpretation of a learner's attempt to communicate ideas. Van Lier refers to the Janus-like quality of such interactions: In these examples, the discourse looks both backward, to the familiar, known, or given, and forward, to the language associated with curriculum learning, or the new. Such contingent interactions evidence an intersubjectivity and sharedness of perspectives that set up expectancies for what may come next, validate (value and respect) the preceding and the following utterances, and help ensure continued engagement (van Lier, 1996, p. 184).

The teachers' responses also reflect the ZPD in that they take as a starting point what the student can contribute but extend it by scaffolding the language the student will later be expected to use. As van Lier (1996) suggests, "in order to learn, a person must be active, and the activity must be partly familiar and partly new, so that attention can be focused on useful changes and knowledge can be increased" (p. 171). The closeness of fit between student and teacher contributions offers an
insight into how far the students’ ZPD is informing the teacher’s response. As suggested earlier, the degree of difference between student and teacher talk can perhaps more generally illuminate the appropriate-ness of teachers’ responses in classroom discourse (especially important for ESL students in mainstream classrooms largely driven by particular curriculum content). Too close a match between teacher and student contributions would suggest that students are not being provided with a context in which learning will occur, because they will have no access to unknown language; too great a difference may lead to students’ failing to understand the teacher’s discourse (see Lemke, 1990, for analyses of a physics classroom where the teacher’s and students’ understandings fail to converge).

Exploring the ways in which students and teachers co-construct meaning also shifts pedagogical questions away from the well-worn debate around traditional/teacher-fronted versus progressive/student-centred pedagogies toward a focus on the nature of the discourse itself and its mediating role in the broader knowledge framework of the curriculum. The texts show how language learning is essentially a social rather than an individual endeavour: Meanings are constructed between rather than within individuals and are shaped by the social activity in which they arise and the collaborative nature of the interaction. As Cummins (1996) points out, one implication of this view of learning, and one that is particularly relevant in an ESL context, is that learners’ achievements (and, equally, educational failure) should not be seen as solely the result of a learner’s innate ability or background but also as the measure of the nature of the interactions between teacher and learner.

Finally, the interactions discussed here are not unusual examples. Similar interactions between teachers and students probably occur daily throughout hundreds of classrooms without teachers being explicitly aware of the nature of their responses. Much effective teaching may result from the intuitive rather than the explicit knowledge that teachers hold; such knowledge is not necessarily stored in propositional form (Heap, 1995). But unless such knowledge is propositionalised by being articulated, it cannot be reflected on or fed back into the classroom and into curriculum design. One of the strengths of qualitative approaches for educational research is that they have the potential to recast teachers’ innate understandings as educationally usable propositions; theorising from practice can lead to usable theory for future teacher development (van Lier, 1994, p. 338).

Teacher-student interaction in the content-based ESL classroom is one area in which such research would be profitable. Further research needs to focus on analysing linguistically the mechanisms through which teachers mediate between the language of their students and the linguistic demands of the school curriculum. The model of language-in-
context central to systemic linguistics offers a way to do this, because of its focus on the relationship between context, meaning, and language; its concern with how meanings are made; and its complementarity with a sociocultural perspective on teaching and learning. Register analysis, for example, can show how teacher-student discourse mediates shifts in field (topic), tenor (the relationships constructed between teacher and student), and mode (the textual resources whereby everyday language becomes less dependent on the immediate situation). Analysis of classroom language that draws on this model has the potential to lead to more explicit and linguistically oriented descriptions, or reconceptualisations, of constructs of SLA such as comprehensible input and learner output (and the relationship between them), negotiation, and recasting, and will help describe more precisely the relationship between classroom interactions and language development. Most important, it will ground such research within the dynamic social context in which ESL school learning is played out. In addition, studies such as the one described in this article suggest that teacher education courses might usefully pay more attention to developing teachers' understandings of the role of discourse in mediating learning. The kind of analysis included here offers one means of achieving this.

THE AUTHOR

Pauline Gibbons teaches postgraduate TESOL courses at University of Technology, Sydney. She has worked as a teacher educator in Hong Kong, Laos, the United Kingdom, Iran, and South Africa, among other locations. Her research interests are in ESL pedagogy and the role of classroom discourse in L2 development.

REFERENCES


Ohta, A. (2000). Rethinking interaction in SLA: Developmentally appropriate assistance in the zone of proximal development and the acquisition of L2


Wells, G. (1993). Reevaluating the IRF sequence: A proposal for the articulation of