Talk in the Classroom

Summary

This issue of the ELIS Research Digest looks at the importance of talk in the classroom. Talk can take place between the teacher and a whole class or between the teacher and an individual student. It can be between individual students working in groups or between an individual student and the whole class. The studies reported in this Digest suggest that talk in the classroom is essential to the cognitive and linguistic development of students across the whole curriculum. However, it seems that restrictive forms of question and answer sequences are still dominant in classrooms and teachers are sometimes unsure of the practicality of alternatives. However, classroom talk allows teachers to more easily monitor their students' understanding of complex concepts. As a result, they are then in a better position to take remedial measures before it is too late. It is also through such talk that students develop the thinking and language necessary for them to learn the required concepts.

Introduction

The term 'oracy' was first used by Wilkinson (1965). He used it to refer to the oral skills of speaking and listening in the context of learning and development. He argued:

> *Where children are … placed in situations where it becomes important for them to communicate – to discuss, to negotiate, to converse – with their fellows, with the staff, with other adults … This is basically how oracy grows: it is to be taught by the creation of many and varied circumstances to which speech and listening are natural responses. (p. 59)*

Since then, oracy has become an important part of educational syllabi around the world. While the term oracy will be used frequently in this Digest, the focus is on the speaking skills in learning in general but with a particular emphasis on their role in subjects or disciplines. A later issue of the Digest will focus on listening.

Traditionally, language has been divided into four main skills – listening, speaking, reading and writing. Until the mid-19th century, schools tended to focus on the written language. Foreign languages were taught through the study of grammar rules and lists of vocabulary that were combined in the analysis of written texts or in the

formation of decontextualized sentences. In the mid- to late-19th century, a growing number of linguists began to question this approach that had failed to produce proficient users of foreign languages. One of the grounds for questioning the approach was the suggestion that the learning of a language (as in the mother tongue) should begin with listening and speaking, followed later with reading and writing (Richards & Rodgers, 2001).

Vygotsky (1978) theorized that we learn through social experience. He hypothesized the existence of the 'zone of proximal development' or ZPD, the gap between what a child could achieve alone and what he/she could achieve with the help of a more knowing other. That other could be an adult or a more competent peer. He believed that language and cognition developed together and that this development was not purely internal to the individual but was also dependent on the social community in which the individual was located. He believed talking was important not just to clarify understanding but also for the individual to learn how to communicate. The adult teacher may be tempted to interrupt a group conversation to help the participants reach a conclusion but this may be counterproductive as the talk itself is part of the children internalizing the concepts. This does not mean that language and cognitive development will take place

naturally. Teachers need to learn skills of observing, questioning and encouraging useful peer interaction and the skill of knowing when to step in and when to let the children carry on without them (Mooney, 2000).

Sticht (2003) stressed the importance of oral skills as the base for literacy skills in a discussion of a number of studies done in the United States on adults with reading difficulties. He suggested that the practice of giving written intelligence tests to estimate their reading potential was misguided. He quoted data from a study (Sticht & James, 1984) of 2,000 adults that showed that, contrary to expectations, native speakers of English with reading difficulties had listening grade levels not far ahead of their reading grade levels. He felt that this gap reflected their true reading potential and that there was a need to improve their vocabulary and content knowledge through their oracy skills before they could make a lot of progress in reading. Only then would the phonics, phonemics and decoding skills become useful, i.e. oracy must come before literacy. It is worth noting that data for adult learners of English indicated a similar situation in that their reading and listening grades were close together. However, in their case, their average reading level (grade 4.8) was slightly higher than their average listening level (grade 4.4) as had been expected for learners for whom the language was a foreign language.

Jones (2007) stressed the importance of speaking and listening in the development of understanding. She suggested that, in trying to speak our thoughts, we often come to a clearer understanding. Making implicit thoughts explicit is a powerful learning tool for children as well as for adults. Many theories of development stress the importance of talk with peers and with a knowing adult as well as of language as a tool for sense making or thinking together. Jones (2007) believed that the important speaking and listening skills could be most easily developed through dialogic teaching, the development of metacognitive awareness, and proper planning and assessment. She suggested that there were four aspects of speaking and listening skills that needed to be planned for: social, communicative, cultural and cognitive. She reported that, contrary to the fears among some teachers that student talk would be unproductive, research had shown that, given an appropriately structured task, students used talk to clarify their own thinking and to help others.

Types of talk

This section looks at different types of classroom talk and some of the terms that have been used to identify and contrast them.

The term 'dialogic teaching' will appear a number of times in this Digest and thus it is important to define it here. While the different writers reviewed below may emphasize different aspects, the main features are agreed on. Dialogic teaching is 'collective', involving the whole group. It is reciprocal in that teachers and students work together to move the talk and the learning forward. It is 'cumulative' in that students and teachers build on ideas that others have contributed. It is 'supportive' in that it generates a risk-free environment where each individual helps the rest. Not all dialogues in the classroom are dialogic. Some simple Initiation, Response, Evaluation (IRE) sequences that are commonly found in classrooms are not dialogic as they do not allow for any real contribution from the students. In the following example, the dialogue is completely controlled by the teacher.

Teacher:	What is the capital of Thailand?
Student:	Vientiane.
Teacher:	No. Were you paying attention when we did this yesterday? It is important to learn about our neighbours.

The teacher already has an expectation of what the student should contribute and will not (cannot) accept any other response. In contrast, in dialogic teaching, the students are in a position to give information and opinions and ask questions. This may happen in an IRE sequence but it can also come in other forms of classroom talk. The important point is that talk builds on the student contributions as in the following exchange:

Teacher:	Where would be a good place to go for a holiday?
Student:	JB.
Teacher:	JB. That's interesting. Why would you choose JB?
Student:	I like JB. (Encouraging nod from

the teacher.) It is easy to get to and it's just like Singapore.

In this sequence, the teacher accepts the contribution of the student and then asks for the reasons for the choice thus encouraging the student to respond with a longer turn.

The sequence of IRE mentioned above was found to be a pervasive discourse pattern in schools in the 1970's. It was seen as very limiting for the students as usually, as we have seen, their response was little more than a few words and, more importantly, was limited to regurgitating information as demanded by the teacher. Westgate and Hughes (1997) noted that there had been a re-examination of this IRE sequence that accorded it greater functionality, emphasizing the possibility of extending the final stage to giving longer feedback and thus revised to IRF (where F stands for feedback). However, they felt that there were some continuing concerns because the student contributions were generally still very brief.

This (emphasis on the 'internalization' of learning) needed to be balanced with longer student turns in the more formal setting of the whole class as this would help with the important step of 'externalizing' learning.

P. Thompson (2008) repeated this concern. He felt that the IRF sequence as it was generally used was 'univocal' in that it centred around the input and ideas of the teacher and, as a result, student turns were very short. He also felt that the alternative focus on teacher-student talk and talk in collaborative small groups tended to emphasize the 'internalization' of learning. He believed this needed to be balanced with longer student turns in the more formal setting of the whole class as this would help with the important step of 'externalizing' learning. He suggested that such monologues from students were not univocal provided they were in response to other people or other texts. In the study he reported on, teachers in six primary and four secondary schools in the UK encouraged talk by providing for whole class activities such as class discussions or debates that built on past learning and on reports regarding school and out-of-school experiences contributed by the students. The length of student turns grew from an average of 2.8 words to 13.7 words over the period of the study.

Scott, Mortimer, and Aguiar (2006) used selected episodes from science classes in Brazil to look at how the science teacher used different approaches to talk in the lessons. They found it useful to use two dimensions: the dialogic-authoritative dimension and the interactive-noninteractive dimension to classify four approaches. They suggested there was a tension in the science classroom between the needs to present the school science point of view and to relate to the students' everyday views of the world. As a result, the teacher in the episodes reviewed moved from a dialogic-interactive stage where she sought the students' everyday views of 'heat' (with some students talking about 'cold heat' and 'hot heat') through to an authoritative-noninteractive stage in which she introduced the school science view of the concept. Later, she moved back to a more dialogic stage as she got the students to apply the principles they had just learnt to a new set of problems.

Scott et al. (2006) went on to ask, if in the end it was necessary to introduce the school science view, why the teacher then took time to entertain the students' everyday views. Their answer was that students needed to make connexions through thinking and talking. The student talk allowed them to express their own views and then relate these to the scientific principles they subsequently learnt.

Given these arguments, Scott et al. (2006) expressed concern that dialogic teaching formed a relatively small part in the teaching of science. They suggested that there were a number of reasons for this. First, there was a common view that the teachers' job was simply to pass on the school science view and that the students' views were out of place. Second, in order to deal with student perceptions, teachers first needed to develop their knowledge of what these perceptions might be and how they could respond. Third, many teachers confused dialogic teaching with an interactive/authoritative approach in which the teacher asked questions but ignored responses that did not fit the school science view. Fourth, teachers felt that dialogic teaching took up too much time that they could ill

afford. Finally, there was a very limited body of evidence (other than the analysis of classroom talk) that showed that this different approach actually had an impact on student-learning outcomes. Despite these difficulties, the authors felt that sequences of teaching that included dialogic teaching as well as authoritative teaching would allow for more meaningful learning.

Similarly, Stein, Engle, Smith, and Hughes (2008) had concerns about the balance of talk in the maths classroom. Maths teachers had correctly taken on board the idea that K-12 students needed to have the voice or 'authority' to discover their own mathematical solutions to problems but had failed to balance this with the need for the students to be 'accountable' to the discipline of maths. It was not enough to give students a task to work on in groups and then listen to multiple solutions without helping students understand how mathematical principles related to those solutions.

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They suggested that one of the difficulties was that experts in pedagogy demonstrated techniques that were difficult for teachers to immediately adopt without further assistance. They suggested five practices that teachers could adopt to help them achieve the required balance: anticipating, monitoring, selecting, sequencing and connecting. Each practice is the preparation for the next. For example, anticipating is needed for monitoring and monitoring, in turn, is needed for selecting.

Before giving a problem to students, teachers needed to anticipate the solutions the students might come up with, including possible incorrect ones, so that they could prepare their responses. They then needed to monitor the group work so that they could plan the most productive way of using the student contributions to help them move towards the required mathematical concepts. They needed to select which groups would present to the class and in what sequence so that the presentations would help students correct common misconceptions and develop a mathematical view while not undermining the students' 'authority'. The final step was to connect what the students had learnt to the

discipline of maths. In this way, students could learn to talk about maths with authority but be accountable to the mathematical principles of the discipline. To do this, teachers needed to contribute to any classroom dialogue just as much as the students.

Commenting on the teaching of oral skills in Britain, Doddington (2001) focused on a different aspect. She suggested that the more recent trend of only teaching 'effective communication' in terms of the more formal stages of the careful pre-planning of areas such as purpose and audience was inappropriate and resulted in restrictions on the kind of language children were allowed to use in class. She believed that spoken language was not generally something that individuals first rehearsed in their minds and then presented to an audience. People developed their ideas, their identity and their interdependence with others as they spoke. It was thus important that individuals learnt to listen to others as well as to speak. In order for teachers to help students to become good communicators, they needed to demonstrate through their own practice that other people's utterances could be food for thought and not just prompts for interrogation. Rather than teach the spoken skills as something internal to the individual which could be improved through rule-governed rehearsal, they should encourage the students to see them as a collaborative tool.

Goh and Doyle (2014) suggested that students needed to develop two kinds of oracy for academic learning. The first consisted of presentation skills in which the process closely resembled that for written texts. Students prepared the texts beforehand and might revise them several times before actually doing the presentation, (i.e. similar to the 'effective communication' that Doddington (2001) referred to). The second was 'exploratory talk', which more closely resembled everyday talk in that it was spontaneous and not prepared. It was more likely to happen in group work where students stated their ideas, defended them and responded to other students' talk. The aim was to come to a

better understanding of the topic by thinking together. This type of talk was believed to help students learn language that used the vocabulary and structures of the subject or discipline they were studying. The teacher could then help the students move from this exploratory talk to talk that more closely matched that of experts in the subject.

Silver, Raslinda, and Kogut (2014) discussed the different types of student talk and how the teacher could affect these. They contrasted the traditional pattern of Initiation, Response and Feedback (IRF) with dialogic teaching. In the IRF pattern, the teacher tended to dominate the talk in the classroom as individual students were usually expected to give short, factual responses in the second step (Response). Such a pattern had a place in teaching but needed to be balanced with dialogic teaching which allowed for student talk that was collective, reciprocal, supportive, cumulative and purposeful. (As mentioned earlier, in dialogic teaching, students are given the opportunity to work together as a class or in groups to build up a learning conversation that builds on what individuals say in a supportive environment. Teachers continue to help direct but do not dominate.)

Silver et al. (2014) went on to contrast exploratory talk with disputational and cumulative talk. In disputational talk, students worked as individuals making assertions and counter-assertions, thus not building knowledge together. In cumulative talk, students uncritically accepted what others said. These two types of talk were contrasted with exploratory talk where the students suggested and counter-suggested, building on what had gone before in a critical but positive manner. The writers cautioned that encouraging exploratory talk was not just a matter of giving students tasks or putting them into groups. The teacher needed to plan the activities carefully to ensure that they provided opportunities for exploratory talk, a point also made by Jones (2007) as mentioned on page 27 of this Digest.

Stahl (1994) discussed one of the simplest ways of increasing talk in the classroom. He found that, by increasing the 'wait-time' used by teachers from what research had shown to be around 1.5 seconds to 3 or more seconds a number of benefits accrued:

- The length and correctness of student responses increased;
- The number of 'I don't know' and no response answers decreased;
- The number of volunteered answers by a larger number of students greatly increased; and
- The scores of students on academic tests tended to increase.

Teacher behaviour also tended to change:

- Their questioning strategies tended to be more varied and flexible;
- They decreased the number but increased the quality and variety of their questions; and
- They asked additional questions that required higher order thinking skills on the part of the students.

The authors emphasized the importance of play in which children could become more aware of different points of view and more knowledgeable of the physical world and the variety of social roles.

Stahl (1994) preferred the term 'think-time' to 'wait-time' as he felt it more closely reflected the purpose of the pause. He suggested there were eight points where the pause could be made. These included not just pauses after teacher questions but also pauses during student responses, after a student's response, during a student's independent contribution, at a point when the teacher was thinking of a response to a student, during a teacher presentation to give students time to think, during the completion of a task by students and at certain points to give impact.

This need for talk in the development and learning of students is generally accepted for the development stages of early childhood. However, the need for talk at later levels of education may not always be so obvious. The following sections of this Digest thus review some of the literature dealing with oracy at different stages of education in order to clarify what may be needed at each stage.

Preschool

Saracho and Spodek (2007) summarized the research on the development of language in the child's early years and the role the teacher could play. They noted how one study (Hart & Risley, 1999) had shown that the number of words that a child had exposure to had a significant effect on their language development at the age of 3 and on their literacy development at the age of 9. It had also shown that engaging in dialogue with other children and adults had a significant effect as well. They pointed to the conclusion by McKeown and Beck (2005) that children needed to explain and elaborate their ideas in order to learn to make sense of the decontextualized language they would meet in school. Saracho and Spodek (2007) emphasized the importance of play in which children could become more aware of different points of view and more knowledgeable of the physical world and the variety of social roles. Such play helped them to learn to communicate with peers and adults.

Saracho and Spodek (2007) recommended that in the preschool years the emphasis should be on oral language experiences, a prerequisite for children to learn and understand the relationship between spoken and written language. There should be a variety of activities, such as play, children's literature, storytelling, puppetry, and creative dramatics. They should be encouraged to express ideas, listen to the ideas of others and then go back to their experiences to see if these ideas held up.

A study of a Japanese kindergarten in Kobe by Shirakawa and Iwahama (2009) showed how these principles worked out in practice. In one example, one child complained to the teacher that another would not let her play house. The teacher encouraged the child to go back and find out the reason for the refusal. When it turned out that the second child felt the 'house' was too small for two children, the teacher encouraged the first child to think of a solution. The result was the two children working together to enlarge the 'house'. The point was that, with the encouragement of the teacher, the children were learning to understand the views of others, and to discover new ideas through social contact.

In the early years in preschool and school, the child is developing both oracy and numeracy. Some (see, for example, Clements & Sarama, 2009; Farran, Lipsey, Watson, & Hurley, 2007, April) fear that increasing the time for an intensive mathematics course, while helping in the development of numeracy, might at the same time detract attention from the development of oracy. This might then have a negative impact on later academic success as various aspects of oral language skills such as vocabulary, grammar and narrative discourse processes have been shown to be good predictors of later academic performance (see Hart & Risley, 1999; McKeown & Beck, 2005). This might be a particularly important consideration for children at risk of academic failure.

Focusing on the maths programme had no detrimental effect on the learning of oracy skills. In fact, it led to improvements in some oral language skills with children from the programme able to give more complex explanations of a story with fewer promptings.

Sarama, Lange, Clements, and Wolfe (2012) suggested, however, that there might be links between learning literacy and mathematics. Children recognize whole words first and only later learn to analyse them in terms of syllable and phonemes. Similarly, they initially see numbers as units and only later come to understand that numbers can be broken down into their parts (i.e. that five can be obtained by adding two and three). In the same way, learning the letters and mathematical concepts of shape may have some crossover as both require the recognition of shape.

In a study in the USA of an intensive maths programme that included an emphasis on shape, communication skills and problem solving, Sarama et al. (2012) investigated the effect of the programme on oracy skills based on a sample of some 1,300 students (average age: 5 years old) from 43 schools divided between experimental and control groups. They found that focusing on the maths programme had no detrimental effect on the learning of oracy skills. In fact, it led to improvements in some oral language skills with children from the programme able to give more complex explanations of a story with fewer

promptings. The authors were particularly impressed as measures for these skills were taken some months after the maths programme had been completed. They believed this success was due to the emphasis in the maths programme on the students explaining the reasons for their thinking.

Primary

The work begun in preschool continues in primary school, except that at this level, a process of focusing on different subject areas in specific timeslots becomes more noticeable. Moreover, there is increasing pressure on teachers in a target-driven syllabus to focus on results and areas that are easily measurable (Palmer, 2003).

Palmer (2003) felt that, although speaking and listening activities were built into the curriculum of England and Wales, teachers under pressure of time tended to drop such activities as they were rather ephemeral to teach and report on. The result was an emphasis on writing that actually resulted in poorer writing as the students had neither the vocabulary nor the ideas they needed to write well. She felt that it was important that, across subjects, well-qualified teachers modelled the literate spoken language. This was particularly important for children from economically disadvantaged homes as they usually did not have such models at home. Moreover, she suggested, if the predicted scenarios of future growth in speech-controlled computerization were correct, such literate speech would replace handwriting, spelling and keyboard skills as an important skill for the workplace.

Similarly, Kotler, Wegerif, and Levoi (2001) noted that children in the northern English city of Bradford who did not use English at home had average reading results at age seven (known as Key Stage 1 in England and Wales). However, their results plummeted when they came to Key Stage 2 at the age of 11. Kotler et al. (2001) believed that these bilinguals were able to cope with the basic decoding necessary to succeed at Key Stage 1 but were not able to comprehend texts at Key Stage 2

because they had not learnt the oral language forms that would help them with concepts necessary to succeed in school reading. They did not have the opportunity to do so at home and in their social groupings and, in class, most oral contributions from students were single word answers to teacher questions. In a piece of research to check on this, Kotler et al. (2001) used adult EL1 Talking Partners to work with small groups of such students over ten weeks and found in all post-test results a greater improvement in reading measures for the experimental group than for the control group. In one (the Renfrew Information test) of the four measures used to test the two groups, the difference between them was statistically significant. In one of the schools in the study, the principal was convinced that the students' writing had also benefited.

Seto (2002) pointed out that the Primary Mathematics Syllabus in Singapore at that time included the aim of enabling students to use mathematical language to communicate mathematical ideas and arguments precisely, concisely and logically. To check if her class could do that, she decided to ask her Primary 4 students to do oral presentations instead of the written practice exams they were doing in preparation for their forthcoming exams.

Talk in the maths class helped the teacher identify areas of conceptual weakness among the pupils, enabling her to make the necessary changes to the teaching. It also allowed the pupils to learn from each other and prepared them to be wrong and open to the ideas of others

Initially, she encountered some resistance from some of her pupils who suggested that the lesson was more like an English than a maths lesson. The first presentation, however, clearly indicated to her that her pupils were having some conceptual problems with fractions and decimals and, as a result, were not placing them correctly on a number line. The follow-up remedial work led the class to look at fractions and decimals not only in terms of numbers but also in terms of time, weight, length, and volume. A second presentation required the pupils to research number lines used in real life and then to present to the class, an exercise the class enthusiastically and creatively embarked on.

In a third presentation, the pupils had to say

whether '¾ kilo of peanuts' was the same as '¾ of the peanuts' giving reasons for their answers. While the groups came up with quite different answers, the important thing was that they were now able to listen to each other's presentations and carefully consider what others said. They had begun to learn from each other.

For Seto (2002), the exercise showed that talk in the maths class helped the teacher identify areas of conceptual weakness among the pupils, enabling her to make the necessary changes to the teaching. It also allowed the pupils to learn from each other and prepared them to be wrong and open to the ideas of others. This was despite the initial reluctance of the pupils who were not used to this approach. As an assessment tool, however, the presentations had one disadvantage as far as some of the pupils were concerned. The presentations had to be done in sequence and pupils felt that, as a result, those who came later were at an advantage as they could learn from the experiences of the earlier presenters.

In another study also done in Singapore, Vaish (2013) looked at the questioning techniques of teachers who were working with students who had weak English language skills at the time they entered the school system. She found that the number of questions did not correlate with the amount students contributed independently. Instead she concluded that the important thing was whether the class was dialogic or monologic. In a monologic class, the teacher may ask the students many questions while still not allowing students any control over classroom input, ignoring student contributions that do not fit in with the pre-ordained lesson. In a dialogic class, as discussed on page 27 of this Digest, the teacher allows the students to contribute their ideas, sometimes even without the teacher asking questions. The teacher then takes up the student input and integrates it into the lesson. Vaish suggested that such a teacher was truly listening to the students and believed that he or she would be a more effective teacher.

The two studies above support the arguments mentioned earlier by P. Thompson (2008), who

came to largely the same conclusion, suggesting that in classrooms where student talk was common, the teachers were in authority but were not the authority. They were equal partners in a discussion with their students although they had the added responsibility of guiding the direction of the discussion. However, he preferred to use the terms 'dialogic' and 'univocal'. He felt that the term 'monologic' suggested that monologues or extended turns could not be dialogic and not involve others. He felt that the contrast 'univocal' versus 'dialogic' was more useful as monologues could be part of an ongoing dialogue.

Writing about the UK, Westgate and Hughes (1997) suggested that there was a great deal of 'depressing evidence' (p. 128) suggesting that teachers continued to restrict dialogue with students to questions that limited their responses to what the teachers were looking for. However, they suggested that there was mounting evidence of the communicative and cognitive benefits for students when teachers shared their ideas with the students and encouraged or allowed them to add their own (Mercer, 1995; Norman, 1992). Children tended to benefit less from adult attention to the forms of their talk than from being taken seriously as conversational partners by an adult. Encouraging students to develop communicative and collaborative learning and group problem-solving skills at every level of schooling benefited them and gave them the skills emphasized by future employers.

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The need for students to speak is not restricted to language classrooms. D. R. Thompson (2012) pointed out that, as students talked about their thinking of mathematical concepts, they not only allowed their teachers to see and evaluate their learning, they also internalized and solidified their own learning. The classroom became more student-centred and engaging. She went on to demonstrate how textbook exercises could be modified to encourage this in the classroom.

Presenting a similar approach, Kaur (2012) noted that research had shown that the highest student achievement occurred in schools where high level thinking and reasoning were encouraged. She

introduced some simple strategies for adapting textbook tasks and showed how a teacher in a Singapore primary school had used these to encourage her students to reason aloud and communicate while they reviewed the four operations, +, −, × and ÷, with numbers less than 40.

In a one-year study of two teachers and their students in a maths primary class in New Zealand, Alton-Lee, Hunter, Sinnema, and Pulegatoa-Diggins (2010) were able to document the significant progress in maths of the students who were mainly Maori and Pasifika, i.e. from non-English speaking homes. The researchers worked with the two teachers to help them to reflect on their own teaching. Over the year, the teachers introduced the students to collaborative approaches and encouraged them to work together to find solutions to maths problems and to give reasons for their solutions in a supportive environment. They taught the students to avoid the cumulative and disputational talk that had been the norm and instead to argue their ideas in a productive manner. The result was that both teachers were better able to diagnose and respond to the students' learning processes thus raising the standard of their ability in maths.

Secondary and beyond

As students move up the education system, their areas of study become more and more differentiated. The focus is then on the importance of talk in a range of subjects, including language, mathematics, science and humanities. In the first study in this section, the writer looked at the role of talk in helping her class of boys tackle their writing problems.

Contrary to what she had been led to expect with regard to boys' performance in class, Beattie (2007) noted that the boys in her Year 8 literature classes in the UK had no difficulty in taking part in discussions. They did not individually try to dominate the discussion but cooperated with each other. As a result, the discussion led to some sophisticated ideas being discussed. However, when the boys were then asked to write on the same topic, they had difficulty even beginning the process and the results were poor. During the discussion, Beattie had noticed that the boys looked for assurances from her (their teacher) and their peers when they spoke and she hypothesized that it was the dialogic nature of the discussion that had helped the boys develop their ideas. However, the discussion held prior to the writing task did not help in the writing. She subsequently found that allowing the boys to complete the writing process together in class in cooperative groups helped. She found they shared their writing willingly, sought opinions and were much better prepared to redraft what they had written.

Mercer, Wegerif, and Dawes (1999) believed that language had three important functions: cognitive, social/cultural and pedagogic. They suggested that teachers needed to help students use the three functions by developing exploratory talk (see also page 29 of this Digest) in order to improve their talk with group peers. In exploratory talk, students encourage all members of their group to contribute to the discussion, challenge contributions while explaining the justification for the challenge and then offer alternatives until finally a group decision is reached. Mercer et al. (1999) showed in a study in three middle schools in England that such exploratory talk could be developed with appropriate material. However, they could not show a statistically significant increase in thinking skills, which they put down to the small size of the experiment and variation in the teaching by different teachers.

In a subsequent article, Mercer (2008) reported on the results of research done with a group of 8 to 11 year-olds in the UK divided between matched experimental and control schools. In the experimental schools, different types of classroom practice (teacher-led whole-class sessions, talk between a teacher and members of a small group and talk within student groups) were integrated within an overall pedagogic design over several months. Teachers introduced some 'ground rules' that encouraged reasoned debate and exploratory talk in class. The researchers used Raven's Progressive Matrices test as a pre- and post-test to assess the students' reasoning both individually and in groups. The post-tests showed that groups from the experimental schools were better able to solve together the problems on the test than those from the control schools. Moreover, individuals from the experimental schools were also better

able to solve the problems when working on their own than individuals from the control schools. Mercer (2008) suggested that this could be because the students from the experimental schools had learnt the problem-solving strategies from their groups or it could be that their reasoning skills had improved because they had 'internalized' exploratory talk or it could be because of a combination of the two. One other result was of interest. The experimental students showed significant gains on tests of maths and science.

Pantaleo (2011) reported on her work with a class of 12-year-old students in British Columbia, Canada. In her article, she focused on one group of three students, two of whom came from non-English speaking homes. She showed, using selected sections of the transcripts of their group work, how they worked together to develop ideas about the book they were looking at and at how they then incorporated those ideas into their writing about the book.

Pantaleo (2011) indicated that it was the collaborative nature of the talk that allowed the students to develop their ideas through exploratory talk. She suggested that this may not always come naturally to students. The teacher's own pattern of oral communication in the classroom would signal to students the kind of talk expected. Professional development and self-monitoring by teachers through audio- or video-recording their own teaching could help them analyse how well they encouraged student talk. They could also help students to look at their group talk and examine how participants contributed to the group's thinking.

The teacher's own pattern of oral communication in the classroom signals to students the kind of talk expected.

Hogan, Rahim, Chan, Kwek, and Towndrow (2012) approached the question of student talk from a different point of view. They noted that studies had shown that, in classrooms throughout the world, the Initiation, Response, Evaluation (IRE) sequence was dominant. Generally, this was seen as an issue as it was felt this situation restricted students to performative talk, i.e. to giving short, factual responses, and prevented the development of dialogue. However, Hogan et al. (2012) hypothesized that the strong results of

Singapore students in international testing suggested that the dominant IRE sequence could lead to other types of talk such as procedural talk (about how a problem could be solved) and conceptual talk (for example, about meaning and explanations). They surveyed over 1,000 secondary students in 30 randomly selected Singapore schools with regard to questions asked in mathematics classes and found evidence that suggested that other forms of talk could result from the IRE sequence.

Chin (2006, 2007) discussed the questioning used by teachers in science classes she observed in Singapore. She suggested that, as a result of the large class sizes, the constraints of having to cover the prescribed curriculum, and the pressures of examinations, teaching was dominantly whole-class instruction or discussion. However, she distinguished between the authoritative approach where the teacher leads students through a question and answer routine to present one specific point of view and the dialogic approach where the teacher encourages original contributions from the students. She identified four categories of question routines of the dialogic type: Socratic, verbal jigsaw, semantic tapestry and framing. She noted that in many cases the questioning followed the common IRE pattern but felt that this could be appropriate if the teacher planned the questioning carefully to develop student knowledge by building on their responses. She did, however, recognize the limitations of her studies which inferred cognitive functions from verbal data and assumed that one student voice represented that of the whole class.

In a discussion of the teaching of maths in the early years of secondary school, Daykin (2004) complained that there was a perception that maths was less language-dependent than other subjects such as the humanities and sciences. In contrast, he suggested that high-quality maths teaching could not take place unless students frequently communicated their ideas orally as cognitive, metacognitive and linguistic development were especially closely linked in maths. He believed that such skills as hypothesizing, generalizing, predicting, testing and verifying were linguistically and cognitively

closely related developmentally.

Daykin (2004) suggested a number of simple approaches that could be used to achieve increased talk in the maths classroom. These included teachers asking students to explain their thinking, giving more wait-time after questions, praising all contributions, encouraging students to expand on their answers and avoiding answering the questions themselves. He warned that results would not be immediate as it would take time for students to acclimatize to the new conditions.

Drawing on the work of Cummins (1984), Daykin (2004) suggested that there were two ways of simplifying difficult tasks, especially in the earlier stages of maths. The teacher could either make the task and related language less cognitively demanding or move it into a context that could be more easily understood. He claimed that students must learn the concepts and related language in preparation for later, more complex concepts that built on the concepts that were currently being learnt. It was thus better, he suggested, to give a relevant context that helped with the understanding of the concept rather than simplify the language and/ or concept.

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One particularly interesting activity that Daykin (2004) suggested was giving pairs or groups within the class different tasks to solve. They had to then explain the task and how they had solved it to the rest of the class, who would later be required to do the same task for homework. The class was allowed to question the reporting pair or group. In this way, the whole class had an interest in the explanation being given.

In a study in Singapore, Pang and Dindyal (2012) focused on a group of junior college students who were studying mathematics. They looked at the errors that the students had made on a test item involving the use of Proof by Mathematical Induction (PMI). Through interviewing a selection of the students, they were able to see where the students had gone wrong. Moreover, they learnt

that even some of the students who got the item correct had not really understood the principles behind the computation and were thus unable to explain why some of their fellow students' answers were incorrect. Some admitted they mechanically did what they had been taught to do although they could not explain their answers. Pang and Dindyal (2012) noted that having students talk about their understanding of concepts provided teachers with the opportunity to understand their students' difficulties and thus to strengthen their own pedagogical content knowledge.

Dannels (2001, November) discussed the need to learn communication skills at university level in order to satisfy the requirements of future employers for employees who could work in multidisciplinary collaborative teams. In one study, she compared two groups of students given a chemical engineering design group task which they had to present to a mixed audience of chemical engineering faculty, representatives of sponsoring industries and fellow students. Each group consisted mainly of chemical engineering students but also included students from industrial engineering, food science, computer science and economics. The experimental groups were given tuition in speaking and writing communication skills. In their presentations, the experimental groups actually scored lower than the control groups. Dannels (2001, November) suggested that this might have been because the students were already in a new, stressful situation and adding the communications course at that point might have compounded the problems. Perhaps more importantly, feedback from the students showed that group members had difficulty explaining their ideas across disciplines so the final presentations ended up as disjointed collections of their ideas. They also had problems deciding on the best way to deal with the very mixed audience they had. Dannels (2001, November) suggested that the students needed to learn how to communicate their knowledge and understanding to different audiences as part of their courses.

Teacher professional development

While the main consideration in this Digest is how oral language is used to help in the cognitive development of students, questions inevitably arise regarding two related areas: the language skills of the teachers themselves and the teachers' real understanding of the role of language in their teaching and the students' learning.

It may seem that the first of these would be a question relevant only to education systems such as Singapore's where teachers are sometimes heard using a local language variety (Singlish) rather than the standard espoused by the system. However, Ferst (1999) reported on a case in the UK where a trainee failed his first teaching practice due to poor oral skills. The complaint was that he used the pronunciation and grammar of his local dialect. Ferst (1999) worked with the teacher in order to help him through his second teaching practice. It was apparent in the sessions that the trainee teacher felt that the language he used was part of his identity and he felt uncomfortable using the more standard forms. Ferst (1999) encouraged him to see the learning of the standard forms as an additional resource that he could use in relevant contexts. She felt it was also important for teachers to understand that it was incumbent on them to help their students develop skills in the standard language as this was the prestige variety and its use could open up employment and other opportunities for their students.

Ferst (1999) emphasized that the success she had with the trainee was based on the building of a relationship of mutual trust. They worked together on developing a programme and, at all times, she showed respect for him and the local variety he spoke. She felt that, without such a relationship, it was quite possible the trainee's bruised ego would have prevented him accepting the assistance she offered.

In terms of pedagogy, the study in a New Zealand primary school by Alton-Lee et al. (2010) mentioned on page 34 of this Digest showed the importance of professional development that involved teacher reflection. Both teachers involved in the study had previously been engaged in a numeracy development project that had looked at ways of getting students to talk but

they had adapted what they had learnt to fit into their established practices. In the study, they worked with one of the authors to look in detail at how they taught and how this affected their students. As a result, they were able, over the period of the study, to change the way their students participated in the class and worked together as co-learners. Alton-Lee et al. (2010) felt it would probably be too much to expect such transformational self-reflection in pre-service training as the teacher trainees would not have enough of their own teaching to review. However, in this example of in-service professional development, the benefits in terms of the students' learning left little doubt about the importance of such reflection.

Assessment

The approach to assessment that is adopted within an educational system inevitably affects the approach to learning and teaching that is found in schools. Administrators, teachers, parents and students are all aware of the importance of assessment especially in results-oriented educational systems such as that of the UK.

Hodgson (2007, 2008) reported on the trial of an oracy assessment system for schools in Wales. The materials were based round text from *Gulliver in Lilliput* and involved pupils at Key Stage 2 (their sixth year at school) developing and presenting a story and a presentation on a famous person. The pupils' home background varied from totally Welsh-speaking to totally English-speaking. The five teachers in the study reported that the pupils had really enjoyed the tasks they had been given, the teachers had been surprised by the quality of some of the presentations, they had found they had been able to learn a lot about the pupils' strengths and weaknesses and the pupils were able to evaluate their own performances.

Similarly, Oliver, Haig, and Rochecouste (2005) reported on a study they did in 13 secondary schools in Western Australia that looked into how teachers assessed the oral skills of their students. This was usually done through 'performance' tasks, such as presentations, despite the fact that some teachers realized that giving presentations to their peers was a very painful experience for many students. Some of the teachers seemed to

see oral skills and presentations as synonymous but many also recognized that there were social and discussion aspects that were also important areas to assess. Unfortunately, they did not feel competent to assess these other areas.

A number of teachers in the study emphasized the importance of oral skills across the whole curriculum. They noted the importance of oral skills in the development of general literacy and in content areas. Their students also recognized the importance of oral skills for their future. They saw that, in the workplace, they would need to be able to persuade, show empathy and explain in standard Australian English but they were not very confident of doing so even with people of their own age. As young adolescents, they used language forms that they felt emphasized their identity but recognized this would be inappropriate at work. Oliver et al. (2005) felt it was important that teachers be helped to set up assessment of the oral skills that focused on those aspects that would be important for students in their future workplace and help students see the relevance.

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Gan (2010) reported on a study of the group discussion task in the oral test used in Hong Kong. A comparison of a high scoring group and a low scoring group showed a big difference in the type of discourse used in the task. In the high scoring group, the participants first established what the required task was and then worked towards a solution by offering suggestions, counter-suggestions and reasons for any suggestions. Their enthusiastic involvement in the task was indicated by overlaps in turns and interruptions.

In the low scoring group, the participants simply offered their individual contributions to each part of the task and then moved on. However, Gan (2010) pointed out that there was still cooperation but, in this group, the focus of the cooperation was on language rather than on the content. When a participant was unsure how to say something, other members in the group offered assistance. Gan (2010) noted that the teacher of the second group had adjusted the task (as was allowed) and provided the low level group with supporting questions. This might have resulted in the group feeling that the task required simple, individual answers to the given questions rather than the kind of discussion used by the high scoring group.

Gan (2010) concluded that the group task authentically represented the interactional skills of the students. However, there was a need to look into how variations in the task given might affect the students' understanding of what was required and thus how they performed.

Doherty, Kettle, May, and Caukill (2011) noted the importance that employers placed on communications skills including oral skills. This, they noted, had resulted in a growing emphasis on oracy in university courses that prepared students for the workplace. In order to examine the role of oracy in such courses, they compared a business course (with 1,000 students) and an information technology course (with 360 students). In the first course, assessment included a group written project. While there was no help given to students as to how to communicate and work with each other, the areas of assessment included 'professionalism'. Where group communication broke down, the individual members were marked down on this component. Doherty et al. (2011) suggested this was an example of 'oracy for learning', i.e. oracy was seen as a tool for learning in all subjects.

In the second course on information technology, the students worked in teams, keeping minutes of their meetings, team evaluations and team reflections. Assessment included a group presentation of a project that was preceded by two tutorials preparing and practising the presentations. The assessment then focused on oral performance rather than content. Doherty et al. (2011) suggested that, in this case, the focus was on 'oracy as a competence', i.e. oracy was seen as a subject in its own right.

Doherty et al. (2011) suggested that there were some validity issues in including oracy in assessment that needed to be solved. Validity was an issue when assessment areas included a skill that had not been taught but it was also an issue when the 'authentic' test activity was assessed

differently from the way it would have been in the workplace.

Conclusion

The studies reported in this Digest suggest that, at the different levels of the various education systems around the world, talk in the classroom is essential to the cognitive and linguistic development of students across the curriculum. However, it seems that the restrictive forms of the IRE sequence are still dominant in classrooms, partly because teachers are sometimes unsure of the practicality of the alternatives. Yet, it is through classroom talk that teachers can more easily monitor the students' understanding of complex concepts across subject areas and be in a position to take remedial measures before it is too late. It is also through such talk that students develop the thinking and language related to the subjects they study.

Westgate and Hughes (1997) noted the difficulty of identifying the qualities of appropriate classroom talk and how these can be measured or quantified. They felt there was an important need to identify the strategies that teachers could use to help students develop the kind of talk that would benefit them rather than having them indulging in easy-going discussion and opinionated vagueness that some authorities had suggested resulted from group work. Armed with such strategies, teachers in all classrooms would be that much more confident in encouraging the kind of classroom talk that would help their students learn. The studies presented here provide some suggested strategies.

However, it is to be hoped that their call is taken up by even more researchers so that teachers can be given research-backed practical guidance to how they can encourage the kind of classroom talk that the research reported here seems to indicate is essential to the linguistic and metacognitive development of our students across the whole school. Moreover, as suggested by Doherty et al. (2011), some consideration needs to be focused on how oracy and communication can be taught, learned and assessed validly as part of the subjects the students are studying.

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