Scaffolding academic language with educationally marginalised students

A research project funded by the Primary English Teachers' Association of Australia (PETAA) Research grant 2016-17

Dr Helen Harper, Menzies School of Health Research

Dr Bronwyn Parkin, University of Adelaide
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Being involved in this research has given Cowandilla teachers the most effective science teaching pedagogy that I’ve ever encountered. Teachers are clear about what they want their students to be able to say and write about a particular science topic. Students gain a powerful command of scientific discourse and they’re asking for more.

Julie Hayes, Principal, Cowandilla PS

Student engagement is extremely high as all students are given the language to allow them access to the meaning of the language and hence a deeper understanding of the topic. Enthusiasm for the topic is higher than when teaching science topics previously (many students regularly asked “when are we doing science?”) and it is also easy to see that students take great pride in being able to talk like an expert about the science content. The language is being retained by more students than in previous topics and the students ability to use the language with associated diagrams/models/equipment demonstrates understanding of the topic.

Michael Cannavan, Cowandilla PS

It is well worth investing the time and energy building a solid base of understanding at the beginning of a learning cycle. The trade-off is that this can actually increase the rate of learning later in the cycle.
Consistency is key. Find the terminology and stick to it. It is important to consolidate the definition before reaching for the thesaurus.
View the focus text as a planning tool. Deciding what basic concepts elements require a focus text and then deciding on the correct terminology can really help to focus and solidify a teacher’s understanding of the concept prior to learning.

Matt Lotherington, Maningrida College

Without the language you can’t teach Science. The language of Science is technical language that is consistent. Students are only going to be as proficient as we allow them.
Hugely valuable and rewarding process. Always felt support and safe to try and make mistakes.
THANK YOU!

Louise Walker, Cowandilla PS

It had never occurred to me to use literacy, in the form of a focus text, to orientate, guide, and consolidate a math lesson! I am now using a focus text in as many lessons as I can and where appropriate.
This has been really good, because as a Non-ESL trained teacher, I am not as acutely aware of the simple pitfalls I can create for ESL students like other trained ESL teachers maybe. Accuracy of language is vital to ensure clarity of common understanding and the focus text helps keep do exactly what its called - focus. It also helped me slow my teaching down, rather than rush things, and better pace the lesson.

Dan Bell, Maningrida College
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Executive summary

Aims and rationale

This report describes our project to develop a theoretically-informed account of the effective teaching of academic language and literacy in disadvantaged contexts. Through the project we aimed to articulate a robust and reliable set of principles for scaffolding academic English to educationally marginalised students. We also aimed to address fundamental questions about the relationship between classroom interactions and students’ appropriation of academic language and literacy.

To accomplish these aims we worked collaboratively with four teachers of educationally marginalised students in content-specific (science and mathematics) lessons. Our goals in working with the participating teachers were to:

- establish shared understandings of the principles of contingent scaffolding
- document, test and refine the principles to make sure they can be used effectively across learning areas and across contexts, as well as being accessible to teachers
- investigate student outcomes in participating classes
- monitor changes in the teachers’ perceptions of their pedagogy.

This classroom work was underpinned by our interest in the role of theoretically-informed practice. Notably, we drew on three complementary theories: Vygotsky’s sociocultural activity theory, Halliday’s systemic functional linguistics, and Bernstein’s theory of pedagogic discourse. We aimed to show how the theories, working together, can help negotiate the complex relationships between language, learning, curriculum knowledge and the socially situated creation of meaning.

The project was motivated by our view that it is essential to develop a pedagogic approach that can support teachers of educationally marginalised students - and the students themselves - to engage with the literacy demands of 21st century participatory citizenship. This is a clear social justice issue, as, with explicit access to discipline-specific language, educationally marginalised students are more likely to achieve at secondary level and therefore have a greater range of life choices in their post-schooling years.

Additionally, we saw a need to document effective literacy teaching in disadvantaged contexts, which are presently under-researched.
Methods

We collaborated with four highly skilled teachers of middle and upper primary students in two schools: Maningrida College, a remote Indigenous Northern Territory school; and Cowandilla Primary School, an urban Adelaide school with a low socioeconomic multicultural demographic. Data were collected at each site in November 2016 and February 2017, during which time 18 mathematics and 15 science lessons (33 in total) were video-recorded. The lessons were recorded using Swivl™ (a robot that pairs with an iPad™), and full transcriptions were made of several teaching sequences.

Teachers taught one topic per data period. The topics were ‘Probability’ and ‘Telling the time’ (mathematics), ‘Electric Circuits’ and ‘Lunar Eclipses’ (science).

At each site we held a preparatory workshop with the teachers to develop common understandings about scaffolding principles and how we intended to analyse scaffolding in classroom talk. For each topic we worked with the teachers to develop focus texts to guide the language and teaching sequence.

We planned and subsequently analysed scaffolding processes at two levels, which we referred to as:

(i) macro-scaffolds (topic sequences). The focus texts were key tools in defining these.

(ii) micro-scaffolds (moment-by-moment contingent language choices in the course of classroom dialogue). We developed an observation tool to guide teacher reflections and to analyse the lessons at this level.

Key Findings

1. Focus texts are effective in the teaching of discipline-specific language and literacy

The project provided an opportunity to study the systematic and efficient use of focus texts to (i) provide a scope and sequence for each topic, and (ii) to help structure oral and written assessment. In science, we found that it was straightforward to align the texts with the language expectations of the Literacy Capability and to match the genres of assessable oral and written tasks. By contrast, in mathematics, focus texts had a different and more innovative role. The mathematics focus texts worked as definitions, as consistent sentence beginnings and as generalised mnemonic statements that students could draw on in times of cognitive challenge.

The focus texts assisted the teachers to structure the movement from speaking to writing. A noteworthy strategy in this process was the use of class notes. Intentionally structuring class notes helped teachers simultaneously to support the oral negotiation of meaning and to prepare the structure for students to produce written texts (as a class and independently).
2. **Shared experience is the foundation for learning in cross-cultural contexts.**

In cross-cultural contexts we noted occasions when contrasting world views caused interactive trouble and confusion for students because the subjectivities of teacher and students were not shared. By contrast, effective classroom dialogue was best facilitated when teachers created intersubjectivity by drawing on shared experiences with their students.

3. **The ‘Three lenses’ observation tool is valuable for analysis and reflection**

Our observation tool is organised into three lenses, representing different perspectives on the complex nature of whole-class dialogue. These are: Shared Purpose (contextualising learning intentions in their cultural and historic setting); Whole Class Interactions as Scaffolding (maintaining positive affect and adjusting teacher talk to provide contingent scaffolding); and Sense Making (using language and other semiotic resources to build shared meaning).

Analysing our lesson transcripts through these lenses gave us a detailed understanding of the micro-processes through which whole-class dialogue is scaffolded effectively.

4. **Student assessment demonstrated language growth**

Student assessment consisted of a pre- and post-text in the form of a story retell and in the science topics, an independent writing task. Language features included technical language, complex sentences, extensions with circumstances, expanded noun groups. New language was evident in student talk and writing in all cases.

**Feedback on the process and benefits of collaborative research**

The collaborating teachers indicated that the project was invaluable for them as experienced teachers who otherwise have few opportunities for in-class mentoring. They stated that the process gave them an outsider’s view on their teaching, with supportive and non-judgemental feedback; and that it made them engage with the inter-relationship between theory and practice, bringing new consciousness to practice, and practice to consciousness. In particular, the teachers indicated that they valued the use of focus texts as planning and teaching tools in both science and mathematics.

**Further directions for research**

Some future directions for research include:

(i) The use of focus texts in mathematics. Further research into other aspects of mathematics, such as number, would help to clarify the role of focus texts in mathematics.

(ii) Assessment tools. Further work is needed in how to assess longer term student concept development alongside language development.
(iii) Student appropriation of new language, including the impact of teaching relevant grammar on student uptake of academic language.

(iv) Working with teachers. We need to know how we can refine our support for teachers, so our pedagogic principles are accessible to teachers.

**Further directions for implementation**

Using our observation tool as a frame, there is a potential for developing a series of modules or workshops for teachers, either face to face or online. Modules might include:

(i) Focus texts: their purpose, how to write them, and how to analyse them as preparation for teaching;

(ii) Teacher talk: how to consciously modify talk to help students appropriate subject-specific language;

(iii) Using focus texts effectively to guide the movement from speaking to writing in a lesson sequence; and

(iv) Using visual texts together with language to support sense-making.

An abridged version of the observation tool has already been developed for a project involving the South Australian Department for Education and Child Development (DECD) and the University of South Australia (UniSA) to develop a two-day Professional Development workshop in teaching the language of science. UniSA has contracted Bronwyn Parkin as lead writer for this pilot project.

In future PETAA might consider developing a similar modular online course, linked to the Teacher Professional Standards, drawing on resources such as the planned PETAA teacher publication, the abridged version of the Observation Tool and video clips from this project.