

KEYNOTE PRESENTATIONS

Challenging Pedagogies: More than just good practice

Pauline Gibbons
Associate Professor, Language and Literacy, University of Technology, Sydney

I'd like to begin by saying thank you very much to NALDIC for inviting me, I think this is the third time I've had the pleasure to talk at a NALDIC conference, so thank you very much.

My title today is Challenging Pedagogies: More than Just Good Practice and in this presentation, I would like to bring together a number of issues that relate to the conference theme.

I thought the title *More Than Just Good Practice* says a lot to those of us who've been in EAL/ESL for a very long time, and it summarises what many of us have been doing for years, which is to argue for the need, first of all, for specialist EAL teachers, and, secondly, for an EAL-aware general teaching force. And we have argued this on the grounds that children who are being educated through the medium of their second language need different kinds of scaffolding from children who are learning through the medium of their mother tongue.

Last time I was here I talked quite a lot about scaffolding, so I'm not going to repeat what I said then, but if I can just summarise what makes things different when you're scaffolding for a second language learner – these are some of the things that we need to take into account:-

- The nature of second language development
- The nature of academic language
- The relationship between language and the context in which it is used and – the often ignored –
- Resources that bilingual children bring.

[PowerPoint slide]

The two young people depicted in my title slide come from a classroom that I'm going to be talking a bit about today, it's a Year 7 class, which, in Australia, is the first year of secondary school.

The young lady is called Nadya and she has an Arabic background. She came to Australia when she was about two years old and, at this point, she was about 13. The

young man is Ahmed, who was a Sudanese refugee, who has been in Australia for about three years and is a superb athlete, and that's what he was known for in the school. But I'm going to come back to these two young people later and I'd like to tell you a little bit about the way in which they saw the program in which they were involved.

In the paper in your conference pack there is a list of some of the characteristics of effective EAL teaching and this is a summary of those characteristics and I will be referring to these throughout the talk. I found it very interesting when I was sent this paper, because, during the research that I have been doing in the last six years with my colleague Jenny Hammond, we have come up with a very similar list of qualities of EAL teaching. It's very interesting that we have come up with some very similar ideas and this, in fact, underpins a lot of the work that we've been doing as well.

Let me now explain my title, the notion of 'challenging pedagogies'.

I'm using it in four ways: first of all I'm using it to talk about challenging those teaching practices that constrain learning for second language learners. Secondly, I'm using it in the sense of providing learners with an intellectually challenging programme, challenging curriculum. Thirdly, I want to talk about the challenges of academic language and literacy, the fact that children are not simply learning a second language, but they are learning in and through that language, and therefore they need to control the academic language and literacy of the subjects that they are studying. And fourthly, the challenges for teachers – how to provide scaffolding for subject learning and cognitive development and, at the same time, to provide support for language and literacy development.

That is basically the structure of the talk that I am going to give this morning, those four areas, and I'll come back to them again at the end of the talk. I think the last one, the challenges for teachers, that's where I really want to address what it is that makes EAL teaching more than just good practice.

First of all then, challenging pedagogies that constrain learning and thinking. These are things that I'm sure you would have heard in your own staffrooms at some stage, maybe with somewhat different wording, and both of them, I think, lead to very inequitable outcomes for EAL learners. First of all, "*I treat all children equally*", and that is certainly something that I have heard over the years. One of the most unequal things we can do is treat children equally. Rather we need to offer all learners, as far as possible, opportunities to participate in the same challenging curriculum, but we need to offer different kinds of scaffolding, so that it is through the scaffolding that we can make differentiations in the curriculum, in

the nature and the amount of the support that we offer. So treating all children equally just about guarantees that, at the end, you are going to have unequal outcomes.

Secondly, and this is also something I think you may have heard around the tracks, “*simplify it – just make it simpler and then they’ll understand*”. I’m going to be talking a little bit more about that when I talk about the nature of academic language, but just at this point to say that if you resort to ongoing simplification, in an ongoing way, then you necessarily restrict what is available to be learned and therefore you put a ceiling on what is possible. So both of those approaches or constraining pedagogies, I think, will produce unequal outcomes. The second point, I guess, is moving into the point about challenging curriculum, challenging learners intellectually. This, I think, is a very good quotation from Carrasquillo:

English language learners’ lack of oral English language proficiency has often hindered their opportunity to receive cognitively stimulating and content-level instruction in school.

What often happens I think - and I’m speaking from my own experience in Australia, but I’m guessing similar things happen here - is that newly arrived children are often left to their own devices by the classroom teacher, until such time as they have some control over English. I have seen children in the corner, colouring in, underlining words, doing all of those kinds of things. I think Carrasquillo is quite right in saying that many children, in fact, are not, don’t have, are not given access to the very kinds of opportunities that they need to develop language skills.

Rather than talking about practices that enhance learning, I’d like to start by looking at the kinds of *environments* that I think we need to set up for second language learners. I have taken this from the work of Mariani who has done some, I think, extremely interesting work, not specifically for second language learners, but, it seems to me, his work is very pertinent for second language learners. He has mapped on different learning environments onto this quadrant. [PowerPoint slide] You have one axis that says ‘high challenge and low challenge’ as in high intellectual challenge and low challenge, and another axis that says ‘high support and low support’. So I’d like to just ask you to think for a moment about each of those four quadrants. If you were a child, a learner, in a high challenge classroom, where there was a lot of intellectual challenge but very little support, how would you feel? If you were in a classroom where there was not much challenge and you were not given very much support, how would you feel in that classroom? If you were in a classroom where there was not very much challenge but a great deal of support, how would you feel then? And, finally, if you were in a classroom where there was a lot of intellectual challenge

but also a lot of support, how would you feel in that case? So I’ll just give you a moment, and if you just want to turn to the person next to you and suggest what kind of learning environment each of those four quadrants would create.

OK, you probably had something like this, [PowerPoint slide] that high challenge and low support is the frustration zone, you are anxious, you are not likely to be learning, low support and low challenge you would probably just get bored, high support and low challenge you feel comfortable but you are not actually learning very much because it’s all very easy, but high challenge and high support is where you are being pushed to go further but given the support to do so.

So throughout this talk, I’m going to be talking about high challenge/high support classrooms, because that is where I think second language learners need to be. They’re not always in that environment, as I’m sure you’re aware.

I want to move on now then to looking at the second of my challenges, which was what it means to challenge learners intellectually. I think this is a particularly important issue for second language learners, because so often – because of their low levels of English – they are required to do less cognitively. And I think that’s a major problem that they are being held back by English.

Deciding what counts as intellectually challenging learning is actually quite a difficult, quite a complex task and I’ve put on your handout in your conference pack a very short definition of what intellectually challenging learning is. And I won’t read it aloud to you, because I’m assuming you’re all literate. I think the important part here though is that in an intellectually challenging curriculum, children or learners do more than just reproduce the knowledge that other people have constructed.

In the last three or four years, my colleague Jenny Hammond and myself at UTS have been involved in a study and some research, where we worked with a group of eight schools, all of whom were interested in providing their EAL learners with an intellectually challenging curriculum. We were interested in particular in what it was that enabled those EAL learners to achieve and they did achieve. And this is the research that I want to talk a little bit about today.

There has, in fact, been a lot of research, largely in America, which has suggested the significance of high challenge classrooms for successful educational outcomes for all learners. The work was done by Newman and his colleagues. And they have suggested three significant findings in relation to raising the levels of academic achievement and intellectual quality.

First, their research suggested that students from all backgrounds are more engaged when classroom work is cognitively challenging than when it consists solely of conventional, low-level work. Regardless of social or ethnic background, all children were more engaged. Secondly, all students achieve at higher levels when they participate in an intellectually challenging curriculum. So everybody did better.

But the most interesting of these findings, I think, is the last one, which is that equity gaps, that is the gaps between learners who, for example, enter school with low socio-economic backgrounds, speaking a different dialect or a different language, the gaps between those children and children who come from middle-class English-speaking backgrounds lessened as a result of working in a cognitively challenging curriculum. That doesn't usually happen. The nature of schools being what it is, equity gaps tend to get larger, actually, as children go through school, but this seemed to reverse that. So I thought it was very, very interesting and very pertinent research.

When Jenny and I started work with this project, where we were looking at intellectual quality/intellectual challenge, we wondered exactly what we were going to find, because it's all very well to say 'Intellectual quality means that you are thinking creatively and you're transforming information and you're involved in higher-order thinking', but what does that actually look like in the classroom? So what we did was to work with teachers over a period of two and a half years and go into classrooms and watch what they were doing. And what I'm going to report to you now is what we saw happening in the classrooms. And because we were interested in what was happening on a day-to-day basis, in other words, how intellectual quality was being enacted, how it was being played out, we decided to talk about intellectual practices. So we were describing the things that we saw happening on a recurring basis in all of these classrooms. We had three primary and five secondary initially, we lost a couple of schools on the way, but most schools stayed with us for the whole time. So what I am going to do is to tell you about the kinds of practices that we saw occurring in all of the schools. There were between 50 and 90 percent of the children who came from language backgrounds other than English, so they were all high migrant-density schools. And they were largely in schools where not a great deal had been expected from those students, including one school that was probably one of the lowest achieving in New South Wales.

OK, so here is a sum of the practices that we observed and, for each one, I'm going to just give you a very brief example so that you can see what it looked like in practice. I don't really have time to do this in the amount of detail I would have liked to.

First of all, students engaged with the key ideas and concepts of the discipline in ways that reflected how experts in the field think and reason. Let me give you an example: They were engaged in activities that mirrored the ways of thinking and meaning of scientists, historians, mathematicians, that is they used content and processes that were central to a particular discipline. And that required students not simply to have a knowledge of isolated facts, but a deep knowledge of the particular discipline.

Here is an example: The students in one class were studying ancient history. On display in the history department were recreations and photographs of artefacts and tomb paintings. As part of their study, they took on the role of archaeologists in examining the things on display. They were given the task of explaining the significance of these works – in other words, they were asked "What do these things signify about the way Egyptians lived?" That is, the students needed to produce responses that went beyond literal understanding and reproduction of knowledge about artefacts and tomb paintings. They needed to interpret what they were observing in terms of what they could learn from it and that, in a sense, mirrors the work of... it is what archaeologists and historians do. And that kind of activity is in sharp contrast to one, for example, which required students simply to label artefacts or answer comprehension questions about Egyptians. They were actually having to think "What do these things tell us about the way Egyptians lived?"

So that's one very brief example of how they were engaging with the ideas of the discipline in ways that reflected what might be happening in the real world. The second one – and we found this to be a very important one – is that students transformed what they learned. They went through a process of transformation and they transformed what they learned into a different form for use in a new context and for a different audience.

So, in one school, a Year 6 class – the last year of primary school – had been working on a unit of work about their local community and they carried out research on issues such as house prices, recreational facilities, the local libraries, sporting facilities, local shopping outlets and so on. The school had a number of newly arrived migrant and refugee students and the students used the knowledge they acquired to create an information booklet about the area for the parents of those children. They also invited in all the newly arrived parents and, through interpreters, they presented a PowerPoint presentation on their local area. So you can see that the gain there went a lot further than just learning about the community and writing about the community, there was a genuine audience for the work that they were presenting. And it was a very intellectually demanding thing to do, because not only did they have to transform

what they learned, but they also had to think about how they were going to present it, put it onto PowerPoint, turn it into an information booklet. So that's what I'm referring to when I talk about transformation of information, doing something with it, putting it into a new form.

The third one was that they constantly made links between concrete knowledge and abstract theoretical knowledge. For example, in one classroom – and it's the one I'm going to be talking a bit about later – they were learning about the importance of replication in scientific investigations. They began by watching a video, which showed two scientists repeating an experiment, doing the same experiment many times. They began by saying “the scientists kept on doing it”, then they talked about the scientists repeating it many times, then the teacher introduced the word ‘replicate’, and they moved on to talk about replication and the importance of replication for reliability and validity. What they did was to move backwards and forwards between that initial video, when they were watching what was happening and saying the scientists did this many, many times, but then using that notion of repeating something many times to get into much more complex abstract concepts like replication and validity and so on.

One of the things we don't want children to do is to hide behind technical language. We don't want them just to parrot new language and pretend that they know what it means. It's the movement between understanding everyday, concrete examples and linking it with more abstract concepts, that, I think, is what understanding a subject has to do with.

The fourth one: the students engaged in substantive conversation. Substantive conversation means conversation about the big ideas in a unit of work. I was listening to someone talk the other day about learning in general, and they said that actually you forget 90 percent of what you learned. Which is a bit daunting really when you think of the time that we spend on it. But, they said, you walk away with 10 percent. Substantive conversations are to do with the 10 percent we walk away with, what is really, really important, the big ideas, the key concepts.

Substantive conversation is extended talk, and it's extended talk between students, not just between the teacher and the student. It tends to be much more reciprocal, it tends to be more extended, with students taking a more central and significant role in directing its content and directing its flow. For EAL learners in particular, of course, those opportunities for collaborative talk are particularly important. So there was a lot of spoken language, collaborative spoken language, in the classrooms.

A fifth one was that students made connections between the spoken and written language of the subject and other, discipline-related ways of making meaning. Language is the primary system for making meaning in school, and it is what most of us are primarily concerned with. But, in addition, different subjects make use of alternative ways of representing information, for example through diagrams, through graphs, tables, flow-charts, maps and so on. Students who are engaged in disciplinary learning need to learn to read these visual representations, just as they learn other forms of literacy. But they also need to be able to interpret and explain them through language, so it is moving between those other systems of meaning and language, where I think there is a lot of intellectual challenge involved.

Again I'll give you an example: in a Year 5 class, the second last class of primary school, students had carried out a number of small experiments in science. And the focus for the unit of work was how they could be represented in graphs. The teacher modelled the use of a range of different types of graphs, for example, bar graphs, pie graphs, line graphs and sector graphs, and students worked out how their findings would be presented in this form. So, again, you can see that transformation of information. But their task also was integrated with ICT, and their task was to present their findings to other groups using PowerPoint. A lot of time was also spent on the students planning what they would say in their presentations, so, again, making links between what the graph means and how you can actually explain that in language.

Another practice that we saw a lot of was that students were encouraged to problematise knowledge and question accepted wisdom. I'll give you an example from a Year 7 history class. The students had been asked to decide whether or not a particular Chinese emperor was a just and fair ruler. There were a lot of Chinese students in this class, by the way, so they were very interested in this. Although they were given access to a lot of historical material, it was left to the students to decide on how they should interpret these sources. And we talked to their history teacher and what she said, I thought, was very interesting. She said they had a whole lot of material about a Chinese emperor and then they had to test the hypothesis, was he a fair and just ruler? Instead of just learning that he did all these things, they had to use the material to deduce something. I think the concept that there are really no right answers is an important one, she said. And we also interviewed the students, and this, of all these practices, was the one they appeared to find most difficult because they weren't used to actually making up their own mind based on historical sources and these were quite a bright group of girls. One of them said “you know, there is no one right answer, that's what makes history kind of scary,” she said. And they had been used all their lives all their school lives to being given historical facts, which they were extremely good at

learning, so to have to actually interpret their own sources was something quite different for them.

So problematisation of knowledge, then, would recognise that knowledge and information can be questioned, it is not an unchanging body of truth. It would include things like taking a critical orientation to reading a text, identifying bias, critiquing different views, pursuing a novel line of enquiry or offering an alternative solution to a problem. This was probably the one that students found quite difficult.

And the last one – and this ran right through all the other practices – was that students reflected on language and used meta-language, language about language, they talked about language, in the context of learning about other things. For example, in the context of writing up a report on a science experiment, there was a lot of explicit talk about the structure of the report, the use of the passive, not just the form, but why you use the passive, because that's the way information needs to be structured in a piece of writing of that type. They talked about how you might express cause and effect, so students were learning about language in the context of actually using it. And the students themselves, in the classrooms we worked in, were quite impressive in terms of their use of meta-language that they actually could talk about the language that they were using and use it to reflect on.

So those were the seven intellectual practices and they represented, I think, a kind of curriculum, which is quite unusual for many second language learners. It was very challenging – it was challenging intellectually, and challenging for many of them because they hadn't learned to learn in quite that way before. It is a sort of curriculum, in Australia, that might be quite common in a selective school, which is, I guess, the closest we would have would be grammar schools. We've still got a few of those. But this was being done, remember, with children who had been seen as not being particularly able, as not having good language etc, etc, etc. So, I think, they did represent fairly unusual practices. So when I'm talking about intellectual challenge and a challenging curriculum these represent the sorts of practices that I think would be part of that curriculum. I'm certainly not suggesting this is all there is, but this is what we observed in the classrooms over a period of a couple of years.

Let me move on now to looking at the third of those challenges and that was the challenge of academic language.

I would just like to remind you that, as you know, second language learners will normally learn the language of the playground pretty quickly and without a great deal of support. But the language associated with learning, academic language, academic literacies, takes a lot longer. And we know it from the work of Jim Cummins that it might take between 5 and 7 years for students to

actually catch up with their native speaker peers. There has been a lot of work done on this in Australia and I would like to acknowledge the work of people like Bev Derewianka, Jim Martin, David Rose, Fran Christie, John Polias, Brian Dare and many, many others. But I think that work has had an enormous impact on the work that is done in schools and in ESL education in Australia.

OK, so here are just a couple of examples of the kinds of challenges that academic language poses to a second language learner. [PowerPoint slide]

Here is a piece of obviously written language: "*The extended drought caused the crops to fail, resulting in a widespread famine and many deaths, especially among the children and elderly.*" I'm going to again stop just for a minute or two and ask you to imagine that you were explaining that text to, let's say, a seven year old. It doesn't have to be a second language learner, any seven year old will do. What would you actually say if a child said to you "What does that mean?" How would you explain it to them? I would just like you to turn to somebody and imagine that they are a seven year old and try and explain that in the way that you would.

Can I ask for a volunteer to explain this text to a young child? Can I ask for someone just to say what you would say?

CONFERENCE PARTICIPANT 1:

We'd start talking about what a seven year old would know about in their own environment, and then we'd talk about if they knew about plants, we could start talking about plants and then say "what does that plant need to grow?" And they would probably, hopefully, say something like 'water'. And then we could..., "what if that plant didn't have any water, then what would happen?" "Well, the plant would die" and then you could relate that to drought.

CONFERENCE PARTICIPANT 2:

...not only everything she said, but also the visual showing of that actual sentence, in terms of, you know, no water, no plants etc, etc.

PAULINE GIBBONS

Right, OK. Any other ideas? What would you actually say though? On the spur of the moment, if a child said "what does that mean?" If your own child said "what does that mean?", what would you actually say to them?

CONFERENCE PARTICIPANT 3:

Lack of water ... the plants didn't grow, they didn't have anything to eat and the youngest and the oldest die.

PAULINE GIBBONS

OK, do you need any more than that? Listen, this is just a linguist's licence, I just wanted to show you the difference between two kinds of text, so this actually

came from the *Guardian Weekly* in fact. I want you to say what you'd say to a young child.

CONFERENCE PARTICIPANT 4:

I'd say..., what would I say? I'd say... I could find a much more interesting book.

CONFERENCE PARTICIPANT 5:

I would say "what would it feel like if you were really, really hungry?" And then we might start talking about hunger.

PAULINE GIBBONS

So you'd appeal to their personal experiences. Yes. Start from the end and go backwards. OK. You'd probably end up, at some stage, saying something like this, I mean, some of you would do more and you'd have pictures and plants and so on, I was just thinking of when my own children were young and they'd say "what does that mean?" and you just explain it in more everyday terms. So the example I got here is: "*There was no rain for a very long time. The farmers had planted crops like maize and wheat and corn, but because it didn't rain, all the crops died. Because there were no crops, there was nothing for the children to eat and they became very hungry. Because they didn't have enough to eat, many of them died, especially the children and old people*". That was really what I was trying to get you to think about – how you'd explain that in everyday language to a learner, to any child, not necessarily an EAL learner. [PowerPoint slide]

I'm taking those two examples, what you can see is that, although the two texts have similar meanings, it takes more than double the words to express it in the second text, 64 in fact compared to 23. And this is because, as you all said when you were talking earlier, there is much assumed knowledge in the first text that you have to make explicit in the second, whether it's by showing pictures of a plant, whether it's by talking about the lack of water, whether it's including the other comments that you made. But everything you said was a way of making explicit the kind of knowledge, the kind of information, that is implicit, assumed, in the first text.

There are further differences in the grammar of the two texts, and this is where we get into some of the issues of academic language. If a child is in primary school, there is absolutely nothing wrong with the second text, absolutely nothing wrong with it at all. But it will limit the child in the kinds of things they can talk about, and I'll explain what I mean by that.

First of all, notice, as I said, that the information is coded somewhat differently. In the second text we have the sentence "*There was no rain for a very long time.*" In the first text, that all gets packed, compacted, put together as "*an extended drought*". So all that information is expressed just in those two words, "*extended drought*".

Similarly, "*the farmers had planted crops and maize and wheat and corn...*", well, that's not mentioned in the first text, but we need to know that to understand what crops are. You can see also that the second text enables you to talk about people, it enables you to talk about a specific famine, but what you can't do, in the second text, is to abstract from that and talk more generally about the concept of famine and drought. And so, in the first text, it gives you the resources to talk about big ideas, it gives you the resources to talk about the causes of famine, or drought-related famine. You haven't got the language to do that in the second text, you need that more academic language in order to talk about those bigger ideas, those big concepts.

So you can see that, while both texts are perfectly appropriate in different contexts, if all you can do is use language in an everyday sense like the second one, you are restricted in the way that you can talk about important concepts. And that's the work that academic language does, it makes things more concise and more precise and it enables you to link different concepts with each other, so to talk about drought-related famine, for example, or the causes of famine.

And again, "*because it didn't rain, all the crops died.*" That isn't spelled out in the first text, we just talk about the drought, and we know what drought is, and we know what famine is. I think that it's important to see academic language not just as jargon, and certainly not just as vocabulary. The way that information is coded is actually coded differently in the grammar, in more academic language. And that's what second language learners, and indeed a lot of first language learners, find very difficult.

Another of the challenges, I think, of academic language is in the difference between spoken and written language. And I'm going to use a text here that I've used in my books, so I'm sure it will be familiar to you. [PowerPoint slide] You all know the context for that, it was a group of children using magnets and using a number of objects for finding out what was magnetic and what was not. It's very everyday language, it's like text 2 of the previous example. The purple bits are where the students have actually got to use more complete, more explicit language, in order to explain what they are talking about. In the first text, they are in a context where they can see what's going on and so they can get away with saying "this" and "these" and "those". In the second text, they are telling other people and therefore they have to use language itself to reconstruct that experience. The third one, as you'll remember, is a piece of written language from one of the children in the group, and the fourth one is taken from an encyclopaedia.

Now, you can see there is more and more purple, and the purple bits are where the information has got denser, where it has been put together and has become much more complex, much denser. In fact, what happens is

that that group of nouns becomes much more complex. So in the last text we have “a magnet is” – and here is a very long noun group – “a piece of metal surrounded by an invisible field of force which attracts any magnetic material in it”, it’s all one thing. That kind of language is very dense and very complex, especially for second language learners. There is a lot to be learned about the differences between spoken and written language and, as we know, most EAL learners, in the early years at least, have very little problems with that face-to-face or everyday spoken language. What causes problems is the language they are expected to use when they move into lower secondary schools and throughout their secondary education, because that’s when the language puts much more press on their linguistic resources.

Let me move on to the fourth part of the talk now, which is to do with the challenges for teachers, in other words: what do you do, how do you support learners first of all to work in a more intellectually challenging environment, and, secondly, to learn to use language appropriately in a more academic way?

Three points about scaffolding. Scaffolding is temporary help that assists a learner to move towards new concepts, levels of understanding and new language. Secondly, it enables a learner to know how to do something, not just what to do and not just to repeat information. And thirdly it’s future-oriented, as Vygotsky said: *What a learner can do with support today, he or she will be able to do tomorrow.*

The difference between help and scaffolding, I would say is that scaffolding is a kind of help, but it’s a kind of help that enables learners to be independent learners, and that was one of the points, of course, that was in your NALDIC paper. I always use the example of teaching a child to spell, and a kindergarten child who comes to you and says: “well, how do I spell the word ‘cat’?”, you can, of course, just tell them or write it down and let them copy it. But you may choose to do something like this, you may choose to say something like “how many sounds can you hear in the word cat?”, “I can hear three sounds.” “How do you..., how might you write the first sound? How might you write the last sound?” That is scaffolding because it is helping them to know what to do in a similar context in the future. So I’m not saying scaffolding is better than help, but I would just like to make a distinction between them. Scaffolding is always aimed at helping someone to do something by themselves in future.

What I would like to do, is to take you into the science classroom I’ve mentioned a couple of times and show you the kinds of scaffolding that the teachers who were involved with that class used. One of them was a science teacher, the other one was a specialist EAL teacher, and they, in fact, team-taught this particular class.

On the back of the handout I’ve got an example of some of the teaching and learning activities that went on in this science classroom. The students were learning about scientific processes of investigation in the context of learning about forces. They were learning about how you carry out a process of investigation in science. Part of the unit of the work required the students to work collaboratively in small groups to design their own experiment to test the truth of common myths. So the myths were something like ‘toast always lands on the buttered side up’, ‘the heavier the object the faster it will fall’ and things like that, but they weren’t just carrying out other people’s experiments, they were actually having to design their own experiments and think about the variables and how they would set it up and so on.

For the assessment task at the end of the unit, the students had to write a report about their experiment and discuss their results. They also had to reflect on what they learned about science, but also what they had learned about designing a process of investigation and how they could have improved on that experimental design.

So this is, very briefly, a list of some of the activities, not the whole thing, some of the activities that they were involved with. They began by watching a *MythBusters* video. I don’t know if you have this in Britain. They actually come from America and they are very popular in Australia at the moment; it’s basically science for lay people. In this particular *MythBusters* video, two scientists were proving, or disproving, the hypothesis that wearing a tongue-stud makes it more likely that you will be struck by lightning. If you’re wearing a tongue-stud, you don’t need to worry, actually, they had random results and there was no correlation between wearing a tongue-stud and being struck by lightning, unless your tongue-stud was about the size of your fist and then it did make a difference. The kids were absolutely fascinated with this, because they all had body-jewellery all over them, so they found this a really interesting video.

So they watched the video and then the teacher talked – as teachers do – about what the students had seen. And as they were talking, she was re-casting, so, in other words, she was providing the appropriate scientific term. So she would ask a question like “What did they keep the same?” and the students would say: “Well, the size of the heads were the same.” And so she would write up ‘size of the heads’. And then, beside that, she would write, in a different colour, so she wrote up what the students said in black and, in a different colour, she would write the technical term, which is ‘controlled variable’. And she also drew attention to the fact that the different kind of variables, controlled, dependent and independent, were up on the wall on a chart with definitions. I’m going to come back to this little bit in a moment.

The next thing – they did a whole-class experiment, which is teacher-led and demonstrated by the teacher, again testing another myth. In groups, they identified the variables in that whole-class experiment, what were the controlled variables, what were the independent and the dependent, and then they had a class with the EAL teacher who modelled a scientific report, gave them other examples of scientific reports to look at, led discussions, they had a joint construction of a report, wrote one together (a joint construction is normally with the teacher describing and the students suggesting what should be written up). So they looked at the models and then they wrote one together.

Then, in their groups, they designed their own experiment, they picked from among a whole list, they picked the myth that they were interested in. They used thinking-sheets to help them plan. They then carried out their own experiments in groups, they reported to other groups about the design of the experiment and the results and then, individually, they wrote a report of the experiment, including a discussion of results and reflection on their design. This was an assessment task and in this particular class, who were not the best at doing assessments, every single student did an assessment, every single one was given in. And when we asked why, they said: “because we knew what to do!” And I thought, how often do we ask students to do something and they’re actually not very clear about what they are supposed to be doing, but this had been so clearly modelled and so explicitly taught, that they were very comfortable with doing this on their own.

OK – the *thinking-sheet*: The classes we were in used what I call thinking-sheets a lot. They were basically to help groups of students design an experiment; it’s just a checklist of questions.

- *Do we agree with the myth?*
- *Why?*
- *Why not?*
- *How might we test this?*
- *What are the two variables?*
- *What materials will we need?*
- *What steps will we need to know... to follow?*

The thinking-sheets were lists of questions, or pointers, to help the students talk together productively. Typically, one thinking-sheet was given out per group. So it was not intended to be an individual activity, but what they did was to enable the students to plan and also to talk about the subject, they had the substantive conversations that I was talking about earlier. They occurred in all sorts of different contexts, not just in science, they occurred in English, for example, where the students were given thinking-sheets to help them structure a discussion. They were used by the teachers very, very often, but they were

always as an aid to group work and an aid to thinking and often to planning.

I’ve given you a very quick run-down of the sorts of things that occurred in that classroom and I haven’t really been fair to the two teachers because they did a great deal more than that. But I hope that’s given you a flavour of the sorts of things that were happening in that science classroom.

Let me now look – from an EAL perspective – at what characterised the programme I’ve just taken you through very quickly and what scaffolding was available. How was this different from a similar class with all native speaker children? I identified six things in this case, teacher-practices, which I think were very supportive for EAL learners - so here’s the bit about what makes it more than just good teaching.

First of all: authentic integration of language and content. [PowerPoint slide] Now I don’t know if you can see this from where you are sitting, it doesn’t really matter if you can’t, but I just put this slide up, it came from the teachers’ programme, to show you how they thought about language in the context of science. And what you can see here, on the left, are the science objectives. And then, on the other side, and this is what made it unusual, as you don’t often see this in secondary science programmes, there were language objectives. So that was the language that the science teacher focused on in the context of learning science. Initially, the students said: “Why are we doing this in science, Miss? This is English!” So they were a little bit bemused at the beginning about why the EAL teacher was there talking about some of those things, but they very quickly realised that this was important help for them. And I think that was one of the reasons why they all handed in their assessment task, because it had been so clearly modelled to them. So, authentic integration of language and content. That, I would say, is one practice that makes EAL teaching different from regular teaching although it’s helpful for all students, many other students also would have found this useful.

Secondly: attention to the sequencing of activities and how they related to each other. Each one of the activities served as the scaffolding for what came later. Watching the *MythBusters* video was the support for being able to talk about it and that in turn helped the students to make sense of the whole-class experiment. That in turn helped them make sense of what variables were and so on. Each one of these activities led on to the next and I think that’s a marker of a good EAL programme. It’s not just the activities themselves that need to be worthwhile activities, it’s the relationship of one activity to the next, which helps to make the process explicit for EAL learners.

Thirdly: explicit teaching about language. Particularly when students were learning about how to write a report, the two teachers in the room followed the teaching and learning cycle, that is they developed the students' understanding of the content, or developed the field knowledge, they were doing that anyway because it was a science class, they took a lot of time showing students model reports, they talked about some of the language of the reports, for example, things like ways of expressing cause and effect, they modelled phrases like 'as a result', 'because of this', 'therefore', 'consequently', which is language that EAL learners find very difficult in fact, those kind of connectives. They talked about the use of the passive in the science class, not as is often done, saying it is a rule, you know, you have to use the passive because it's science, but explaining why, because of the nature of what you are talking about requires us to use the passive in English. They talked about the function, not just the form. They also talked to the learners about language itself, they gave them terms like connectives and organisation and so on. There was a lot of explicit teaching about language.

Abstract or low-level tasks are situated in an authentic context – I think people who are concerned with language are often worried about how do you teach basic grammar, how do you teach sentence structures, how do you teach spelling, how do you teach these things in this kind of a context? My response would be that you still do the basic kind of stuff that we have always done, you still may need, at times, to focus explicitly on the form of the passive, how you write a sentence using the passive. You do need to do these things and I think it would be irresponsible just to say: "Well, the kids will just pick it up because we are modelling it." The point is, though, that those sorts of exercises in this class were done in this bigger context so they understood the relevance of what they were doing. When the teacher came to say: "You know, this is how you write the first sentence of the explanation or this is how you write the passive or this is how you do this", and she would actually spend time with them, almost in a kind of exercise sense, and getting them to underline passages and underline things in other reports and so on, which was, in some sense, fairly low-level basic language work. But it wasn't excised from its context, it wasn't functionally empty, because the kids were then about to use it in writing the report.

I was talking to one of my PhD students last year, who comes from Turkey. He was saying that when he was a student, he was apprenticed to a barber. And he said one of the first things he had to do as part of his apprenticeship was to shave a melon. Now, if you think about it, a melon is roughly the size of a human head, it has got kind of fine hairs on it, and he said by shaving the melon, you got the flexibility of the wrist and so on. If you took that out of context and if he wasn't learning to be a barber, it would be a totally meaningless exercise. I

think language exercises taken out of context are like that – it's like shaving a melon when there is no reason to. But if you put it back into its context, there is no reason why you can't focus on small bits of language, small items of language, if that's what's required, as long as students can see where it is leading. I think the metaphor of shaving the melon, is a pretty good metaphor for what we can do to make language meaningful. But once you take it out of context it becomes completely ridiculous. There is a place for these low-level tasks, provided they are situated in authentic, more authentic contexts, in whole contexts.

The fifth way that I think that has made it very different from some classes I have seen in mother-tongue teaching is what – I think Leo van Lier coined this phrase – a 'Janus curriculum'. Janus, as you know, is the Roman god of doors, he faces two directions, and I think a good EAL programme always faces in two directions: It looks at what learners bring to the learning, but it keeps a very clear focus on where you want learners to get to. So you have to bring those two things together, which the teachers did very successfully, as I hope you've realised from this unit of work.

In this particular classroom, some of the discussions about variables took place, for example, in the students' first language. There was a fairly large group of Arabic students, and some of the talk in the groups was actually in Arabic. There was the use of everyday language to explain what the scientists were doing, before the technical language was introduced. But there was no compromise in terms of the science. So the learning was scaffolded up, it wasn't dumbed down. So you have this kind of looking in two directions.

You could see the same thing in the talk as well. [PowerPoint slide] This is a conversation between the science teacher and some of the students about replication. This is immediately after they've watched the video. The students said: "They have to do it," – the experiment – "many times, so that they can see if there are any changes." And the teacher says: "yes, so that they can see if they get similar results." "And see if a myth is busted, it wasn't getting busted, so they kept doing it until it got busted!" "So," said the teacher, "they did the experiment many times, your experimental method should be repeated a number of times too, so that a more accurate conclusion can be made. This is called replicating the experiment." "OK, they repeated the experiment many times." "They kept on doing it", said the students. "They kept on doing it and this is what you have to do as well in your experiments, you have to replicate the experiment, you're going to repeat it several times, you're going to replicate it." Has to be teacher-talk, doesn't it?

But that kind of switching backwards and forwards, appropriating what the children were saying, "kept on

doing it”, “they did it many times”, but also using the science word, “replicate”, and later on, she talked about replication, so she nominalised it. So that’s what I mean by Janus-like quality and I think good teaching, particularly good EAL teaching, has this quality about it.

Use of *message abundancy*: This is a term I invented because I kept seeing it happening in classrooms and there wasn’t a word that I knew that actually represented it. If you wouldn’t mind going back to that sequence of activities, on your handout, I just want to refer to that to give you an example of what I mean by *message abundancy*. I said that the students watched the video and then they talked with the teacher about what they had seen. As they were talking, the teacher wrote up what they were saying, but also re-cast it, put it into scientific terms using a different colour on the board. She also made references to the definitions on the wall-chart. Then they did the second experiment, they identified the variables and they used it in their own work and then they reflected on what they had learned. Now, if you had been a second language learner sitting in that class and you were trying to make sense of what a variable was and the different kinds of variables, you would have had many, many opportunities to understand that. If you didn’t understand it one way, you’d have another way to make sense of it. If you were a second language learner in that class, you would have had opportunities for participating in an initial shared experience, which is watching the video with everybody else; hearing everyday language alongside academic language in the interactions between teachers and students - the Janus-like talk; seeing the key points written on the board, so you have got a visual representation of what you’re hearing; having the difference between everyday and technical language highlighted through the colour-coding; having access to a chart of definitions; getting practice in putting new concepts into practice; and, finally, using the learning in a new context. That’s what I mean by *message abundancy*. So that you have more than one bite of the apple, you don’t just get told one thing once.

A lot of EAL students that I’ve interviewed in secondary say their teachers their teachers talk too quickly. I don’t think it’s actually the speed of the talk that they’re responding to, I think it’s the speed at which information is given. If you’re a second language learner, it helps enormously to have the time to process a new idea. This kind of recycling of the same idea many times over, I think is one of the most important things about a curriculum. I called it message abundancy because it seemed to me that there was an abundancy of messages there and many opportunities to understand something.

So those are six things that I think make EAL teaching different from regular classroom teaching. And, as you can see, this classroom exhibited all of the characteristics that your NALDIC paper talks about, prior knowledge,

rich contextual background, comprehensible output, making language explicit and developing independent learners. But what I have tried to demonstrate is that these things can occur and should occur in a high-challenge, high-support classroom.

As I started with a Mariani diagram. I’m going back to the two children, the two young people that we saw at the beginning, because we also interviewed the students. We spent a lot of time talking to students, it’s amazing what you can learn from students, and I don’t think we talk to them enough about what helps them to learn. Nadya says: “It made me confident of myself that I could do it. It was easier because she made everything bigger.” I didn’t actually ask her what she meant by that, but I think she was talking about the message abundancy, you know, she had many opportunities to see what was happening. “At first I didn’t like science, and now, as I got through it and the teacher helped me, I got confident of myself that I can learn it.” So I think that that speaks for itself in terms of this young woman feeling now that she was able to learn, she sort of extended her identity in a sense and felt that she was able to learn science.

The young boy that you saw was an extremely good athlete but struggled with all his other schoolwork. But at the end of this unit of work, we asked him whether he had enjoyed it, what was hard and what helped him, and he said: “I think science is better than PE.” I thought ‘great!’, and I think that’s what we want our learners to feel, we want them to feel ‘yes, I can do it!’, and ‘yes, I feel confident, that I can be a learner.’ They were positioned as people who were successful, who were going to be successful. And, as I said, they all completed their assignment, which was unheard of, and, interestingly, in the end of unit test which they did there were four classes, they were streamed, and this class was the second to bottom, these kids did as well as the kids in the top grade, which, OK, it was only an end of unit teacher-designed test, but I think it actually spoke volumes about what message abundancy and the other things I was talking about can do.

OK, I’m nearly finished because I want to give you time for some questions. But I do want to just add something else. And that is, that effective EAL learning is more than just having a bag of strategies to draw on, it’s more than knowing about comprehensible output and message abundancy and all the other things we’ve been talking about. I think we can only have real change in schools when teachers – and I’m not talking about you, I’m talking about people who don’t go to these kinds of conferences – we can only have real change in schools when teachers’ assumptions and beliefs also change. Teachers’ assumptions and beliefs, beliefs about things like the nature of language, the nature of learning, the children’s communities and the communities they come from, the sort of assumptions and beliefs that teachers hold about these things, are a major force behind most

decisions in individual classrooms. That actually, I think, is what makes the difference. Teachers' beliefs and assumptions can have either enabling or constraining effects.

For example, a teacher who sees knowledge as a commodity that is transmitted from the teacher to the students, is not going to be giving much airtime to listening to and building on students' ideas and prior knowledge. If your belief is that learning is something that occurs solely within individuals, you're not likely to set up the kinds of collaborative group work that facilitates language development. If you are a teacher who sees content as a body of something to cover, you're not likely to be thinking about the literacy demands in your subject. And if you see EAL learners as language-deficient, you are unlikely to take the trouble to find out what a student knows in his or her first language, nor to encourage the kinds of higher-order literacy engagement that is fundamental to school success.

So the way teachers think about these things actually impacts enormously on how they behave in the classroom and how they talk to students. And, as I say, I'm not addressing this to you, I'm addressing this to, I'm sure, some of the people that you work with and people who are not in the area that you are in. I think that teachers' ways of thinking have a great impact, as well as all the other things we have been talking about. Turning that on its head, here are four ways of thinking that I believe create opportunities for EAL learners to engage in learning and what I call the challenge zone. So four ways of thinking that I think will help students.

First of all, teachers think about their learners as the people they can become, not as the people they are at the moment, not as the people with limited English, but as the people they can become with support. This emphasis on students' learning potential rather than on their current abilities and therefore the consequent raising of expectations of what is possible, is especially important, I think, for EAL learners whose cognitive and conceptual understanding often outstrips what they are able to show in English. It's exactly what Vygotsky was talking about, of course, with the notion of the zone of proximal development. Treating learners as the people they can become I think is very important. And that's why those two young people were treated as the people they could become and rose to the challenge.

Secondly, teachers are less focused on covering content and more focused on *uncovering* the subject. What the teachers in that classroom were doing, was uncovering science, uncovering the ways of thinking, uncovering the language, uncovering what is important in science, rather than being overly concerned with the actual content. That is not to say that the content wasn't important, but it didn't drive everything else, it was used as a way of doing something more important, which was to uncover

the content. Now I think that most teachers feel they're under pressure to cover a certain amount of work with their students and I think this is actually unavoidable in the senior years of school. In fact, certainly in Australia, it's very difficult to do anything else. But a shift of focus towards uncovering the subject means that teachers make explicit to learners those things that I've just been talking about. And it's the things they learn when you're uncovering the subject, that, ultimately, are the enduring tools that children make use of in the later years of school. These students very much understood certain important concepts in science, which they will be able to use for the rest of their school life in science.

Thirdly: the teachers are reflective practitioners. They think critically about their own practices and avoid the temptation to locate under-achievement in the students themselves or in their home backgrounds. How many times have you heard people say: "Well, you know, of course they are going to fail, because look at their homes, they don't have any books in the home." Maybe people don't say that in England, but they do in many places. So rather than blaming the students and blaming their home background, if you are reflective and you reflect on what kind of opportunities are being given to students, that seems to be a much more productive way of looking at it.

And, finally: teachers see a culturally diverse classroom as a resource not a problem. The last twenty or so years have been characterised by mass movements of migrants and refugees across the world resulting in a wider cultural mix than we've ever had before in schools. So it becomes ever more important to be able to navigate difference and to talk across cultures. Classrooms where there is multi-cultural diversity mirror the broader society, and the kinds of collaborative learning I've been describing and that I know the NALDIC paper is also supporting, creates opportunities for all students to look beyond cultural difference to a recognition of what they share and to take this understanding into the world beyond the school. As Gordon Wells has said: *Who we become depends on the company we keep and what we do and say together.* I think teachers who see their classrooms as a resource are doing a great service, not just to the EAL children, but to everybody else in the class as well.

To sum up, I think when students are treated as capable learners, when they are actively engaged in the kinds of challenging tasks I have been describing, and in literacy learning, when they are given opportunities to use knowledge in meaningful ways with others, they not only achieve at high levels, but also – as we saw in the comments of the two students – they expand their academic and personal identities and, most importantly, they extend their own beliefs of what is possible for them. So, at that point, I would like to say thank you for listening, and I'll stop.