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Scaffolding academic literacy with indigenous health sciences students: An evaluative study

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Abstract

We report on an action research project that explored the use of an innovative pedagogy, known as *Scaffolding Academic Literacy*, to accelerate the learning of Indigenous undergraduate health science students at the University of Sydney. The pedagogy encompasses a set of teaching strategies that enable all students to read high level academic texts and successfully use what they learn from reading in their writing. The context of Indigenous adults entering tertiary study and their literacy needs are first outlined, the *Scaffolding Academic Literacy* pedagogy and its implementation is described, and results of students' literacy development are measured using an assessment tool that combines qualitative analysis with a numerical score to track and compare progress. Results indicate that integrating reading and writing academic skills into the curriculum using the pedagogy accelerated students' academic literacy at above expected rates of development, measured against standard secondary school progression rates, at the same time it enabled students to develop a more thorough understanding of their field of study (The term 'field' is used here both in a general sense as the entire field of activity and knowledge of an academic discipline, and in a specific sense as the elements of the academic field that are realised in a particular text. Crucially an academic field exists only in the texts in which it is realised (spoken and written), see Halliday, M.A.K. (1978). Language as a social semiotic: The social interpretation of language and meaning. London: Edward Arnold and Martin J.R & Rose, D (2007b). Working with discourse: Meaning beyond the clause (2nd ed.). London: Continuum).
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1. Introduction

Many Indigenous students entering university have literacy needs which are not met by standard academic pedagogies and are therefore at a disadvantage when it comes to achieving higher education outcomes comparable to many of their non-Indigenous counterparts. For example, Rose, Lui-Chivize, MacKnight, and Smith (2004) report that "few Indigenous adults who are now re-entering education had successfully completed high school, and many were forced to leave with little more than primary schooling" (see further below). The *Scaffolding Academic Literacy* pedagogy described in this paper has been designed to address this problem, by integrating teaching of academic reading and

writing skills in the context of studying the academic curriculum (Rose et al., 2004). The project was conducted with a group of Indigenous students enrolled in a Preparatory program and Bachelor of Health Science degree course at Yooroang Garang Centre for Indigenous Health Studies, University of Sydney.

The academic literacy demands of these courses include technical fields such as anatomy and physiology, and social science fields such as Indigenous studies, primary health care and professional practice. There is not the space here to describe the nature of these academic literacy demands in any detail, however they entail different but complementary patterns of academic discourse. Technical fields involve hierarchically organised bodies of empirical knowledge, while social sciences tend to involve more contingently negotiated arguments for abstract categories and principles. Bernstein (1999) describes these as hierarchical and horizontal knowledge structures respectively, characteristic of sciences and humanities. For detailed descriptions see Christie & Martin, 1997; Halliday & Martin, 1993; Martin & Rose, 2007b; Martin & Veel, 1998; Wignell, 2007. Access to these discourses typically requires a long apprenticeship in reading, writing and discussing them in the secondary school, which few Indigenous tertiary students have the advantage of. The purpose of the research was to test the efficacy of the *Scaffolding Academic Literacy* pedagogy with Indigenous students in the context of such a health sciences curriculum.

The paper begins by outlining the context in which the research was undertaken, and highlights the need for academic programs to incorporate academic literacy into teaching practices to maximise learning outcomes. This is followed by a description of the action research method that underpinned the project, including the pedagogy and its implementation at Yooroang Garang. Results are described with quantitative measures of improvements in students' academic writing, including examples of writing improvements to demonstrate qualitative improvements. Due to limitations of space, the focus of the paper is on the pedagogy and its academic literacy outcomes for this group of students. More detailed description of the pedagogy is discussed in Rose et al., 2004.

Whilst this research was conducted with Indigenous Australian students, its findings suggest that the *Scaffolding Academic Literacy* methodology could be valuable for teachers working with international and other students for whom English is a second language. This should be of particular consideration at universities where non-English speaking background students comprise a significant proportion of the student intake. Currently the *Scaffolding Academic Literacy* pedagogy is also being implemented and researched in universities in China, South Africa and Latin America, in both English and Spanish (e.g., Martin & Rose, 2007a).

2. Context and purpose of the research

The characteristics of Australian Indigenous students entering higher education vary from those of many non-Indigenous students. Overall, Indigenous students are more likely to be older and have no formal qualifications. In 2003, 33.9% of Indigenous students entered higher education with no formal qualifications compared to 5.4% of non-Indigenous students (Department of Education, Science and Training [DEST], 2005, p. 16). Indigenous students are also more likely to be enrolled in enabling programs rather than undergraduate programs and to demonstrate low rates of course participation and completion. These statistics are reflected in the student groups enrolled in programs at Yooroang Garang, the setting for this research. Yooroang Garang: School of Indigenous Health Studies, conducts undergraduate and postgraduate programs in Aboriginal Health and Community Development, as well as an Aboriginal Health Sciences Preparatory Program. The degree and preparatory programs are offered in block mode whereby students alternate between a total of six, week-long intensive sessions on campus per year, separated by off-campus periods when they study at home and work in their communities. The block mode program allows students, most of whom are mature aged, to combine study while maintaining employment, family and community obligations.

As skilled members of their communities and workplaces, many students entering the preparatory program at Yooroang Garang are returning to education after a significant absence or having not completed high school. This places this group of students at a significant disadvantage as they more often than not require time, support and opportunity to develop the necessary academic skills for success in tertiary study. Research evidence shows that ''of all those who enrolled at university, about 68 per cent had completed *any* university course by 2004'' whereas ''only 31 per cent of Indigenous students had completed their first course by 2004'' (Marks, 2007). Literacy has been identified as one core issue at the heart of these educational disparities. In particular the academic literacy demands for many Indigenous students entering university are a significant challenge. Analysis of students writing at the commencement of the project showed an average literacy level at the start of Year 1 of the Bachelor degree equivalent to junior secondary levels, and in the Preparatory course equivalent to upper primary levels. Our experience over two decades of Indigenous

further education programs in Australia suggests that these literacy levels are typical for Indigenous adults re-entering education. They reflect a history of marginalisation that has prevented Indigenous people from acquiring a level of education considered a prerequisite for study at university (Nakata, 1999).

At average rates of development it could potentially take up to six years for these students to acquire the academic literacy necessary for tertiary study. This represents an unacceptable delay for students who are already mature aged, and are typically pursuing tertiary qualifications for their professional careers in health care, and calls for change to standard academic practices to address the needs of students who do not enter university with high levels of academic literacy. In this respect this is a problem well beyond Indigenous tertiary education, encompassing many international students as well as mainstream students who have matriculated from Australian secondary schools.

These issues are further complicated by the 'block mode' of study in which Yooroang Garang's Preparatory and Bachelor programs are offered. Although block mode programs are common practice in Indigenous tertiary education programs, research suggests that they "constitute a different learning experience to that of semester based programs and present particular challenges to success" (Farrington, DiGregorio, & Page, 1999). For example, large bodies of knowledge that are usually studied over a semester of face-to-face lectures and tutorials must be acquired instead in week-long on-campus blocks. Furthermore, during off-campus periods many students must juggle study with competing employment, family and community responsibilities, with relatively little experience of independent academic study.

The *Scaffolding Academic Literacy* pedagogy, developed in part at the University of Sydney, offered a promising alternative to existing approaches to academic literacy and standard academic teaching, by incorporating the teaching of literacy skills into the teaching of the academic curriculum. As learning the field of academic texts involves reading (and writing) the language patterns in which it is expressed, this approach integrates these as dimensions of a single pedagogic process. The pedagogy entails teachers guiding students through a detailed reading of texts in the curriculum, drawing attention to the organisation of texts and their language patterns, as well as the concepts, classifications, arguments and technical terminology used in the field, and then using what students have learnt from reading to write successful academic texts. The approach thus enables students to develop a more thorough understanding of the academic fields they are studying in the curriculum, at the same time as they learn to read and write about them.

3. Research methodology

3.1. Research approach

The project is described as action research in that its goals were to introduce pedagogic change, at the same time as interpreting and evaluating that change, and the researchers were the agents introducing the changes.

Over two semesters in an academic year at Yooroang Garang the scaffolding technique was implemented in several units of study within the preparatory and undergraduate programs. All students in the preparatory and undergraduate programs are Indigenous Australian students. All students enrolled in those units of study were exposed to the scaffolding technique used in the classroom but not all students consented to participate in the research. Out of the total enrolment, twenty- five students did consent and provided permission for their writing tasks to be analysed for the purposes of the research. The research group included five students enrolled in the one year Preparatory program, eight students in the first year of the Bachelor degree course, and twelve in the second year of the Bachelor course.

The first step in the research project was a pre-test to evaluate students' academic skills in their writing. The pre-test required students in each cohort to read a short academic text, and then to write a short summary paper about the key information in the text. Pre-tests were then evaluated using an innovative writing assessment schedule, designed for the project, that provided precise qualitative feedback about students' written language skills and a numerical score to indicate quantitative measures of learning gains: this is discussed in more detail in the Results section of the paper.

The second step in the project was to implement the pedagogy in two selected units of study in each of the three courses. This was supported by a series of professional development sessions for lecturers, and demonstration by a scaffolding literacy specialist in a number of classes. The pedagogy was implemented consistently over two semesters by one lecturer, and in one semester only by three other lecturers. Other staff members chose not to participate in the project. This allowed a comparative analysis of results between classes where the pedagogy was more or less consistently implemented.

Table 1
Steps in the research project

Step 1	Step 2	Step 3	Step 4
Pre-test to evaluate students' academic skills in their writing	Implement pedagogy in two units of study in each of the three courses	Written assessment tasks at conclusion of semester one and semester two	Comparative analysis of all writing samples, using the assessment criteria

The third step was the collection of student academic writing samples. Writing samples included the pre-test writing task at the beginning of the year, and written assessment tasks submitted by each of the three student cohorts at the conclusion of semester one and semester two. Students were not required to complete any additional writing for the purpose of the research project. All the writing samples were written tasks set as a component of the standard assessment schedule for each unit of study.

The final step was a detailed comparative analysis of all writing samples, using the assessment criteria. For each course, writing samples were grouped in high, average and low levels of achievement. This enabled precise measurement of academic literacy improvements for each group of students. These four steps in the research project are summarised in Table 1.

3.2. The Scaffolding Academic Literacy pedagogy

The *Scaffolding Academic Literacy* pedagogy is designed from the premise that the primary skill that students need for university study is independently learnt from academic reading (see Rose, 2007a for a theoretical analysis of the role of reading in formal education). No matter what the field of study, university courses consist of large quantities of academic texts, which students are generally required to read before lectures. The broad function of lectures is then to build on and synthesise the information presented in course readings, and students are then required to demonstrate what they have learnt from readings and lectures in the form of written assignments. This traditional academic cycle, illustrated in Fig. 1, is predicated on the assumption that students have already acquired high level skills in independently reading and writing academic texts before they arrive at university. It thus excludes the needs of a great many students who have not acquired these skills to the requisite level, leading to increasing problems of academic standards and attrition. While current academic practice includes a number of more supportive variations on the traditional academic cycle, the basic structure of this cycle remains, in our experience, the dominant mode of delivery of academic courses across disciplines.

The first step in the *Scaffolding Academic Literacy* pedagogy is to address the inequitable assumptions of the traditional academic curriculum cycle. Rather than demanding that students independently read difficult academic
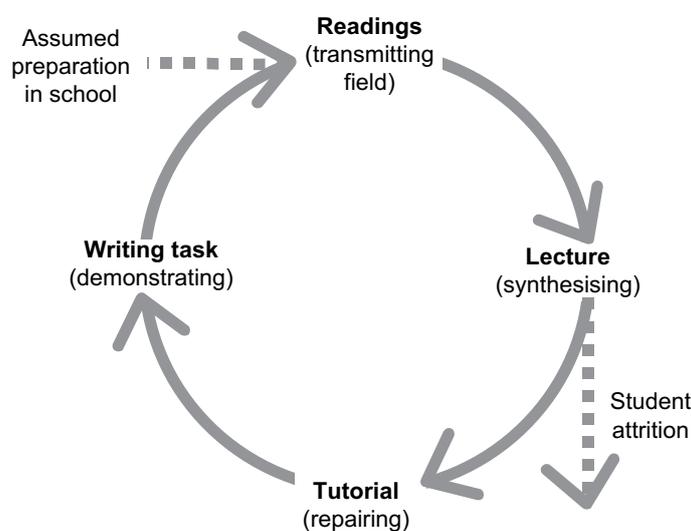

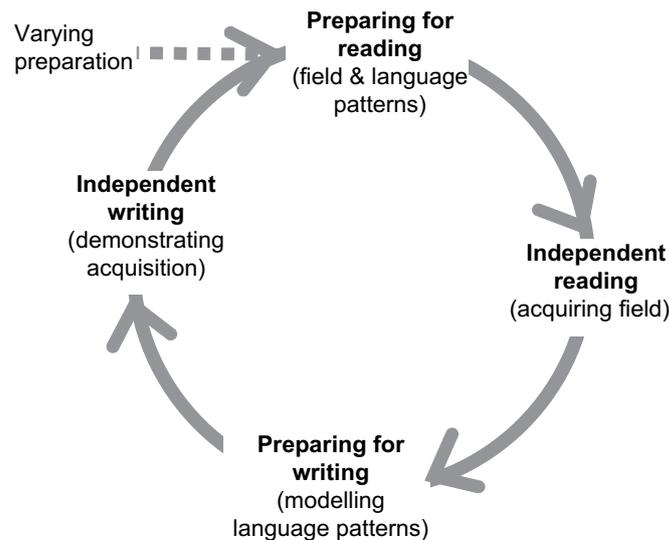Fig. 1. Traditional academic curriculum cycle.

Fig. 2. Scaffolding academic cycle.

texts before classes, which they may not be able to read or adequately understand, class time is used to prepare all students to read difficult texts with critical understanding. And rather than ranking students on their success or failure in writing assignments without preparation, class time is used to prepare all students to succeed in writing tasks. This approach is founded on the principle that learning occurs in the 'zone' between what learners can do independently, and what they can do in interaction with a teacher (Vygotsky, 1978), a process known as 'scaffolding' (coined by Bruner and colleagues in Wood, Bruner, & Ross, 1976, cf. Mercer, 2000). This redesigned approach to the academic cycle is shown in Fig. 2.

3.2.1. Preparing for Reading

The *Scaffolding Academic Literacy* pedagogy includes four potential levels of support for students. Each level involves a movement from reading curriculum texts to writing new texts drawing on the readings. The first level, known as *Preparing before Reading*, provides students with sufficient background knowledge to access the text, as well as a synopsis of the steps in which it unfolds. The second level is *Paragraph-by-Paragraph Reading*, in which the text is jointly read in class, with the teacher providing information about each paragraph before and after it is read. The third level is *Paragraph-by-Paragraph Text Marking*, in which the teacher supports students to identify and highlight key information in each paragraph, leading to note making and joint writing using the notes. The highest level of support is *Sentence-by-Sentence Text Marking*, in which students are prepared to identify and highlight key wordings in each sentence of a short passage, before note making and joint rewriting of the passage from the notes. Each of these levels of scaffolding was used in the project, and is discussed in more detail as follows.

Preparing before Reading includes a general introduction to the field in the text, followed by a synopsis of the text in terms that all students can understand, before they are required to read it. Students may be encouraged to voluntarily read the text independently, or it may be read and discussed in class, either read by the students in turn or by the teacher, as described below. Crucially *Preparing before Reading* requires teachers to look closely at the texts they are using, both to identify the background knowledge students will need to access a text, and to analyse the sequence in which the text unfolds.

Paragraph-by-Paragraph Reading entails reading aloud a key section of the article. Before reading, each paragraph is prepared with a general summary of what it is about in terms that all students will understand, but including some of the academic terms of the paragraph. After reading, this general understanding forms a basis for elaborating key elements of the paragraph, including definitions of technical terms, explanations of new concepts, or discussion building on students' field knowledge. As the preparation and reading provides access for all students to understand the paragraph, the elaborating discussion can be especially fruitful, engaging and extending to everyone. The combination of *Preparing before Reading* and *Paragraph-by-Paragraph Reading* provides sufficient support for all students to independently complete the reading with greater depth of understanding than is normally possible.

Paragraph-by-Paragraph Text Marking supports students to identify key information in each paragraph of a text or a passage, following *Paragraph-by-Paragraph Reading*. Students are prepared to identify key information by giving a position cue to find the relevant wording, together with a synopsis or paraphrase of what it means. For example, a position cue may be 'at the start/end of the first/next/last sentence it says…' Providing position cues avoids the extraneous cognitive load of skimming and scanning for the wording, enabling students to focus instead on the task of recognising and understanding the wording from the meaning cue (van Merrienboer & Sweller, 2005). Once they have identified and highlighted the wording, their understanding is elaborated with definitions, explanations or discussion, as for *Paragraph-by-Paragraph Reading*.

In *Sentence-by-Sentence Text Marking*, students are prepared to identify wordings within each sentence of a short passage, by giving a position cue to find the relevant wording, together with a synopsis or paraphrase of what it means. Once students have successfully identified and highlighted each wording, its meaning may be elaborated with a definition, explanation or discussion, relating the element of meaning to the sentence, passage and text as a whole, and to the academic field.

Each of these levels of support in the *Scaffolding Academic Literacy* pedagogy addresses different components of the complex task of academic reading. Using each of these strategies ensures that all students are given access to the total complexity of language patterns in the passage of text, but in manageable steps. *Preparing before Reading* can be used as a component of all teaching that will significantly improve all students' engagement with course readings, whether or not the more supportive strategies are used. The detailed study of a short passage in *Paragraph-by-Paragraph Reading*, and in both levels of *Text Marking*, enables all students to read the remainder of an academic text independently, with a high level of critical understanding, no matter what their starting point in academic literacy. By critical understanding we mean that students are able to recognise, interpret and critique constructions of meaning at the levels of choices of wording, text organisation, field or subject matter, and ideology, and to use these understandings to make critical choices themselves in their writing.

3.2.2. Preparing for writing

What students have learnt through the reading activities, about the field and language patterns of a text, can be capitalised on and extended by jointly writing notes from the reading and using them to write a new text. Students take turns to write the wordings they have highlighted in the text on to the class board as dot-point notes, as other students tell the scribe what to write. This activity provides many opportunities to further discuss the field and organisation of the text, and if necessary to practise spelling and pronunciation of unfamiliar words.

The next step is to jointly write a new text from the notes. This supports students to practise organising a text of the same genre as the reading text, as well as using its information in a variety of academic grammatical patterns. The process of rewriting varies with the genre of the text to be written. (For illustrations see the writing samples below, and examples of rewriting in Martin & Rose, 2005, and Rose et al., 2004.) The teacher's role in this stage is crucial, to provide students with options for new wordings and sentence organisations and to point out discourse patterns and other key elements in the notes.

Each of these stages of preparation enables all students to successfully write new texts, using what they have learnt in the preceding stages. This is the task on which students are assessed. The independent task may be in a new field, but it will be the same genre, using many of the same language patterns that have been practised in the preceding stages. Crucially the teacher can be confident that all students have been adequately prepared to complete the task successfully. As the assessment task is specified in terms of the language skills taught in the lesson sequence, assessments will then provide a clear measure of how well the teaching activities have contributed to the students' academic literacy development.

3.3. Implementation of the Scaffolding Academic Literacy pedagogy in the project

The *Scaffolding Academic Literacy* strategies described above were delivered consistently in two course units per semester in the Bachelor programs, and in one unit per semester in the Preparatory program. One text was selected from the curriculum for study in each week-long teaching block. Each course unit included 7.5 hours class time in each teaching block, generally in 1.5 hour lessons. In the first lesson of the week the class would typically be introduced to the field of study, providing the background knowledge of the field that students needed to access the text. The second lesson would then be devoted to *Paragraph-by-Paragraph Reading*; the whole of a short text may be read

in the lesson, or the first page of a longer text. The third lesson may be devoted to *Text Marking*, either *Paragraph-by-Paragraph*, or *Sentence-by-Sentence*, depending on the goals and student needs. *Paragraph-by-Paragraph Text Marking* was used if the goal was to make general notes from the text, for writing summaries, or contributing to a new text; *Sentence-by-Sentence Text Marking* was used particularly in the earlier teaching blocks to apprentice students to academic grammar, and otherwise with more difficult texts. In the fourth and fifth lessons, notes would be written from the reading texts, and part of a new text would be jointly written.

In order to focus in detail on texts in the teaching blocks, the course unit curricula were covered in depth rather than breadth. However, the purpose of focusing on students' academic reading skills in class time, using just one text at a time, was to enable them to then independently read the curriculum in both breadth and depth. Furthermore, the in-class activities described above included far more than simply reading the words in a text. Each activity involved continual discussion of the academic field of the text, beginning in general terms in *Preparing before Reading*, and increasing in detail and academic sophistication in each subsequent lesson phase.

The course units in which the strategies were implemented in this fashion included *Primary Health Care*, *Professional Practice* and *Indigenous Perspectives on Health* in Years 1 and 2 of the Bachelor course, and *Anatomy and Physiology* and *Aboriginal Studies* in the Preparatory program. Lecturers in these course units received professional development training in the strategies, and in the selection and analysis of texts for planning lessons, through three seminars and observation of lessons demonstrated by a specialist in the pedagogy. Lecturers then selected and analysed curriculum texts, and prepared and implemented scaffolding lessons.

3.4. The writing assessment schedule

Results of the case study were measured using an innovative writing assessment schedule that gives precise qualitative feedback on students' written language skills, together with a numerical score that provides quantitative measures of learning gains. This assessment schedule is similar in several respects to the *Measuring the academic skills of university students* (MASUS) test used at the University of Sydney for some years (Bonnano, 2000), but is based on more recent research in educational linguistics (Martin & Rose, 2008, 2007b). It provides a numerical score for various aspects of text, that can be systematically compared with other scores in the student cohort, and with expected scores at different stages of education. This enables rates of literacy improvement to be objectively measured against expected rates in the educational sequence. A representative sample of students' writing over the two semesters of the case study was analysed using this assessment schedule, giving statistical averages of learning gains.

The criteria for assessment are based on a systematic model of how language is used in its social contexts (Martin & Rose, 2007b), grounded in systemic functional linguistics. The model enables skills at each level to be given equal weight in assessment, rather than privileging some skills over others. There are eleven criteria grouped in five categories: genre, register, discourse, grammar and graphic features. Questions that summarise the focus of each assessment criterion are given in Table 2.

At the level of the genre there are two questions for assessment: whether the type of text is appropriate for the writing purpose, and whether it goes through appropriate stages (see Martin & Rose, 2007b for a comprehensive description of written genres). At the level of register there are three criteria: field, tenor and mode (Halliday, 1978; Martin &

Table 2
Academic writing assessment criteria

Genre	Is the genre appropriate for the writing task? Does it go through appropriate stages?	
Register	FIELD	Does the writer understand, interpret and/or explain the topic coherently?
	TENOR	Are evaluations appropriately objective?
	MODE	Is there an appropriate use of technical and/or abstract language?
Discourse	PHASES	Is the text organised in an appropriate sequence of phases?
	LEXIS	Is the field well constructed by technical lexis and sequences of lexical relations?
	CONJUNCTION	Are logical relations coherently constructed between sentences and phases?
	REFERENCE	Is it clear who or what is being referred to at each step of the text?
	APPRAISAL	Is appraisal used judiciously to evaluate ideas, arguments, people, things and texts?
Grammar	Are sentences organised to present information coherently? Are written grammatical conventions used appropriately?	
Graphic Features	Is the layout clear, including paragraphs and sections? Are illustrations used appropriately and clearly?	
	Is spelling accurate? Is punctuation used appropriately?	

Rose, 2008, 2007b). Field describes the writer's understanding and description of the relevant technical field, or of the issues or the text being reviewed; tenor describes whether writing is objective, persuasive, evaluative, or tenor can vary in highly complex patterns. Mode describes the continuum between the highly technical or abstract language of academic articles, and texts by non-expert or inexperienced writers that often look like speech written down.

Discourse includes the sequences of meanings in a text as it unfolds, and how these meanings are tied together, including five sets of criteria: phases, lexis, conjunction, reference and appraisal. Two of these criteria may be unfamiliar: phase and appraisal. A phase of meaning may be a paragraph or a few sentences long. A well-organised text has a clear sequence of phases that may be predicted by an introductory paragraph or by the field. Phases are sensitive to both the genre and field of a text; generic stages are highly predictable, such as the Introduction, Methods, Results and Discussion of a research report, whereas phases are the more variable components of these stages (see Martin & Rose, 2008, 2000b, Rose, 2007b). Appraisal includes the expression of attitudes, how they are amplified or diminished, and how they are sourced to the writer or to others. In academic writing, judgements of people, appreciation of things, and their amplification must be subtly managed, and sourcing becomes very important, including referencing other writers (Hood & Martin, 2006).

At the level of grammar, discourse patterns are expressed as wordings within sentences. Because they are obvious in a cursory reading of student texts, grammar problems are traditionally a major focus of writing assessment. In contrast, in the assessment schedule here grammar is given the same weighting as each of the higher level criteria in genre, register and discourse. The key criterion here is whether each sentence is organised to present information coherently, with a starting point that relates to preceding messages, followed by elements of new information.

Graphic features include spelling, punctuation and presentation of the text, including paragraphing and illustrations. Like grammar mistakes, these lower level features are often given a major weighting in writing assessment because they are most obvious, despite the fact that they contribute relatively little to the coherence of a text. In the assessment schedule here, graphic features receive the same weighting as each of the higher level criteria above.

3.5. Assessment process

As outlined in the Introduction above, three student groups participated in the case study, including students of the Preparatory course, and Year 1 and Year 2 of the Bachelor degree course. Writing samples were collected at the beginning of the year, the end of semester one, and the end of semester two.

The first step in the analysis procedure was to rank all writing samples from each of the three student cohorts into three levels of academic literacy — low range, average and high range. The purpose of this ranking was to measure rates of improvement for students who began with different levels of skills. This ranking procedure gave a total of 27 sets of writing samples, including three levels (low, average, high), collected at three stages (initial, middle, final), from three student cohorts (Preparatory, Year 1, Year 2).

Texts were ranked by means of a brief initial reading, applying the assessment criteria in general terms. A representative text was then selected from each set of writing samples, for close analysis using the assessment criteria. Texts were given a numerical score for each criterion from 0 to 9, giving a maximum possible score of 99.

4. Results

4.1. Examples of assessments

Assessments are illustrated with extracts from three texts that demonstrate the overall progression across the three cohorts: initial writing from the Preparation course, a mid-year sample from Year 1, and a final sample from Year 2. Comments are provided for each criterion to illustrate how they apply. These comments were determined by the researchers, along with the numerical scores.

Preparatory students initially were asked to write a short text that summarised and commented on a one-page exposition about Indigenous history. Writing sample 1 represents the middle range of writing skills that students brought to the course (Table 3).

The level of writing skills in sample 1 is equivalent to an average standard in upper primary years (Years 5–6). The high range of initial samples from the Preparatory students, with a score of 15, was equivalent to junior secondary years (Years 7–8), and low range from the Preparatory students, with a score of 3, was equivalent to middle primary years (Years 3–4).

The writing task for the assignment in Writing sample 2, after one semester of Year 1 of the Bachelor course, was to summarise and interpret an academic discussion about the construction of Indigenous identity. The following sample represents the average range of assessments. It is a brief extract from a five-page text (Table 4).

The level of writing skills in sample 2 is equivalent to an average standard in senior secondary years (Years 11–12). Although there is developing control of academic language, it is still often spoken in tenor, and may not yet reach a university matriculation standard.

The writing task for this final assignment in Year 2 of the Bachelor course, in Writing sample 3, was to summarise and interpret a range of readings on *Ethics for Health Care*. The following sample represents the high range of assessments. It is a brief extract from a four-page text (Table 5).

The level of writing skills in sample 3 is now at a standard that is likely to be acceptable in Year 2 of an undergraduate university course. This achievement illustrates the potential of the methodology to enhance outcomes for students who may already possess fundamental academic skills. That is the methodology appears to be useful for a range of students, from the least prepared to the more successful.

4.2. Quantitative results

Resulting scores are given in Tables 6–8. For each course cohort, *low range*, *average* and *high range* scores are grouped together so that improvement rates for each student group can be easily seen. Within each grouping, the first

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Writing sample 1: Preparatory program, initial sample

WHAT IS HISTORY

History is part of our culture and our history is about our past relationship with the present and the future History is what we get off our family and friends about our ancestors what happened in their lives where they came from.

History is about our survival achievements culture and other events happened in our past and also the future As we are role models now we can tell stories to our family and friends in the past we had battles and a lot of hardship experience by our people and they overcame it and they survived in the present as we are learning from the past

History gives us evidence of our land ownership and past injustices to assist us fighting to reclaim what our rights are it is justice We remember those who forget the past are condemned to repeat it

Whoever controls the past controls the future We know who we are and we also have secure identity We can build a better future for our family and friends we understand things went wrong in the past we can try to make sure that things never happened again thats why the past is important for the present and future.

Table 3
Assessment of Writing sample 1

GENRE	Purpose to summarise short exposition 'What is history', but has merely rephrased article; no clear stages of Thesis, Arguments or Restatement	1
FIELD	Repeated field from model text	2
TENOR	Personal	1
MODE	Very spoken	1
PHASES	Phases not clearly sequenced or distinguished	1
LEXIS	Mostly everyday lexis, borrowed from model text	2
CONJUNCTION	Little logical relation between sentences and phases	1
REFERENCE	Mostly personal: *we, our, they*, and one spoken text reference *thats why*	1
APPRAISAL	Implicit positive judgement of people: *role models, lot of hardship experience, overcame, survived*	1
GRAMMAR	Many problems with grammar of written sentences	0
GRAPHICS	Paragraphs do not match phases. Mainly accurate spelling of common words. Almost no sentence punctuation or letter cases.	1
Total		12

column gives scores for initial writing samples, the second column is the mid-year samples and the third column is the final samples. Trends in writing improvement over the two semesters are then plotted as line graphs, in Figs. 3–5. Improvement trends are shown as exponential trendlines. (X-axis values of 1–9 represent low, average and high range scores at initial, mid-year and final stages.)

Writing sample 2: Year 1 Bachelor, mid-year sample

…

Construction of Us

There is not only tension among non-Indigenous people about ideas of identity and treaty but there is also tension in the Indigenous community. The construction of Aboriginal identity has been greatly influenced by the media. Colonial concepts, urban myths and romantic traditionalism do little for a true identity.

In the past Indigenous people were not part of the discussions of Treaty and identity. They are now demanding to be heard and who better to guide the process that the Indigenous themselves.

I agree with Louise that the Government will not decide on the issue without the participation of the rest of Australia. I think they should know all of the issues, as it will help them understand.

History has stuck to how Aboriginals are defined. Historical legacy and political climate are major hurdles to overcome. It would do service to look more closely at what history has bestowed upon the Aboriginal people in determining how a Treaty would work.

Since Invasion by Europeans, Aboriginal people have been classified, defined and categorized. Anderson (1997, p. 4) highlights the power imbalance because discussions have been done by the non-Indigenous. Taylor (ibid) writes about identity being invented then re-invented. It is of great concern to the Indigenous people that they are being defined by white society. Anderson (ibid) states that whites think it's their right to define and guide the Aboriginal community but if the shoe was on the other foot the privilege would be denied.

…

Table 4
Assessment of Writing sample 2

GENRE	Purpose to summarise and interpret academic discussion; stages include: 1 engagement and issues, 2 first issue, 3 second issue, 4 judgement	3
FIELD	Good understanding of history and politics described in article, integrated with personal experience, well referenced to authors	4
TENOR	Developing skills for objective tenor, but still often personal	3
MODE	Developing control of academic language, but still often spoken	3
PHASES	Range of phases – engagement, issues, examples, reflection – sometimes not well sequenced, but consistent sequence of issues and reflection	4
LEXIS	Constructs public and personal issues, develops coherently: *intricate issues of a Treaty-two debates-relationship between a Treaty and identity-intricate issues for people*	4
CONJUNCTION	Some concluding conjunctions: *because, as*, countering: *not only…but also*, and comparing, but few conjunctions characteristic of academic writing	3
REFERENCE	Reference to things and people is clear but no text reference	3
APPRAISAL	Some written appreciation of things: *intricate issue, passionate subjects, greatly influenced*, but spoken judgement of people: *lot of confusion in the Indigenous community, who better to guide,* mostly personal sourcing: *I agree, I just liked, I think they should know*	4
GRAMMAR	Some grammar errors, mix of written and spoken sentence types: *I think they should know of all the issues, as it will help them understand.*	3
SPELLING	Phases not clearly set out in paragraphs. A few spelling errors. Variety of written punctuation with few errors	3
Total		**37**

Writing sample 3: Year 2 Bachelor, final sample

Ethical Principles for Health Care

…

There are slightly different principles in use in regard to ethical duties and behaviour in health research practice. Referred to as the Belmont principles, they include 'beneficence', 'respect for persons', and 'justice'. Unlike the principles defined by Beauchamp, Childress and Gillon, beneficence relating to research has two responsibilities. The first of these promoting the health of individuals and the second is to ensure the whole society reaches its full potential. The second Belmont principle, 'respect for persons' involves encouraging and supporting the individual's right to make decisions for themselves. The final principle of 'justice' relates to making sure that the advantages and disadvantages of research are shared equitably.

These principles suggested by ethicists Beauchamp, Childress and Gillon as well as the Belmont principles provide a sound base for anyone thinking about issues of ethics. They are not intended to be definitive guides on 'right or wrong' behaviour, but should be used as handy instruments for ethical analysis an comparison.

The principle of Justice requires further consideration. The three most common models include 'justice as fairness', 'comparative justice', and 'distributive justice'. Based on the work of three well known philosophers, these models rely on different ethical theories, yet all are about equitable distribution of resources.

…

Table 5
Assessment of Writing sample 3

GENRE	Purpose to describe ethical principles in health care; stages include: 1 state principles, 2 describe in detail, 3 relation of ethics to law, 4 conclusion	7
FIELD	Clear description of principles and relation to law, little relation to Aboriginal health work, inadequate referencing	7
TENOR	Objective, draws on authorities	8
MODE	Highly written academic language	8
PHASES	Logical sequence of reasons, and classes of principles, could use more examples	7
LEXIS	Good control of technical terms and builds field clearly and systematically, e.g. *these principles-principle of justice-three most common models-justice as fairness-comparative justice-distributive justice*	8
CONJUNCTION	Sophisticated written resources for concluding, countering *not intended to be…but should be used, the only exception to this model*, and comparing *similar to…however not only…*	8
REFERENCE	Sophisticated text reference back and forwards, *under this model, requires further consideration ->*	9
APPRAISAL	Sophisticated resources for appreciating *definitive guides, provide a sound base*, judging *well known philosophers*, amplifying *invariably influenced, conditions considered more serious*, and sourcing *suggested by ethicists, according to philosopher John Rawls*	8
GRAMMAR	No grammar problems, variety of written sentences	9
GRAPHICS	Paragraph for each phase, 1.5 line spacing for marking, headings. No spelling problems. Accurate written punctuation.	8
Total		**87**

5. Discussion

Assessment results in Tables 6–8 and Figs. 3–5 show significant overall improvements in academic literacy skills over two semesters across all three student cohorts. The numerical scoring system enables the rate of improvement to be compared with progression points in school grades that are standardised in state systems (e.g., Australian Council for Educational Research [ACER], 1997; Ministerial Council on Education, Employment, Training and Youth Affairs [MCEETYA], 2003). Writing that scores below 10 points approximately corresponds to that expected of middle primary grades, writing that scores 10–20 approximately corresponds to upper primary, 20–30 to junior secondary, 30–40 to middle secondary, 40–50 to senior secondary, and 50 points to a matriculation standard at the end of secondary school.

Table 6
Assessment scores for Preparatory course

Writing samples:	low range			average			high range		
	initial	mid	final	initial	mid	final	initial	mid	final
GENRE	0	1	2	1	1	2	2	2	3
FIELD	1	1	2	2	1	2	2	2	2
TENOR	0	2	1	1	2	2	1	2	1
MODE	0	1	1	1	1	2	1	1	2
PHASES	0	0	2	1	2	2	1	2	1
LEXIS	1	1	1	2	1	2	2	2	2
CONJUNCTION	0	0	0	1	1	0	1	2	2
REFERENCE	0	1	1	1	2	1	1	3	3
APPRAISAL	0	1	1	1	1	1	1	2	1
GRAMMAR	0	1	0	0	1	0	2	2	1
GRAPHIC	1	1	1	1	2	1	1	2	2
Total	**3**	**10**	**12**	**12**	**15**	**15**	**15**	**22**	**20**

Table 7
Assessment scores for Year 1 Bachelor course

Writing samples:	low range			average			high range		
	initial	mid	final	initial	mid	final	initial	mid	final
GENRE	1	2	4	2	3	4	3	4	4
FIELD	1	2	4	2	4	6	3	4	5
TENOR	1	2	4	2	3	4	3	3	6
MODE	1	2	4	2	3	4	4	4	6
PHASES	1	2	4	2	4	5	2	4	6
LEXIS	2	2	4	2	4	5	4	4	5
CONJUNCTION	1	2	4	1	3	5	2	4	5
REFERENCE	2	2	4	2	3	4	3	4	4
APPRAISAL	1	2	4	2	4	4	3	4	6
GRAMMAR	2	2	4	2	3	4	4	4	4
GRAPHIC	2	2	3	1	3	4	3	4	5
Total	**15**	**22**	**43**	**20**	**37**	**49**	**34**	**43**	**56**

Table 8
Assessment scores for Year 2 Bachelor course

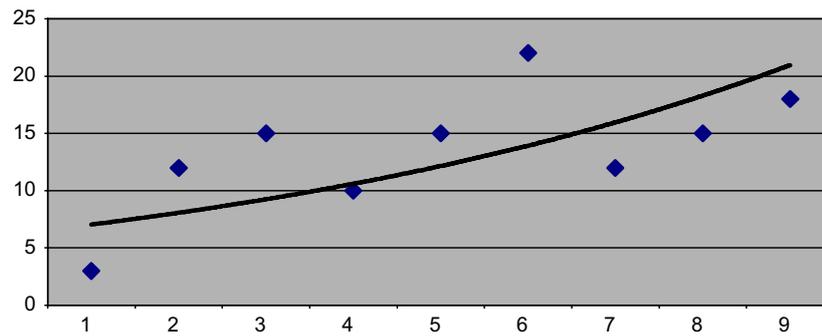| Writing samples:	low range			average			high range		
	initial	mid	final	initial	mid	final	initial	mid	final
GENRE	2	5	5	2	3	5	3	5	7
FIELD	3	5	5	4	5	4	5	5	7
TENOR	3	3	5	3	4	5	4	5	8
MODE	3	4	5	3	4	5	4	5	8
PHASES	2	3	6	3	3	5	5	6	7
LEXIS	2	4	6	3	5	6	4	5	8
CONJUNCTION	2	4	4	3	5	6	3	5	8
REFERENCE	2	4	6	3	4	6	4	6	9
APPRAISAL	2	4	5	4	6	5	4	5	8
GRAMMAR	2	4	3	3	4	7	4	5	9
GRAPHIC	2	3	6	2	4	6	3	4	8
Total	**25**	**43**	**56**	**33**	**47**	**60**	**43**	**56**	**87**

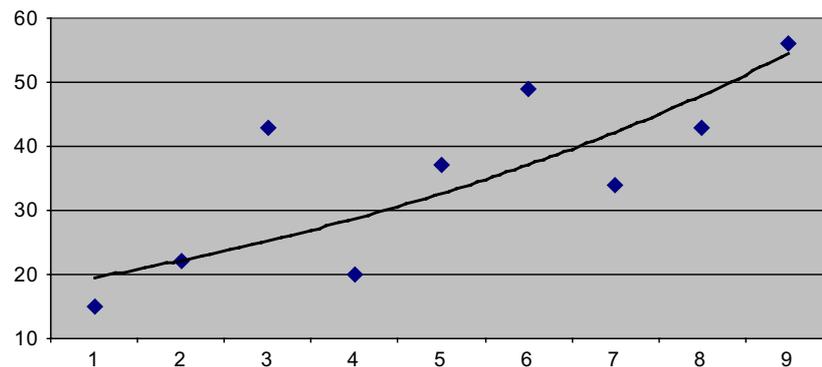Fig. 3. Writing improvement trend in Preparatory course.

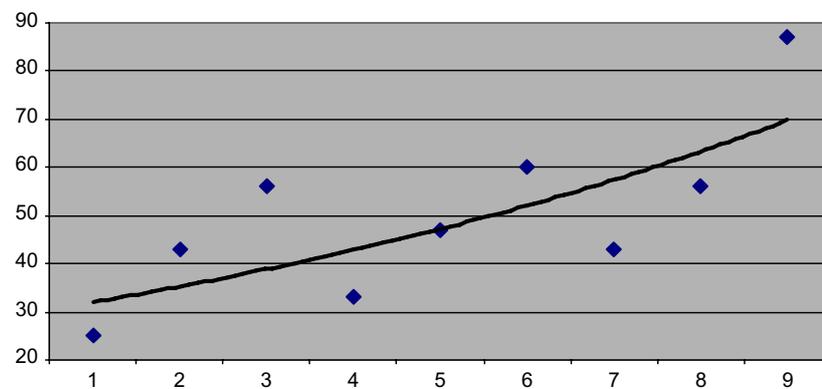Fig. 4. Writing improvement trend in Year 1 Bachelor course.

Fig. 5. Writing improvement trend in Year 2 Bachelor course.

The most rapid improvements were in Years 1 and 2 of the Bachelor course, with each range (low, average, high) improving approximately 30 points. In Year 1 this represented an improvement from a mean junior secondary level below 30 points, to matriculation level above 50 points. In Year 2 the improvement was from a mean middle secondary level below 40 points, to a mean 70 points, an academic literacy standard expected at first year undergraduate study. These gains were made through consistent implementation of the *Scaffolding Academic Literacy* strategies in two units of the Bachelor degree course, as described in section 3.3 above.

In the Preparatory course, with a trend at just over 10 points, improvements were considerably slower. Two factors contributed to this slower rate. The most significant was less consistency in implementation of the strategies, in just one unit per semester. Secondly, the strategies were applied in a social science oriented course unit in semester one, and then in an anatomy and physiology unit in semester two. The radical switch to a new field and genre slowed the upward trend, although scores for the science writing at the end of semester two were similar to those for social science at the end of semester one, demonstrating the potential for improvement.

These outcomes suggest that the rate of literacy improvement may be directly proportional to the time spent on the *Scaffolding Academic Literacy* strategies in teaching blocks. Consistent implementation in two course units, around 60 hours face-to-face teaching in a year, resulted in approximately 30 points improvement. This is comparable with a gain from junior secondary school level literacy to matriculation level, or from middle secondary to undergraduate level, in other words an equivalent of four years academic literacy improvement in just one year. This improvement rate is consistent with results for the scaffolding literacy pedagogy in schools, "consistently more than…double the expected rate of literacy development. Furthermore, 20% of students made gains of…four times the expected rate of literacy development" (Culican, 2006).

6. Conclusion

Generations of systematic exclusion of Indigenous Australians from secondary and further education have left a legacy of very low academic literacy rates amongst Indigenous adults, as well as a further generational lag in the family preparation of Indigenous children for school success. Standard teaching practices in both schools and universities have not evolved to meet the needs of students such as these, despite the political will to improve their educational access and outcomes. By contrast, the pedagogy applied in this project has been specifically designed to overcome this problem, developed over almost a decade in schools (Carbines, Wyatt, & Robb, 2005; McRae et al., 2000; Rose, 2005; Rose & Acevedo, 2006; Rose, Gray, & Cowey, 1999), and more recently in universities (Rose et al., 2004).

This action research project has demonstrated that it is possible to improve adult students' academic literacy, at the same time as providing access to an academic curriculum in sciences and social sciences, by supporting all students to read and write the academic texts in which the curriculum is realised. An average improvement rate equivalent to four years or more of secondary schooling, in just 60 hours over one year, shows that such achievements are within the scope of many academic programs.

Further research is required to map the kinds of improvements that can be made by applying each of the four levels of support in the *Scaffolding Academic Literacy* pedagogy, and to follow up the success in other academic courses of students who have benefited from the strategies. Significantly improving results, simply by preparing students to access course readings through the *Preparing before Reading* and *Paragraph-by-Paragraph Reading* strategies, could have useful implications for academic teaching of increasingly diverse student bodies. Significantly improved success for students who have received the intensive support of *Text Marking* strategies, could justify their application as a component of academic programs, wherever improved success rates are considered a goal worth pursuing.

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