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RETAINING INDIGENOUS STUDENTS *in* TERTIARY EDUCATION: LESSONS *from the* GRIFFITH SCHOOL of ENVIRONMENT

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■ Abstract

Low retention of Indigenous peoples in all Australian universities has been identified as a problematic issue by the Australian Federal government. Griffith University (GU), Queensland, Australia, provided funding to examine the factors affecting Indigenous retention in higher education, with the aim of developing innovative participation and retention strategies specifically for Indigenous students. This paper focuses on research conducted within the Griffith School of Environment that questioned the possible links between the provision of information to commencing Indigenous students and their retention. It essentially examines to what extent current university structures support Indigenous enrolments and retention, via the information they receive upon enrolling. From interviews conducted in an informal discussion format with currently enrolled Indigenous students in the Griffith School of Environment, critical deficiencies were identified in the information Indigenous students receive during the early transition phase of university entrance. A key finding of this study, and which is the subject of current research, was the support amongst the students for the development of an Indigenous curriculum in science as a strategy for improving the attraction and retention of Indigenous students. This paper details the research project and its findings.

■ Introduction

In 2006 the low retention of Indigenous peoples in all Australian universities was identified as a problematic issue by the then incumbent Federal Coalition government, and they subsequently allocated \$1.73 million in funds for research to foster higher rates of Indigenous student recruitment and retention in higher education (O'Keefe, 2006). Access, participation, retention and success are the four higher education performance indicators used by the Australian government to track the progress of Indigenous students relative to non-Indigenous students within Australian tertiary institutions. The *National Report to Parliament on Indigenous Education and Training 2005* notes that most higher education institutions in Australia are striving to increase their Indigenous student numbers. However during the period 2001 – 2005 there was a decline of 3.4% in Indigenous enrolments in higher education courses with the largest decrease occurring between 2003 and 2005 (Commonwealth of Australia, 2008, p. 120). In 2004, a report to the Australian Council for Education Research (ACER) acknowledged that the reasons for low retention rates were not known (Mellor & Corrigan, 2004).

Recent research conducted within the Science, Engineering, Environment and Technology (SEET) group at Griffith University explored, via interviews, the perspectives of a small cohort of Indigenous students, concerning their perceptions about the factors influencing retention of Indigenous students at Griffith University. The project specifically examined the provision of information to Indigenous students in the early transition phase of university which begins three weeks before semester and up to the sixth week of first semester (-3 to +6). Research that specifically focuses on the personal experiences of Indigenous students in relation to retention had not previously been conducted at Griffith University. This was a collaborative research project, undertaken by academics in the Griffith School of Environment and the Gumurrii Student Support Unit, the Indigenous support and representation organisation on campus.

The informal discussion format used for the interviews provided the opportunity for research participants to express their wider perceptions on

why the university is finding it difficult to attract and retain Indigenous students. These retention issues are particularly apparent within the science programs. We found student perceptions to be very insightful and informative and to reveal important insights into the future retention of Indigenous students within Australian higher education. This paper details the methodology that we employed in the research project and presents a brief summary of the literature reviewed in relation to the attraction and retention of Indigenous students into tertiary science programs. It then presents the findings of our research and provides a brief discussion of the implications of these findings.

■ Methodology

Conscious of the many ethical, epistemological and methodological dilemmas of research conducted within Indigenous domains (Smith, 1999, pp. 58-72) the methodology for this research project was designed specifically to allow the voices, perspectives and reflections of the Indigenous students to be heard. In the initial phase of the project, we conducted a review of the current literature on retention in general, and specifically of Indigenous students, focusing on the early transition phase. We established what information is available to Griffith University Indigenous students during the transition period by:

- Searching the internet for information specific to Indigenous students,
- Contacting university administration,
- Contacting Faculties and Schools within the SEET group.

We contacted each of the Schools and Faculties within the SEET group via email through the Griffith SEET Administrative Support Coordinator.

Informed by the feedback from the Schools and Faculties, we conducted interviews with four current Indigenous students within SEET to ascertain their perceptions of the information provided. While we acknowledge that this is a small number of students, given the total numbers of Indigenous students within science faculties across Australian universities is similarly small, we feel their comments are representative and of importance.

Considering the history that Indigenous communities have had with researchers, the initial contact phase is particularly crucial when undertaking a research project within an Indigenous community. We had intended to also interview a cohort of past students who did not complete their program to ascertain if the information, or alternatively, the lack of information they received in the early transition period affected their decision to withdraw from the program. Unfortunately, time constraints and a lack of contact details prevented us

from conducting these interviews. Participants in the research project did, however, relay stories regarding why they perceive other students had left their chosen degree program.

Care was taken to ensure that data gathering was undertaken in a culturally sensitive manner. The relationship of mistrust between researchers and Indigenous communities can affect the number of Indigenous people willing to participate. Therefore, the project was flexible enough to accommodate options whereby an Indigenous, rather than a non-Indigenous, member of the research team could interview participants. Confidentiality was paramount. Students were identified by the Gumurrii Student Support Unit member of our research team, who emailed them and invited them to participate. The research team organised a meeting with individual participants to explain in detail the project using an information sheet and address any concerns or possible risks identified by the participants and by the team. Here the participants were presented with the full information and informed consent package for their consideration. In the discussions, it was also stressed that participation was voluntary and, if the offer to participate was declined, no explanation was needed.

This study's main data collection method was unstructured interviews conducted in an informal discussion format between the study participants and a member of the research team or research assistant. These interviews were intended to allow the participants to express their opinion on the information provided to them prior to commencing their study program and in the first six weeks of the program. This type of interviewing allows the perceptions of the participant to emerge during the interviewing process with a minimal input by the researcher, and suits Indigenous research methodologies since the participant is engaged in a conversation at an equal level with the researcher. Each interview was audio taped, took a maximum of 40 minutes and was conducted within the university. Each interview was confidential and, to protect the anonymity of interviewees, we used a simple reference system. Given the small number of participants, anonymity was an issue. All participants were de-briefed, informed of the outcomes of the project and thanked for their participation.

■ Background and literature review

A study from the University of Sydney identified an apparent lack of relevance of science and technology (S&T) to Indigenous Australians (McLisky & Day, 2004). This is a continual theme in studies of retention of Indigenous students within tertiary science programs and has led to calls for curricula that reflect Indigenous peoples knowledge and experiences. Students interviewed for that study indicated that they had no mentors or role models within the field, and

could not envisage future careers or positive outcomes for themselves or their communities from the study of S&T. The study therefore identified a need for increased targeted marketing of Indigenous access and for support of Indigenous students enrolled in S&T.

Innovative strategies are clearly required to address retention problems and to make science more attractive to Indigenous Australians. In Canada, enrolment, retention and success rates for Indigenous students, though still low, have improved as universities have become committed to developing more relevant and accessible curricula and programs. Projects linking Indigenous knowledge and Western science have been initiated in Canada at Cape Breton University and Trent University. These universities participate in partnership programs with First Nations communities to Indigenous curricula and, consequently, have retention and program completion rates twice the national average for Indigenous students in Canada. In the Canadian experience, these programs have attracted Indigenous and non-Indigenous students alike (Hauser, 2008; Malatest & Associates, 2004). The potential for Indigenous curricula to improve the retention rates of Indigenous students within tertiary science programs has been verified in recent research (see Hauser, 2008) and was also identified by the Indigenous students within this research project as key to attracting and retaining Indigenous students. We return to this critical point following the ensuing discussion of our findings.

■ Discussion

Information gathering

Prospective students considering study at Griffith University can enter through the Queensland Tertiary Admission Centre (QTAC), either directly from school or after finishing TAFE or other courses including adult tertiary preparation such as the Logan Tertiary Access Program. There are also provisions for alternative entry, for which Indigenous students are eligible through the Alternative Entry Program. Information on how to enter via this process is, however, not available on the Griffith University internet site. A search of the site using the term "alternative entry" results in a link to the Gumurrii Student Support Unit where there is a short paragraph saying that Griffith University has an Aboriginal and Torres Strait Islander Participation Program, but no details are provided. The site also states that the Gumurrii Student Support Unit runs a Tertiary Preparation Program, but the program is not explained in any detail.

We found it very difficult to locate information specific to (potential) Indigenous students. In general, the university's electronic resources are almost devoid of any information pertaining to prospective Indigenous Australian students. There is a link for

international students on the home page, but finding links to Indigenous student information is very difficult. A Griffith University website search using "Indigenous" returns minimal information relevant to prospective students and does not provide a direct link to the Gumurrii Unit.

Student perception on information

Griffith University administration does not give any specific information for first year Indigenous students, nor do the individual Schools within the SEET group. One student felt that even the general information on the website was lacking: "And on the website when you go to enrol, it doesn't give you that much of a good summary of what the subjects are" (3). "It was not until mainstream Orientation Week that Griffith School of Environment actually handed out a green manila folder with information about the faculty and staff of ENV (Griffith School of Environment)" (4). This environmental science information package does not contain any information specific to Indigenous students.

All students offered a place at Griffith University receive an Enrolment Information package from university administration. The package contains a booklet *Your Guide to Enrolling at Griffith*, a timetable entitled *Semester Two Dates and Deadlines*, an academic calendar, and parking information. We asked the Indigenous students participating in this project about the package to determine if the information contained within was helpful. The answer was a unanimous "no":

The package we got was just sort of information on where you can park and where you can't park and just the locations of the buildings ... it didn't have any influence whatsoever [*on my decision to stay at the university*] ... No, the information packet wasn't helpful. There was no information I think for the Indigenous students in there in relation, I suppose to the mainstream university ... There was no information there, it was just that I had a connection with the Gumurrii Unit and the Gumurrii Unit had a separate induction (1).

The package of stuff that they sent out was pretty basic just telling you where you could park and your student card and a lot of admin kinda related things. I don't think I could say that that really influenced me to come here. No. It wasn't really slanted towards an Indigenous student anyway. So when you get it, it's just a general "Welcome to Griffith" type of thing and you know that everybody is getting it anyway. You know, it's just general information. Anything further that you want, you're probably best to approach the Gumurrii people directly and ask for more help (2).

Participants (2) (3) and (4) were critical of the mainstream orientation program for its focus on organisation and completion of assessments rather than career options. Participant (3) revealed in the interview that she was changing study programs away from environmental science to planning as she saw the employment options as better and confided that she does not really know what sort of work she could do as an environmental scientist. Possible career options have, obviously, not been made clear in information provided by environmental science. Participant (4) also spoke of the lack of general information about what career options are available and options for further study:

I only found out 6 months ago that RHD means research higher degree. Didn't know. Up until then I just had it in my head, all you've gotta do is pass this. All you gotta do is pass. And that is all I was doing. I thought well I don't have to be a bright star. I just gotta get this degree in my hand. At the end of the day it doesn't matter if it is distinctions or passes. A degree is a degree. And other students had sorta said "yeah, you don't have to knock yourself out. Get a pass. Get a pass". Until I found out about honours and research higher degrees, I didn't even realise that I should've been putting in a better performance so that then I could be considered for those options. I should've known that straight up. We didn't discuss that on orientation ... I needed to know when I first come in here (4).

Further, a lack of Indigenous content in the general university administration Enrolment Information package did not serve to encourage the commencing Indigenous students. One student suggested that that problem could be remedied to some degree by including information about the Gumurrii Student Support Unit and listing contacts within the Centre (4).

Positive influence of Gumurrii Student Support Unit on retention

The students also generally felt that the mainstream orientation program was of minimal use compared to the Gumurrii orientation program, which they all credit with having positively influenced their decision to stay in their study program at Griffith:

It was extremely helpful. I actually honestly believe that if I hadn't gone to that, within the first 3 months I would have pulled the pin and wouldn't have come back. It was just good to know that there were people there if you needed them. They give you so much support, they offer you tutors, and they offer you introduction

courses to writing résumés and, you know, assignments and that kind of thing. So, they really are there to help back us up, and yeah I found that if I hadn't gone there I really don't think I would have stayed at university. Honestly. I might be sounding a bit biased or something here, but ... (2).

... our Gumurrii orientation week, they put us through quite a few little exercises during that week so we were actually on the ball with things like timetabling and if you are asked to do an essay, how to approach writing an essay. And a few extras like that. They had already pre-prepared us before the mainstream O Week ... the Gumurrii unit ... is my absolute greatest support, for keeping me here, and motivating me each week (4).

The students spoke of the Gumurrii program making them feel "comfortable" (1), "like I'm not alone" (4), and helping them overcome nerves (4) and feelings of intimidation (1). One student stated: "I know that if the Gumurrii Unit wasn't there and didn't give me any sort of an understanding of what is to be expected at university, I wouldn't have stayed at the university" (1). The same student recounted the experience of a fellow Indigenous student who had not attended the Gumurrii program, explaining that "he couldn't understand what was expected of him" and left his chosen study program and the university (1).

Some of the current SEET students interviewed for this project had left school decades earlier and appreciated the information provided by the Gumurrii Unit when they commenced university, and the ongoing support provided by the Unit. They report feeling that the university is an "alien" (4) or "foreign" (1) environment in which they are not entirely comfortable. Often they are the first person in their family to attend university, as one student explained, "not a lot of Indigenous people get up to a standard where you are going to uni" (4). Three of the interviewees, (1) (2) and (4), stated that they are often overwhelmed by a feeling that they are out of their depth amongst the other students described by one of the interviewees as the "cream of the crop" (1).

Students' perceptions of science

All participants admitted to being scared or intimidated by the idea of doing a science degree. One participant has suggested that more Indigenous peoples would consider environmental science if they could overcome the negative image of "science":

Actually, there may be option in the future to start looking at how we refer to environmental sciences in that respect for Indigenous students

because as soon as you say science, it seems to sound so formal, academic, like up there, like its something alien almost, instead of just learning about your environment (4).

Indigenous peoples have a tendency to view science with suspicion, as their resources and their knowledge have historically been studied as objects of science. Through these studies, Indigenous knowledge has been defined and constructed as “inferior” compared to dominant understandings of acceptable knowledge (Semali & Kincheloe, 1999, p. 19). As Nakata states, Indigenous knowledge is often presented as “everything that is not science” (2007, p. 9). The historical links of science with colonialism and the subjugation and appropriation of Indigenous knowledge has, to a significant degree, made science a less than attractive career option for Indigenous peoples.

A commitment to environmental issues appears to be the reason why the student cohort interviewed for this project chose to study science. Two students identified the multidisciplinary approach of the university as their reason for choosing science at Griffith University (1) (4). All of the students have reported undergoing positive change due to their study, particularly as Griffith University is a multidisciplinary university. For example, one student reported her new found confidence to represent her community by engaging in debates on the environment intellectually rather than emotionally (4). Two of the students identified the opportunity to combine environmental studies with Indigenous studies as the deciding factor (1) (2). One stated that, “because there was Indigenous studies in it, and, and I thought then well OK, maybe I will be able to get an understanding of how this university delivers issues in relation to Indigenous people. And that’s what attracted me to it” (1). There is an element then, of testing the university’s credentials on Indigenous issues.

Still, the prospect of studying science was daunting for all of the participants:

When you think science or university you think brains ... when you say science it conjures up all these images of Einstein, and you know, molecules flying everywhere, and although that is it, there is a lot more to it ... I was very surprised that science has got a lot more to do with normal everyday living than what I thought it was. And I think that with other people too (2).

When you say science I think a lot of people think chemistry, and that scares people. Yeah, I think science is a very scary word. And that *most of us haven’t got enough brains* to actually do science or law or anything like that (2).

■ Self identity

The above quote is indicative of how Indigenous students’ image of themselves can affect the courses undertaken. The idea that Indigenous peoples “don’t do mathematics and science” is pervasive and can have a negative affect on self image.

When I first met Chris Matthews, [an Indigenous mathematician and Lecturer employed by the Griffith School of the Environment] and someone said to me “oh, you’re going to meet Chris Matthews. He’s got applied mathematics and everything” and I’ve just gone “what? He’s an Indigenous guy?” So I even had my own pre-conceptions that we would have trouble learning mathematics. You know. I even had them myself... I felt terrible that I actually recognised, my goodness, that I already had my own preconception that our people couldn’t get up to a standard like that. I don’t know why. I don’t know why I had those perceptions there. I feel terrible that I did. I will never do it again. But up until I met Chris, that was actually there. And all through school, by crikeys, when I was young, I don’t know why, but maths. A lot of us ended up wagging school because we couldn’t handle the maths. When I think about it now, it’s probably the way it’s delivered. Because when Chris sat me down to teach me, I was able to understand what he was telling me much easier than the text books I’ve had and other different people that have tried to teach me (4).

Two of the students extolled the importance of role models in encouraging young Indigenous peoples to study science (2) (4). One noted that most Indigenous role models are sport orientated and “that we need more academics to show them that if you can’t run, you know, you can still have a career and you can still make it big” (2). One student has been surprised to discover that she has become a role model:

I noticed some of the younger kids down home they are only in their teens and they are coming out of high school and stuff, and they have heard that [own name] has gone to uni. You know, she’s doing environmental science and stuff. And I am proud to say that a couple of the kids down home have said that they are going for environmental science. Why? Because, if [own name] doing it, we can cut it as well. So we need all our kids to see who’s done it before, and whose been successful at it, to get right in their faces and say, “come on, you guys can do this too” (4).

There are few Indigenous academic role models in science because there are few Indigenous academics

in the field. So it is possible that Indigenous peoples are not studying science because they do not see it as relevant to themselves or their communities, thus setting in place a cycle of non-engagement in science.

Law, Society and Culture, Education and Health are fields of study that continue to attract and retain the majority of Indigenous higher education students. These are considered "traditional" areas of education for Indigenous Australians as they have direct relevance to them and their communities. This perception of relevance stems from current Indigenous disadvantage in health and education and their over-representation in the prison system. Concomitantly, science is perceived as a non-traditional area attracting very few Indigenous students, a perception reflected in equity statistics.

Student (1) suggested that the reason Indigenous peoples are entering fields like law and education is relevance, as "those are the needs for our community at the moment", with issues such as native title being most prominent. There is a need to "have our own people back in country" to deal with community issues (1). Participant (4) also spoke of connection to country, stating that she chose to study environmental science at Griffith University because of its interdisciplinary nature, providing a more holistic approach to environmental studies, and giving her the intellectual tools to address her communities priorities. Participant (1) believes the interdisciplinary focus promoted at Griffith makes the degree programs more attractive to Indigenous students. We wanted to know, then, if there is a possibility that science can become relevant for Indigenous peoples and communities.

I see that further on down the track, once people start achieving native title, well that is going to sort of drive the direction of environmental science, in the sense that we need Aboriginal people to have an understanding of mainstream science so that they can go back on country and start managing country. So that will probably be further on down the track. And, well, that's actually happening now if you look at issues that are happening around Australia, where a lot of our own mobs are getting back into their country (1).

The constraints at the moment are curriculum related. Indigenous peoples feel excluded from the mainstream sciences. The knowledges of Indigenous peoples do not feature in science studies as a science, but rather as "beliefs":

Science and stuff, like biology, they don't really talk about how Indigenous people have knowledge of animals and stuff like that. Like, they make it sound as though white people discovered everything. And yet they [Aboriginal peoples] were there first (3).

Worsley (1997) suggests that different systems of knowledge are simply co-existing subcultures, and makes the point that there are different "schools of thought" within all science, reinforcing the oft raised question: Is it possible to have one universal, homogenous science? As all knowledge is local, Western science is recognised within this postcolonial field of study as only one culturally specific ethnoscience. Harding's central argument is that other sciences should be included within the term "science" through an acceptance of the diversity of knowledge – multicultural epistemology's and ontology's – rather than a unity of science (Harding, 1998).

The knowledge of Indigenous Australians is only recently being recognised for its value in science, particularly in understanding and "managing" nature.

There are some things on managing the environment that can come from an Indigenous perspective. And there're some things that we have been taught in our mainstream course, that it would be good to associate with, "well this is akin to an Indigenous perspective". For instance, in environmental economics, we were taught about Buddhist philosophies, right, because Buddhist philosophies are, generally, very close to sustainable principles. Not utilising more than you need etcetera. And after that was finished on the day, I went up to the Lecturer and I said "do you know what? What you have just gone through, our Indigenous philosophies are right on the money with this". Because they are. I mean they really, really are (4).

There is, in general, a lack of understanding of the many, diverse and valuable knowledges that exist in this country's original population that could assist in the protection of the environment. There may be no need to look further than our own Indigenous population for guidance in developing sustainable principles. Awareness of this is, however, limited:

I was shocked that some of the people that I know doing environmental sciences, environmental studies, haven't had any introduction at all to the environment of Indigenous peoples. And I mean, let's face it, that's the backbone of this country. That's why its, you know, here and yeah, environmental aspects of connection to land. That is something that they leave out a lot. And it's just everything to us. Yeah, so I think that needs to be really highlighted in the environmental courses (2).

An inclusive, Indigenised curricula does not involve exclusion of mainstream sciences, rather an appreciation that combined, these knowledge systems may have a lot to offer.

... my understanding of science is knowledge, so, okay I can learn mainstream science, but then at the same time I have already got a science there so I am trying to find that connection between the two of them, and how we can sort of marry them together, so that they can compliment one another. And then you know, and of course give my old people and understanding of how mainstream science thinks, and then marry that up against ours so that we can find an equilibrium (1).

I think, I think that with the science that I'm learning is that we're learning about a Eurocentric science and we're getting an understanding of how people study, you know, biodiversity, they study water flows, they study, you know, animals, biota and so forth. Science, Aboriginal science, is similar but it's a different understanding. And that understanding is that Aboriginal peoples' science gives them their connection to country, or gives them their ecological connections to country. But they also place themselves within that science. So the science is actually them. So from what I can see, is that while we have Eurocentric science and we have Aboriginal science, they should be complimenting one another in the sense that, well okay, here's one way of looking at management, but then also there is a management regime that's already existing. So there's that connection there in the sense of well okay we've got a Griffith University that's studying science, but then they should be looking outside of the box, and understand that well there is another science that actually applies to this land. And that's being reciprocal again, of understanding each others science (1).

Within that context, an Indigenised curriculum would be beneficial to all students in science not just Indigenous students. One participant in this study recounted how non-Indigenous students often ask:

Are there any courses that we can do so that we can know a bit more about what you guys are, and what you do, and what your part in Australia is? And I think that's really, really important. I believe that every course should have to have some content from Indigenous Australia. And I think that if they had something like that in the sciences program that you would see more interest from the kids at school and communities (2).

The link with communities is vital in developing an Indigenised curriculum, and it provides a pathway for Griffith University to develop unique science degrees. The university could benefit greatly by:

Dealing directly with people who have got already established Aboriginal land and sea management agencies and having that connection with the Griffith University to those organisations so that they can get an understanding of well ok, here's one group here who has already got a land and sea management agency. Well they're actually talking about the whole management of their country. They are not just talking about one particular topic. And I see that if you have that connection with those different Indigenous communities, well that would give people an understanding of well okay, here's a science here that we haven't even tapped into yet (1).

Griffith University could promote itself and provide useful information to prospective and first year students by developing a close relationship with communities by involving them in curriculum development. We contend that an Indigenised/"inclusive practice" curriculum in science would only be relevant and acceptable to Indigenous students and communities if it is community driven. This corresponds well with Griffith University's Academic Plan which advocates community engagement which is fully integrated with teaching and research.

Participant (1) envisages a reciprocal relationship between the university and Indigenous communities that would be mutually beneficial:

For example, Griffith University having that connection with communities, having that direct link in the sense that we want you to study in say ENV. Well, see its reciprocal, in the sense that here we got a university where it's coming to the community, and then the community can then offer, you know, the ENV Faculty benefits in the sense that, well OK we're gonna be doing studies in this particular field, well actually we have these particular environments on our country. So that makes that individual of that community feel comfortable because they are going to be going back onto country and doing studies on their own. But it gives broader understanding to mainstream students as well, in that, we are living in this particular country, here's people who are connected to the country and this is their understanding of environmental management. So ... it's a two way street in that sort of sense (1).

Participant (1) believes if a collaborative relationship existed between the university and Indigenous communities, and a commitment to Indigenous Australians was demonstrated through an Indigenised curriculum, the university would attract and retain students, including the colleague spoken of earlier who withdrew from his degree program. Participant (1) also suggested that the university should foster a

“community action component” to build confidence between students and the university, where “old people” in communities are informed so they can encourage prospective students. Indigenising curriculum in other disciplines has proven to have a twofold effect. Firstly, it can lead to an increased enrolment and retention of Indigenous students (Falk, 2004) and secondly, in fostering greater awareness of Indigenous issues amongst non-Indigenous students and academics within a given field of study (Hart & Moore, 2005; Lowe & Cocumbas, 2000).

Despite the possible opportunities presented by an Indigenised curriculum, it is important to acknowledge the complexity and difficulties involved in developing and implementing one. There is a perception that an Indigenised curriculum simply involves the inclusion of Indigenous content in courses, or in the words of Nakata (2004, p. 8) “just another data set for Western knowledge to discipline and test”, “something we just plonk into the curriculum unproblematically”. An Indigenised curriculum is a negotiated space between Indigenous knowledge systems and Eurocentric knowledge systems. This space is what Nakata (2007, p. 8) labels the cultural interface – the contested space between two knowledge systems. An Indigenised curriculum requires, among other things, a genuine acceptance, and actualisation, of ontological pluralism via a genuine engagement with Indigenous people and their ontologies. An adherence to ontological pluralism goes beyond acknowledging the existence and possibility of multiple ways of knowing but insists that the ontology’s of other peoples needs to be understood and engaged with (Hauser, 2008; Howitt & Suchet-Pearson, 2003).

The acceptance of ontological diversity as the foundational starting point for an Indigenised curriculum is inherently challenging for Eurocentric knowledge systems (Hauser, 2008, p. 55). Such an approach challenges and interrogates the social construction of knowledge, and the power relations inherent within this construction, that has seen the reification and privileging of scientific knowledge within Western academic institutions and discourse. Other ways of knowing and knowledge systems are simply dismissed as primitive or inferior (Howitt & Suchet, 2001, p. 6). Thus an Indigenised curriculum is both unsettling and challenging to academics ensconced with the walls of Eurocentric academic institutions. Cognisance of the challenge inherent within any attempts to Indigenise university curricula is imperative as these attempts will almost certainly be met with institutional resistance. To date, no university within Australia has developed an Indigenised curriculum within any science course (McLisky & Day, 2004).

Griffith University initially responded to the call to Indigenise curricula by developing a database of those courses that include Indigenous content, via the inclusion of this information when course

outlines are electronically submitted. In the latest Griffith Academic Plan 3 (Griffith University, 2008), the university has committed itself to ensuring student diversity by focussing on retention and success rates of Indigenous students. In response it has established the “Working Group for Aboriginal and Torres Strait Islander Curriculum Development Initiative” to oversee the indigenisation of curricula. The university is also seeking to establish an Academic Centre for Indigenous Knowledges to support the Indigenisation of Curricula via engagement of Indigenous communities in the development and implementation of inclusive practices in the curriculum. (Griffith University, 2008, pp. 14-15). While these developments at Griffith University are inherently promising, the actual process of Indigenising the Griffith curriculum has yet to be outlined and defined.

■ Summary

Statistics tell us that there is a problem attracting and retaining Indigenous students in science, but not “why”. This project contributes to an understanding of the “why”, identifying factors influencing the participation and retention of Indigenous students with the Science and Technology Group, Griffith University. The research identified a critical lack of information specific to Indigenous students including a lack of electronic information on the Griffith University website specific to Indigenous students; a lack of information specific to Indigenous students in the Enrolment Information package distributed by university administration; no information available to Indigenous students from the Schools and Faculties within the SEET; and finally, a mainstream orientation program the students felt was not very useful to them as Indigenous students, as it focused on improving retention by encouraging students to be organised and finish assessments rather than addressing career options and social needs.

The Indigenous students interviewed for this project were, however, very positive about the information and support provided by the Gumurrii Unit, which they argue, positively influenced their decision to stay. The Unit helped to break down some of the barriers the Indigenous students experienced in the early transition phase. These barriers include: feelings of isolation due to the lack of information specific to them; social pressures, especially in relation to family and community expectation; identity issues associated with internalised negative perceptions of their own, and their peoples’, ability to “do science and maths”; and finally, the stress of positive discrimination, where students doubt their “right” to be in the university, and their ability to compete with other students, especially if they have entered through an alternative entry pathway.

The students offered some innovative suggestions on ways to improve retention through provision of focused information specifically to Indigenous

students. Their suggestions including: placing Gumurrii Student Support Unit and Indigenous contacts on the Griffith University website homepage and in other information packages; greater support from the university for the Gumurrii Student Support Unit and its Indigenous support programs, especially those that link with schools and communities for prospective students, and for commencing and current students, dealing with feelings of alienation, social stresses and perceptions of inferior academic capacity; clearer academic expectations of each student before teaching commences; provision in the early transition phase of specific information on career options; the utilisation of role models/mentors with skills in mathematics and science to inform students of career possibilities outside sport; the development of an Indigenous curriculum which would be beneficial to Indigenous and non-Indigenous students, creating a better understanding between these co-existing knowledge systems; engagement with communities to demonstrate commitment to Indigenous peoples and issues; and finally, an engagement with Indigenous high school students in their schools, by bringing them into the university on excursions.

Crucially, there is wide support amongst the students for the development of an Indigenous curriculum in science as a strategy for improving the attraction and retention of Indigenous students. Science can be made relevant by demonstrating how it can meet the needs of communities, and the possible reciprocal relationship between different ways of knowing and between Griffith University and Indigenous communities. We are, however, very conscious of the potential perils involved in devising and implementing such a curriculum, as an appreciation of Indigenous knowledge in academia can be interpreted by Indigenous peoples as an appropriation. As stated earlier, Indigenous university curriculum is a contested and complex process and requires intensive research (see Hauser, 2008) to ensure it is both culturally relevant and pedagogically sound. Further research and discussion is therefore required.

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