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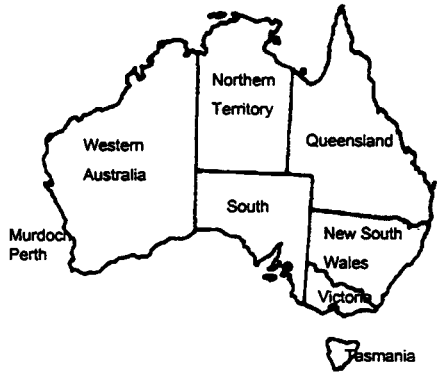
Learning Preferences of Some Aboriginal and Torres Strait Islander Students in the Veterinary Program

A.L. Barnes

Division of Veterinary and Biomedical Sciences,
Murdoch University, Murdoch, Western Australia 6150



Introduction

In 1989, a Professional Education Program for Aboriginal and Torres Strait Islander people (PEPA) was established at Murdoch University in Western Australia, to encourage the participation, retention and success of Indigenous Australians in studying for and qualifying as Veterinarians.

Many of the students entering the program have arrived at tertiary studies via a different route than the non-Indigenous students and have often had less preparation for tertiary study than their colleagues. The support offered by the PEPA Unit includes bridging courses in chemistry, attention to learning skills, tutorials on specific subjects as required through the course, as well as offering personal support and a safe environment for studying and companionship.

In 1996, the first two graduates from this program completed their Bachelor of Veterinary Medicine and Surgery, and registered as veterinarians. In that year, the program had four students in first year, two in second year, one in third year, two in fourth year, and two in the fifth (final) year of the course.

Academic support at that time was provided by non-Indigenous Australians with Veterinary and Science backgrounds, as well as through a system of peer tutoring, where senior students in the PEPA Unit tutored the junior students. Literature detailing learning by Indigenous Australians at tertiary institutions is scarce and provided little guidance on appropriate strategies for tutoring these students and providing academic support. This academic support was intended to equip the students with skills for learning and success within the veterinary course, and in their post-graduate careers.

In an attempt to better understand how the students learn, and therefore be able to offer more appropriate academic support, interviews were carried out in 1996 with the students in the PEPA Unit to determine their preferences for learning. The interviews loosely followed a series of questions, but they were informal and students were given the opportunity to expand on points they considered important. Responses from the interviews were compared to previously published information about the learning preferences of Indigenous students. The interviewer was one of the non-Indigenous academic veterinary staff within the Unit, and was well known by the students.

Learning by Aboriginal People

Teachers of students from cultures different from their own can find it difficult to understand the extent to which a student's culture and personality can influence their learning. It is accepted that there is a link between learning and culture (Hughes and More, 1997), and it can be valuable for teachers to recognise that students from particular cultural backgrounds may exhibit particular learning styles, as long as these generalisations are not misused in a racist or discriminatory way (Gibson, 1993).

The following generalisations on Aboriginal culture and learning are made from the available literature, and as such cannot capture the complexity of Indigenous culture, nor will they all be characteristic of any particular individual. They are presented as a starting point for considering how cultural aspects may influence social interaction, cognitive behaviour, perception and learning preferences of tertiary students.

Aspects of Indigenous Culture that may Influence Learning

Byrnes (1993) cites work by Philpot (1990) comparing the world view of Aboriginal and non-Aboriginal people, which indicates the importance of the group compared to the individual. Aboriginal society requires knowledge of the 'interlinked understanding of the social structure and its obligations' with individuals having status only 'within the broader social construct' (Byrnes, 1993). Non-Aboriginal society is described as linear, with different aspects of society compartmentalised and the individual all-important. Fogarty and White (1994) conducted questionnaires, which showed that, compared to non-Aboriginal university students, the Aboriginal students sampled were more group oriented and less concerned with personal achievement.

Aboriginal culture is said to place greater emphasis on personal relationships than occurs in non-Aboriginal society, and particularly considers the quality of these relationships, rather than quantitative aspects (Christie, 1985; Harris, 1988). Within an educational setting this can have important implications, because the success of a teacher/student relationship can influence the learning of an Aboriginal student, and actions that the Aboriginal students feel are culturally appropriate may be misinterpreted within another cultural context.

Ryan (1992) describes how relationships of indigenous Athabascan children with their elders can influence how those children respond to another older person. Such a student may find it very difficult to respond to questions or display their knowledge in the presence of adults or other persons in authority, as that would violate their beliefs about appropriate behaviour in particular relationships. This may be misinterpreted as ignorance or resistance on the part of the student. Brandl (1980, cited in Christie, 1985) found that with the group studied 'the social cost of making a mistake is greater than admitting ignorance', while Harris (1988) warned that 'the Aboriginal preference for non-pushy participation' could be misinterpreted as laziness. Hughes and More (1997) further discuss the cultural influences that result in 'apparent passive participation' of Aboriginal students.

Aboriginal people are considered to have a more accepting view of the environment, adapting to it rather than changing it to suit their needs, in contrast to 'Western' cultures, and without the need to scientifically dissect and analyse (Christie, 1985; Harris, 1988). The relationships between things and people give them their value, and 'Aboriginal languages ... have few terms for the objective contrasting and comparison of physical objects' (Hughes and More, 1997).

The view of Aboriginal people towards knowledge is said to contrast with the non-Aboriginal view. In 'traditional' Aboriginal society knowledge can be sought by all.

The lifestyle of Aboriginal people has changed over the years following the influx of people from other cultures into Australia. Although many Aboriginal people do not now live in what was regarded as 'traditional' settings, it appears that many of the values of their culture are retained (Fogarty and White, 1994). The impact of these values and beliefs upon education in non-Aboriginal institutions must be considered.

Aboriginal Learning

Christie (1985) surmises that in Aboriginal culture, knowledge comes from the outside and is part of doing, rather than being constructed internally. As such, Aboriginal people may tend to deal in concrete events and approaches, rather than the abstract and hypothetical (Sayers, 1988). Harris (1988) considered that much Aboriginal learning is by observation and imitation, with the emphasis on action, learning in real life situations rather than contrived settings. Aboriginal people are thought likely to have, in general, a field dependent cognitive style (Davis and McGlade, 1982; Collins, 1993). Thus, they look externally for guidance and motivation, and appreciate a structured approach to learning (Collins, 1993). Because of this approach, learning may be context specific, making it difficult for the student to generalise or to apply the learned principles to different situations.

Aboriginal students are said to have greater sensitivity and success in dealing with visual and spatial information, compared to verbal information (Klich, 1983; Ryan, 1992). Christie (1985) states that in Aboriginal society the role of language is reduced and 'traditional Aboriginal education takes place with little need for recourse to verbal explanations'. Harris (1984) recommends using shared concrete experience as a starting point, then moving to discuss it and then record, so that verbal learning can be incorporated successfully into education of Aboriginal students.

Aboriginal people are considered to learn in a holistic fashion, which is complemented by visual preferences and capabilities (Ryan, 1992). It is suggested that they first understand the overall concept before dealing with the details, rather than learn the parts and sequence them into an end product (Harris, 1984; Hughes and More, 1997). This style is in direct contrast to most Western formal education, which breaks the whole into pieces and teaches each individual component – a style more compatible with verbal and analytic processing (Ryan, 1992).

The suggestion that Aboriginal people view knowledge as whole and complete would complement descriptions of Aboriginal social structure. However, it may not allow for consideration of cause and effect within the context of problem solving, and the methods that non-Aboriginal people may consider as logical, analytical sequencing of learning or problem solving may be foreign to Aboriginal students. Problem solving by Aboriginal people tends to be by trial and error, repeating the whole process until correct (Harris, 1984). Patience and persistence are characteristics exhibited by Aboriginal people (Harris, 1984), which would assist in this method of problem solving. Kearins (1985) points out, however, that Aboriginal thinking does involve sequential processing, resulting in logical deductions, but this does not seem to be the conscious analytical process used in Western education. It is also pointed out that this deduction may not be 'restrictively sequential' (Kearins, 1985), which is consistent with a cyclical rather than linear world view.

Hughes and More (1997) describe two styles that Aboriginal students may develop in responding to questioning. The first is reflective, where 'the student is slow to respond and thinks the answer through before responding, if at all', motivated by a desire to avoid shame or ridicule. The second style may be seen when the student gives up and makes 'random, guessing attempts', in an ineffective use of trial and feedback.

These learning characteristics are consistent with field dependent learners, for whom specific information may be masked by other information (Jonassen and Grabowski, 1993), making it difficult to analyse a pattern into its different parts (Collins, 1993). The 'global style' of learner fits many of the traits described for Indigenous students, including non-linear associations between components, the formation of global impressions, and intuitive thinking allowing the inclusion of emotions into decisions (Schmeck, 1988).

The Interviews

The interviews were verbal responses to a standard set of questions, but in some cases the students had more to say on certain issues, which meant a greater emphasis on some areas. These interviews were transcribed and then examined to determine whether any of the generalisations about learning by Aboriginal people held true for these students. Nine students in the Professional Education Program for Aboriginal and Torres Strait Islander Veterinary Students (PEPA) were interviewed, and these students were in first through to fifth year. The students came from a variety of backgrounds, having variable exposure to and contact with Aboriginal and Torres Strait Islander relatives and lifestyles. Their responses give insight into their thoughts, and they are identified by the year of their course.

The main motivation for the interviewed students to be at Veterinary School was because they wanted to be veterinarians. *'I always wanted to be a vet'* was a common reason, although it was obvious there had been some discouragement *'but they kept saying you can't do that'* (4th year). One student acknowledged the positive influence of the PEPA Unit: *'I thought I wasn't good enough to be a vet – when I found out about this program I changed my mind'* (1st year).

Some students were also motivated by the acknowledged benefits of education in general, and the improved employment prospects for people with a tertiary education. *'I made a decision ... that the only way to get out of a poverty cycle was to get a tertiary education'* (4th year).

Many of the students had little idea what tertiary study would be like. Several students were the first from their families to attend university, so there were no family experiences on which to draw. Those who had done post-secondary study in other courses and other institutions were better prepared. *'I went to [an agricultural college] before this, so I had a fair idea what I was in for ... You have to use your own initiative, you don't have people pushing you along'* (1st year).

Learning meant a range of things to these students. Some felt it was all about gaining knowledge, and being able to reproduce that, while many added that understanding and application of that knowledge was important.
'I guess [learning] means being able to pick what you need to know from what you're given and doing things with it' (1st year).
'Not so much just taking something in and being able to spit it back out; taking something, understanding why it is that way, and ... basic principles' (3rd year).

There was evidence of holistic learning by most of the students interviewed. It was important for them to have an overview of the subject and then to be able to consciously link and integrate areas and facts and see how it all worked together.
'In an ideal world, I'd like to get an overview, divide it into its major headings, and then investigate each of the headings and see how they relate. I don't like going from the minutiae and working my way backwards' (4th year).
'Knowing where the course is headed helps me relax' (2nd year).

'I try and relate them one to another, a number of explanations to get one big explanation that is much more comprehensive... It's better if you can understand the whole subject, not just the exam questions' (1st year).
'Make it like it's connected in some way – like it's not just concept type of stuff – relevant, interesting' (2nd year).

With new information, many students were more comfortable if they could see how it fitted into the existing picture. *'Nut through it, piece it together, put it / link it with something else you've been taught, why it happens'* (2nd year).

Some of the students were able to 'go with the flow' and deal with the information in the way it was presented, building up the whole picture. *'You've got to be given little snippets and gradually brought up to a level where you can understand the more detailed stuff'* (1st year). However, this student preferred to be given *'as much [information] as possible so I can pick it over and decide what to keep out of it... I can go back later and decide what I want to keep out of it'* (1st year).

The students appreciated planning and direction in the subject matter. *'Structurally sound and a bit more sequential ... Clarity, some sort of direction, don't be all over the shop'* (2nd year).

Holistic learning is said to be complemented by visual capabilities, and there was a definite preference by the interviewed students for presentation and learning of material in a way that was visually engaging. Use of visual aids, such as diagrams, charts and colours in notes helped some of the students to learn, and the more experienced tertiary students were better able to generate their own diagrams for study.
'If they do the notes as well as draw a diagram – I love ... that, it gives you two different ways to look at it' (1st year).
'A whole paragraph of information can be represented by one diagram, and if I remember the diagram, I remember the whole paragraph. It's much easier' (1st year).
'Draw things in charts, colours, put things in different areas on the chart, if there's things that cross over I put them in the middle and use intermediate colours' (3rd year).

Subjects that were visual were considered easier. *'Anatomy and histology ... a lot of it's visual so you can actually see what's happening, rather than pathways – you just can't see it and sometimes you lose the concept of it'* (2nd year).

For those subjects dealing with the unseen pathways that 'went on in the dark', the use of analogies was helpful. *'Something that you can relate it to, something really simple that you see every day, that you can think about'* (2nd year).

Many of the students expressed a preference for practical, contextual learning, and were less at ease with subjects that were not seen to be relevant.
'I have to be able to see a realistic, applied use for doing it. If I can't see a purpose for a subject, I've got this thing – my brain says no I don't want to know it ... best way to learn is practically. Actual experience is so much more useful than just reading it in a book. When you see things happen it's much more a learning experience' (1st year).
'I'm a practical learner, get in, have a go, practical really makes sense to it, linking it' (2nd year).

A final year student commented that the best way to be presented with information was in a practical, clinical setting, where one could see the animal, go through the history and clinical examination, think about that and use text book or notes, then make the diagnosis. Others agreed: *'I guess that is the same with anyone in any subject, if they are physically doing what it is that they've come to learn about, it makes things that much more interesting and that much easier to learn, rather than sitting down looking at words'* (1st year).

In general, the preferred method of assessment was by assignment, not examinations, as it was felt they could do a better, more meaningful job in assignments, and they learned and retained information better that way.

'When it comes down to an exam that's worth 100% I don't think he's getting a good representation of what we really know and what we can do. Assignments – it makes you go back over what you've learnt and compile that into a thing' (5th year).

'I would rather be assessed by assignments. I do panic for exams – I try not to but I do. With assignments I come away with a lot more general knowledge and a lot better picture of what I'm meant to be doing' (3rd year).

'I do well in a viva so long as I'm not intimidated by the people taking the viva. I'm pretty good verbally, so that works well. I'm not too bad in the written exam, now that I've overcome a few hiccups. I do like short answers and essays, and I like exams that are practically orientated, e.g. specimens, radiographs in front of you– that engages you a bit' (4th year).

Oral assessment was well regarded by several students, and it was interesting to consider the following discussion from one student with regard to a tradition of oral story-telling.

'I find it easier to talk answers out than to write them. I can write ... you know the stuff, you were able to write down your first draft, get all your ideas, bring everything in to make one huge complete answer that you were really proud of – get it all down and say, "yeah, that's the way it was told"'(2nd year).

Relationships with teachers and with other students were very important to most of the students interviewed. They like to feel comfortable with the teacher and be able to relate to them. If the teacher was intimidating or overbearing that was detrimental to participation by the student, who would then just keep quiet.

'If I'm intimidated by the person I just keep my mouth shut and don't give them a chance to attack me – even when I know the answer I still won't say anything' (5th year).

'I'm a real one on one person. I don't cope very well with a lot of people in a room because I get flustered by having to interact with them all on a different level. I get really anxious – I go into every lecture thinking ... I hope they don't ask me a question because I'll just say I don't know it' (2nd year).

'You don't want someone you don't know to get a poor opinion of your abilities. Before I'll actually butt in and say something it's got to be something I know I'm 100% sure I know what I'm talking about. If I don't know the answer or I'm not sure I probably won't say anything' (1st year).

Not all the students felt that they would rather be silent than wrong, but there were consequences if their efforts were criticised.

'I don't feel worried that I say something that's going to be wrong. If someone does give me a hard time (that you're wrong) – that really ticks me off, for the remainder of the tute you take a back seat' (2nd year).

Two students mentioned that it was beneficial to respect the teachers.

'If I have a lot of respect for the person that's teaching it I feel I shouldn't let them down – that plays quite an important part. If there's someone teaching it who I don't respect then I lose interest. If there's someone doing it who I respect, and I respect the amount they put into it, then I feel they deserve a bit of commitment from me' (4th year).

'[should] respect teacher – if no respect, don't take anything in that they say. Some kind of assertiveness so you respect them. Easy going personality that have kept up with times – kept up with kids' attitudes and morals so can relate to kids, get on the same wavelength. Not on same level, the students have to look up to the teacher' (1st year).

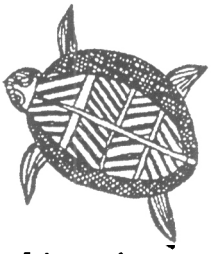
Some students were happy to consider the teachers as the experts who had all the knowledge to impart. *'I came along with the concept that they know all the stuff and show me. I don't judge in that way. They ask these stupid questions "what would you like to be*

taught?'" (2nd year). However, other students were more critical of the information they were presented with, and used textbooks and discussion to clarify or question this information. One student felt frustration that students were treated as though they did not have anything constructive to contribute to their own learning process: *'People assume ... [they] are here to tell you everything you ever need to know and you don't know anything yourself and you have nothing to contribute to this course'* (4th year).

Not knowing the other members of a tutorial group, and not having a common interest, made it difficult for a number of students to participate in the tutorial. *'I didn't really like that because some of the people in the tutorial knew each other really. They were from different schools and I felt really uncomfortable because I didn't know them, and none of them knew each other. Everyone felt uncomfortable and we were all that different that we didn't really mix together. We couldn't really talk about things as a group because none of us could communicate with the others because there was a sort of barrier there. Better if have a common interest, goal, relates you to each other. If you feel at ease with other people and tutor – much nicer. Better if there's a good relationship'* (1st year).

There were some comments on coming up with the 'right answer' to clinical problems that did not indicate recognition of any sequential thinking in solving the problem, while some recognised that they failed to explain how they reached an answer that seemed obvious to them. *'Sometimes in written work I don't write down all that I know – I take too much for granted that they know what I'm talking about'* (5th year).

A few of the students commented that they were quite happy to have a go at doing things, for example in practical classes, and they would just have another go if they got it wrong. There were remarks on the type of environment in which they might feel more comfortable to try something, for example if they were not expected to be perfect immediately. One student mentioned that she did not want to make a fool of herself, and this might prevent her from attempting things in certain situations. There were also comments about being able to take time to solve problems without being under pressure.



Conclusions

The students interviewed in this project come from diverse backgrounds, and therefore cannot give a complete picture of Aboriginal and Torres Strait Islander students studying science subjects at university. However, these interviews did give valuable information on these particular students, which enabled the teachers in the PEPA Unit to develop more specific programs and tutorials to support their academic progress. It was also an introduction for students to start thinking about their own learning and become more conscious of how to make the most of their strengths and deal with their weaker areas.

In a number of areas, statements made by these students about their learning are consistent with the generalisations from the literature. From these generalisations, some specific strategies can be developed. Many of the strategies simply conform to what is considered 'good teaching practice' and would be useful in most classes.

It did appear that many of the interviewed students preferred a holistic approach to learning, appreciating overviews of subjects, and conscious linking and integration. Visual aids were noted to be very helpful. They also showed a preference for applied, contextual learning, and benefited from practical experience before, or along with, the theory. Even in situations where actual practical work cannot occur, engaging students by having

them experience or remember an actual 'thing' could then be followed by discussions and reflections and a movement from the concrete to the abstract. The use of analogies was beneficial in situations where an actual thing cannot be seen.

Problem solving by critical analysis and sequential linear steps may not be the preferred method for some of these Aboriginal and Torres Strait Islander students. Consciously recognising and outlining a sequence, and establishing basic patterns to follow may help, and it can be useful to then practise using these patterns in other situations.

The importance of comfortable relationships between staff and students was stressed in these interviews. These students stated that they may not participate or even speak in situations where they feel personally uncomfortable or intimidated. In group work an effort should be made to allow students and staff to develop more personal rapport and seek areas of common interest, so that students can feel comfortable to participate. Emotional aspects that influence how a student feels about learning do need to be considered with these students. These aspects include having a safe learning environment, support of family, friends and other members of the academic and professional community, positive feedback and encouragement, and the staff having an obvious interest and enthusiasm for the subject and the students.

The students interviewed here do not favour assessment methods that test memory but not necessarily understanding. Assignments that require understanding of the topic, but give the students time to put it together without the stressful artificial environment of examinations should be considered as assessment options. Oral and practical examinations may also be appropriate, if the student is not intimidated by the teacher conducting the assessment.

These interviews have identified some of the learning preferences of the Indigenous students in the veterinary program, and found that there are some similarities to published information of the learning styles of Indigenous people, which indicate there are learning styles which are more likely among Indigenous students. This information may be of benefit to teachers of Aboriginal and Torres Strait Islander students. However, it is important to consider the diversity within any group of people, and not stereotype learners into particular categories just on the basis of their heritage.

It is also important to consider how this information should be used in successful teaching of Indigenous students. Understanding the students' preferences for learning can help a teacher prepare material and teach in a way that the students find comfortable and engaging. However, teaching only to their existing preferences may not be to the students' advantage in their development as learners, and it may be preferable to seek to equip all students with the ability to learn in a variety of ways and contexts.

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