

Teaching from Country: Queensland Aboriginal Narratives and Teaching of the Linnaean Taxonomy in an Indigenous Classroom

Joel Serge Rioux

Queensland University of Technology, Brisbane

joel.rioux@batchelor.edu.au

Abstract: *It is difficult to engage Aboriginal students with Western science topics such as the Linnaean zoological taxonomy. Yet the study of local fauna is an area in which there is much local Aboriginal knowledge. This paper explores the effect of integrating Aboriginal and Western knowledge on the science learning of students in an Independent Aboriginal Community secondary school. It reports on an action research study conducted with twelve Year 8-9 Indigenous students in a Montessori classroom in which the teaching of Aboriginal and Linnaean classifications of animals was integrated. The study covered eighty-three (83) lessons that included Elders' narratives on local fauna, and specially constructed didactic and developmental materials. Classroom observations and pre-post instruments focused on the effect of the teaching on students' pride in heritage and knowledge of culture and the Linnaean taxonomy, looking for teaching actions that appeared to stimulate strong learning responses. Preliminary results reveal that the conflation of both Aboriginal and non-Aboriginal knowledge, along with an emphasis on contextualisation, strengthened both the Indigenous students' Aboriginal identity and the status of local Indigenous knowledge in the science classroom. Evidence indicates Aboriginal adolescents also developed deeper understandings of the non-Indigenous Linnaean taxonomy.*

Keywords: Zoology, Taxonomy, Montessori, adolescent, Indigenous, Linnaean

1. Subject-Background Literature

It is difficult to engage Aboriginal students with Western science topics such as the Linnaean zoological taxonomy. Yet the study of local fauna is an area in which there is much Aboriginal knowledge. This study explored the effect of integrating Aboriginal and Western knowledge on the science learning of students in an Independent Aboriginal Community secondary school. The study investigated the Montessori teaching approach of *Murri* (Queensland *Aborigines*) classificatory systems and suggests that it will help students to develop an understanding of the *Migaloo* (*non-Aborigines*) vertebrate Linnaean system and formal taxonomy (kingdom, phyla, classes and orders of vertebrates). The idea was that the researcher would initiate the study by investigating the Murri community's local traditional animal classificatory systems (past and present) or ways of grouping animals from ancestral times. If this idea did not eventuate, the second option was to collect local zoology narratives in order to extract animals to classify. In other words, the study used familiar Murri knowledge to classify local fauna identified within Elders' narratives before leading the students to the non-Indigenous vertebrate taxonomy and investigated students' interactions with both taxonomies. The researcher ensured that the use of local *Indigenous Knowledge (Ik)* was equally valued, promoted and recognised. This notion also helped to preserve, protect and revitalise local Indigenous cultural practices and students' Murri identity.

Aboriginal adolescents have rights to an education in cultural contexts familiar to them, according to the conventions on the Rights of Indigenous People and preservation of *Ik* (United Nations, 2005). However, the reality is that students who possess a different culture than the school culture, understanding school science is a challenging enterprise (Ezeife, 2003; Shizha, 2008). According to Aikenhead (2002), a common situation arises that he describes as a colonial style of science education. "A type of cognitive imperialism pervades school science whenever students, particularly Aboriginal students, are assimilated (some would say colonised) into thinking like a Western scientist in their science classes". When utilising the one-way Eurocentric leading approach (*Ek*) to school science and at school in general, learning for Murris is de-contextualised. "When learning is de-contextualised, that is, where there is a dissonance between the curriculum and

pedagogical approaches embedded in the official education and Indigenous knowledge systems, student engagement in desired learning is less likely to occur” (Ewing, Cooper, Baturo, Matthews & Sun, 2010, p.14). Michie (2002) suggests for Aboriginal students an education in cultural and familiar contexts where: “The aim of the science curriculum should be to promote consideration of the differing worldviews, not solely to enrich Western science but to facilitate a two-way exchange of knowledge and of cultural understanding” (p.37). The study articulates that when teaching zoology taxonomy, contextualisation to culture referred to that which already exists, that is Aboriginal cultures and “Indigenous knowledge systems” (Nakata, 2008, p.2).

The Migaloo teacher of Murri students can either colonise students by attempting to enculturate adolescents into Western science zoology taxonomy or begin to embrace a decolonising approach to school science that gives Murri students access to Migaloo science without diminishing their Aboriginal identities. Battiste (1998) suggests that we adopt a decolonising approach to science teaching by *enculturating* students into their community, a community increasingly affected by Western science and technology. This shift in the enculturation of students, from Western science to the community, suggests a postcolonial approach to science teaching (Battiste, 2000). This study challenges science teachers to investigate the Murri zoology perspectives, the Murri views and understanding of nature and include them in their science program. The local experiences of Murri students “provide science educators with an opportunity to make a significant difference to the school experiences of Aboriginal students” (Aikenhead, 2002). This paper describes a section of the zoology study (local Murri narratives) that was inspired by the need to decolonise school science using local *Ik*; that is to say incorporating Murri animal knowledge into a localised science program.

2.Design-Procedure-Participants

The study reports on an action research study conducted with twelve Year 8-9 Indigenous students in a Montessori classroom in which the teaching of Aboriginal and Linnaean classifications of animals was integrated. The study conducted in a remote independent Indigenous secondary school covered eighty-three (83) lessons that included Elders’ narratives on local fauna and specially constructed developmental and didactic materials. Classroom observations and pre-post instruments focused on the effect of the teaching on students’ pride in heritage and knowledge of culture and the Linnaean taxonomy, looking for teaching actions that appeared to stimulate strong learning responses.

The study attempted to partly use methodologies informed by an Aboriginal interpretive framework and were built around Murri epistemologies (ways of knowing), axiologies (ways of doing) and ontologies (ways of being). Indigenous methodologies refer to “the effort to make visible what is meaningful and logical in our understanding of ourselves and the world” (Moreton-Robinson and Walter, 2010 cited in Christie, Guyula, Gotha & Gurruwiwi, 2010). The imperatives of collaboration on all teaching matters and on the importance of the Murri culture was the unwavering mission of the study. The idea of collecting local Aboriginal animal stories was developed in consultation with one Murri school administrative staff, two School liaison officers, one culture teacher, two Indigenous Education Workers and twelve adolescent participants. “It is important to develop the issues together and work through them in a discussion, waiting for the story to come along” (Christie et al., 2010). The local Murri people participated in a process that facilitated the development of a sense of themselves as local agents, having an authoritative voice (Christie et al., 2010). The Migaloo researcher could not pre-empt what the students were about to learn because he did not know what to expect and he was obviously unfamiliar with the local zoology content of the Murri section of the study. Therefore, the researcher turned his attention completely towards the Murri students and staff as a guide for this entire interviewing section. An open-ended question to all participants initiated this section: *What process do we follow to interview local Elders? How do we start?* But one thing was sure; The Indigenous adolescent environment, the classroom and community, as well as the students’ Indigenous culture and prior experiences had to be included in the zoology lessons.

Smith (2012) suggests that “storytelling, oral histories, the perspectives of elders and of women have become an integral part of all Indigenous research... intrinsic in story telling is a focus on dialogue and conversations amongst ourselves as indigenous peoples, to ourselves and for ourselves” (pp. 145-146). Indigenous storytelling has provided the

most important means by which Indigenous cultures are perpetuated. With the consent of, and participatory control by, the Indigenous greater school community members, the Murri school of this study has a major responsibility to play an active and positive role in helping to slow and perhaps reverse the loss of traditional Indigenous storytelling. I see a critical need to participate in the prevention of any further loss of the remnant community animal stories. One *Ik* pillar of the study was selected: eighty-one (81) local zoology narratives collected in the Murri section of the study. These have tremendous potential to inform authentic development of local Murri pedagogy, close to the students' everyday experiences.

The study began with the local Indigenous perspective on the topic of local animal stories and then introduced a Eurocentric cultural stance, known by students as "the way scientists talk about the topic". The entire program conveyed both the familiar views and understanding of nature through local Murri zoology classificatory activities and narratives. It also suggested the Eurocentric science as a second way of viewing and understanding nature. There was a need to be explicit about the *Ek* and its cultural presuppositions or its Migaloo scientific worldview content. In other words, in a postcolonial science education, *Ek* or the Western science Linnaean taxonomical content was studied after the local community's Aboriginal science and animal storytelling or *Murri yarn with a cuppa (cup of tea)*. *Teach from Country* means that *The Culture Makers* or Elders were the source of learning how to properly classify and show respect for animals. The conversation with Indigenous students was guided by the following pattern: Now that we know how to classify local animals the *Murri way*, I would like to teach you about how animal classification is conducted by people in another culture or how scientists classify them, that is to say Linnaean animal taxonomy. The non-Aboriginal Linnaean section of the study (kingdom, phyla, classes and orders of the vertebrates) is the subject of another article.

Incorporating *Ik* into a localised science program meant collecting local zoology narratives amongst Murri community members and Elders, in order for students to extract vertebrates to classify. This segment of the study represented the *Murri story* section and consisted of four subdivisions. Only the third one is discussed here in this article.

1. The teacher-researcher attempted to define the concept of *Murri narrative* by enquiring among local community Elders and Murri staff.
2. One invited Elder's view on the importance of storytelling and the adolescent participants' own *Murri stories*.
3. The prepared students interviewed local Elders and community members.
4. The students identified vertebrates from the same collected narratives and performed animal classifications.

The following were the commonly agreed eight main steps devised by Murri staff and adolescents in preparing students for the task of interviewing community members and Elders (3). These steps were designed alongside two Indigenous Education Workers (IEW's), a Culture Teacher, two Murri Administration staff, two School Liaison Officers (SLOs) and twelve adolescent participants:

- Reaffirm the importance of storytelling for Aboriginal people and place Murri narratives into perspective (with the assistance of a guest speaker).
- Design an interview protocol.
- Construct interview rules and discuss manners to adopt while in the presence of Elders.
- Generate a preliminary list of potential Elders/and community adults with an animal story.
- Select an Elder of their choice and write a personal invitation letter to their potential interviewees.
- Interview, record (Digital Voice Recorder) and video Elders.
- Transcribe their narratives.
- Select animals from Elders' narratives to classify.

3.Preliminary Findings

Preliminary results reveal that the conflation of both Aboriginal and non-Aboriginal knowledge, along with an emphasis on contextualisation and local *Ik* (narratives) strengthened both the Indigenous students' Aboriginal identity and

the status of local Indigenous knowledge in the science classroom. Evidence indicates Aboriginal adolescents also developed deeper understandings of the non-Indigenous Linnaean vertebrate taxonomy.

Preliminary results of the study also indicate benefits for participants and Indigenous staff when the Migaloo teacher employs a conflationary, hands-on zoology program. Although analysis is not complete, initial findings have shown that:

1. The approach to use both Indigenous and non-Indigenous knowledges results in increased engagement with community members, and increased engagement and learning from Indigenous students;
2. Teaching using this approach in an authentic Indigenous classroom where attendance is irregular required an emphasis on individualised teaching but this did not affect learning and appeared to work well because of the interest in the material; and
3. The approach, with its emphasis on the contextualisation of teaching, led to uplift the status of local Murri knowledge, particularly the status of Elders' knowledge and students' Murri classification systems, and as a result increased enthusiasm for learning about zoology.

Contribution to teaching and learning science

The collection of eighty-one (81) local zoology narratives helped adolescents transition from the local Murri views and understanding of nature to the Migaloo/Eurocentric views of vertebrate taxonomy (Linnaean classification). The animal stories became *the hook*, the cultural interface (Nakata, 2008) or one of the transitional activities between the Indigenous and non-Indigenous curricula. The zoology stories of the land, a source of limitless learning for the youth, helped reconcile *Two-Way Learning* (Ober & Bat, 2007). The theoretical frameworks (contextualisation and *Two-Way Learning*) not only enticed the adolescents to participation but strengthened their sense of belonging and their Murri identity. The adolescents' interest and engagement during the collection of animal narratives point to the importance and benefits of protecting and promoting local Murri *Ik*. Valuing the existence of local narratives, in the science lessons with agreement from local *Culture Makers*, is worth promoting to ensure the preservation of local *Ik* heritage that could inform true development of local Murri pedagogy. It is imperative for Indigenous culture that local storytelling and cultural practices continue to exist within the school context and be celebrated by all teachers to develop a genuine bipartisanship amongst the various views of nature, Murri and Migaloo. The local animal stories remind us to listen to and appreciate the differences between human beings, whilst also valuing our similarities.

On the one hand, too often, internalised colonialism becomes the norm where students and the community are "riveted" by the values and behaviour of the dominant colonists, leading to Murrus having a negative view of themselves and their culture. On the other hand, during the study, Murrus showed an intimate connection to the land with their local animal stories through celebration of every day experiences like echidna (*Tachyglossus aculeatus*) hunting. This bank of local narratives, the Murrus' bush knowledge, their skills and ingenuity must be integrated into the science curriculum. These Indigenous animal stories point to a dormant abundance of *developmental materials* for authentic and meaningful science lessons close to every day experiences of the Murri people.

The need for a balanced view of both types of materials in the Murri science classroom was presented in this study. First, the recognition and celebration of the Murri identity lead to the emergence of *developmental materials* or the "understanding of zoology stories". Learning more about the Murri heritage became the focus of the Murri zoology section of work. The collection of eighty-one (81) local narratives was considered *developmental materials* for this age group because interviewing Elders was about supporting the students to *understand their community, its local history, its people, its Murri heritage, that is to say, the adolescents' identity* rather than directly or explicitly teaching them content. Secondly, the didactic materials belonged mainly to the Migaloo section in this study, teaching structure and content of the Linnaean zoology taxonomy (example: *Monotremata, monotreme, mammals that lay eggs. They have a beak or a bill. Many have webbed toes*). Finally, this combination of didactic and developmental materials offered a variety and choice of work for students with various learning styles and needs. Both materials positively impacted on students' level of

interest and engagement in the zoology activities. *Teach from Country* concerns naturalising local Murri epistemology in the pedagogy and in the zoology curriculum. “A post-colonial science education framework cannot be constructed without Indigenous people’s renewing and reconstructing the principles underlying their own world view, environment, languages, and how these construct our humanity” (Battiste, 1998).

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