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Author

Niesche, Richard

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The Use of Home Language in the Mathematics Classroom

Richard Niesche

Griffith Institute for Educational Research

<r.niesche@griffith.edu.au>

In this symposium, I argue that the use of home language needs to be viewed as a valuable resource for teachers in Indigenous schools in the Kimberley region of Western Australia. For students to be able to negotiate meaning and mathematical concepts in Kriol can help facilitate their mathematical learning as well as demonstrate an explicit valuing of indigenous cultures and heritage.

The continual underachievement of Indigenous students in this country has been well documented (MCEETYA, 2006). As a part of an overall reform pedagogy to address the poor performance of Indigenous students' outcomes in mathematics in the Kimberley region in Western Australia (Zevenbergen & Niesche, 2008), this paper examines the issue of home language use in the classroom. The issue of language in the classroom has long been recognised as an important one in Indigenous education in Australia (Malcolm, Kessarar & Hunter, 2003). With the use of Standard Australian English (SAE) as the dominant mode of communication in the classroom, this places those students who speak English as a second language, including Indigenous students who speak Kriol or Aboriginal English, in the difficult position of having to 'catch up' with those students who have grown up only knowing English. When Aboriginal students from regions such as the Kimberley come to the classroom, they come equipped with a language and form of communication that is based on an Indigenous world view (Christie, 1985) with particular cultural histories and ways of being. Harris (1984) has argued that the Aboriginal public speaking 'rule' of the right for speakers to speak and the right of listeners not to listen, coupled with the increased level of movement and physical activity within the classroom places these students at odds with the mainstream way of 'doing' school. Walsh (1997) also claims that communication in Aboriginal society is largely communal rather than the more dyadic and contained interaction of non-Aboriginal groups.

While such differences need to be recognised, it is equally important that such cultural aspects are valued in both rhetoric and in practice. The aim of this paper is to therefore argue for the use of students' home language within the mathematics classroom to negotiate meaning and to place an important emphasis on valuing their cultural heritage. This latter point is particularly important with the loss of large numbers of Indigenous languages throughout this country. It is important for these communities' cultures to be acknowledged and preserved. The use and encouragement of students to use their home languages can also be a powerful resource for teaching and learning. Such a model moves away from deficit discourses that have so plagued Indigenous education in this country to one of viewing such a cultural heritage as a valuable resource.

Languages in the Kimberley

There are a large number of diverse languages in the Kimberley region. However, the relatively small group of speakers means that many of these languages are under threat (Berry & Hudson, 1997). Languages spoken in the Kimberley are both a Kriol and Aboriginal English (AE) which adds to the complexity for classroom teachers. The difference between these two terms is the extent to which the language is influenced by English. However, both terms are often used interchangeably. Kriol is largely a mixture of

local Aboriginal languages and English, however words typically have a new Kriol meaning and pronunciation. For the students who speak Kriol and learn English at school, they quickly adapt to using Kriol amongst their peers and family, and English with English speakers such as classroom teachers. The knowledge of Kriol is a sign of identity with their community. In some cases children speak Kriol while their parents' main language is a traditional one (Berry & Hudson, 1997).

Approaches in the Mathematics Classroom

It has been recognised that the issue of language is a crucial one in the process of constructing mathematical knowledge within the classroom (Gorgorio & Planas, 2001). In order to improve their educational outcomes and performance in school mathematics, these Indigenous students will need to be able to negotiate the fundamental and linguistic assumptions that underpin school mathematics. In addition, they need to be able to fully participate and engage in other aspects of this research project, such as group work, intellectually challenging tasks, and reporting back. All of these activities place an enormous strain on the students' capacity to fully engage with these aspects of classroom learning. As a result, I believe that students be encouraged to use their 'home language' or Kriol in the classroom for the purposes of negotiating mathematical concepts to enable them to better understand and negotiate these mathematical problems.

Research into approaches such as 'code switching' and multilingual classrooms has been conducted extensively in South Africa (Setati & Adler, 2001) and Canada (Epstein & Xu, 2003). The notion of code switching refers to the practice that enables learners to harness their main language as a learning resource. The work of Boaler and Staples (2008), for instance also highlights the power of such an approach in raising the outcomes for non native English speakers. In Boaler's study of Railside, the students were able to negotiate meaning in their home language (Spanish), however, they were required to also use the appropriate mathematical terms when discussing their ideas to the class. Setati & Adler (2001) also point out the importance of contextual diversity, and the issue of moving between languages is only part of the process of learning mathematics. They point out that moving between languages and distinct mathematical discourses is where the main challenge lies. It is not just a matter of switching languages but also negotiating the mathematical language and articulating the meaning of mathematical concepts. This is certainly a challenge for teachers in Indigenous communities such as those in the Kimberley for meaning is derived from context. The lack of immersion in number within regions such as the Kimberley compounds the problem. There is very little use of numbers within these communities. For example, in the local store, there are no prices on items, nor are there numbers on houses etc. As a result these contexts offer little in ways of preparing students for the world of schooling.

One of the aspects of this research project is for the teachers to encourage the students to report back on their learning in their group activities. It is expected that while the students can negotiate meaning within their groups in their home language, they are required to report back to the rest of the class using the appropriate mathematical terms in SAE.

Facilitating the Use of Home Language

The teachers participating in this project have so far been hesitant to encourage the use of home language by the students. Of the 26 lessons that have been observed during 2008, none of the lessons had any mention of students using their home language. One reason for

this may be that so far, the emphasis has been on developing mathematically rich tasks for the students. However, teachers and schools have been made aware on a number of occasions that the use of home language is an aspect of this project that may reap good rewards. Other reasons for the lack of 'take up' of this notion could be reasons such as teacher inexperience (many teachers are first or second year out teachers); lack of knowledge of local languages (a number of teachers are also new to the region, and others have made little effort to learn); a harsh and isolating physical environment in which to teach, where teachers are in remote areas a long way from families and friends; and complex and often problematic relationships with the local communities. For success in this project, it is vital that the students' home language or Kriol is viewed as a resource to the students' learning rather than a barrier.

There are two issues that are important in facilitating teachers to enable the students to use their home language within the classroom. These are the importance of school leadership, and the use of Aboriginal Education Workers (AEWs) from the local communities. With such a valuable resource as AEWs on the schools' doorsteps, these community members can provide the necessary link between the teachers and the students in the negotiation of home language. However, the facilitation of these links requires leadership from the school to make those links productive and beneficial. Of the six schools participating in this project, five of these use AEWs in the classroom. However, from our observations of these classroom interactions, the AEWs are largely functioning in the role of managing and observing student behaviour rather than taking an active role in the classroom activities and facilitating the students' learning. It is common for AEWs to be heard 'growling' at students when they are misbehaving, yet their participation in classroom learning can be of great benefit to not only the students' learning but also to help school community relations. In discussions with the AEWs at one school concerning their role in the classroom, they responded that they would like to play a more active role in the learning activities. In order to facilitate such involvement, the principals and teachers need to actively work with the AEWs to help them contribute to the teaching and learning in these schools. There have been some complaints that the AEWs can be unreliable, not turn up on time or regularly, and not have the required expertise to adequately help the teachers. It is therefore the role of the school leadership to move away from existing deficit models of the contributions of local community members to one of actively seeing these AEWs as potentially valuable resource that can benefit the children and their communities. In response, we have encouraged the attendance and participation of AEWs in the twice yearly workshops run by the project research team.

Concluding Comments

In this paper I have put forward the argument that the use of home language in the classroom for the students involved in this project can be of benefit to both the students and communities. This has largely been a proposal rather than a report based on empirical evidence. The challenge is now up to the teachers to design appropriate tasks that allow the students to collaborate in their home language on rich mathematical investigations. These collaborative efforts can need to be facilitated by an AEW from the local community for any chance of success. Only then can we evaluate the effectiveness of this approach for this particular context, and if necessary, tailor the approach to suit the contexts in which these students live. The model which is proposed here represents a significant shift away from existing approaches to teaching mathematics in these areas. If we are serious about improving the continual underachievement of Indigenous students in this country, then this

approach, as a part of a larger pedagogical reform, can play an important part in redressing this imbalance.

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