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Access to mathematics versus access to the language of power: the struggle in multilingual mathematics classrooms

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In this article I explore how teachers and learners position themselves in relation to use of language(s) in multilingual mathematics classrooms. I draw from two studies in multilingual mathematics classrooms in South Africa. The analysis presented shows that teachers and learners who position themselves in relation to English are concerned with access to social goods and positioned by the social and economic power of English. They do not focus on epistemological access but argue for English as the language of learning and teaching. In contrast, learners who position themselves in relation to mathematics and so epistemological access, reflect more contradictory discourses, including support for the use of the their home languages as languages of learning and teaching.

Keywords: access to mathematics; language of power; multilingual; Setswana

Introduction

"Classroom conversations that include the use of [...] the [bilingual] students' first language as legitimate resources can support students in learning to communicate mathematically" (Moschkovich, 2002:208)

> "*If we changed our [mathematics] textbooks into Setswana and set our exams in Setswana,*[1] *then my school will be empty because our parents now believe in English*" (Lindi, a Grade 4 mathematics teacher).

It is widely accepted that language is important for learning and thinking and that the ability to communicate mathematically is central to learning and teaching school mathematics. What is still under constant debate and investigation is which language is most appropriate for learning a subject such as mathematics especially in multilingual contexts. The quotes above capture the essence and complexity of the debate. Research argues that the learners' main languages are a resource in the teaching and learning of mathematics while teachers argue for the use of English. Herein lies the problem explored here:

> Why is it that teachers and learners prefer English as the language of learning and teaching (LoLT) when research and policy support the use of the learners' home languages for learning?

The arguments for both sides are equally compelling as they are about access to mathematics and social goods. The main aim in this article is to give substance to the debate by exploring how multilingual mathematics teachers and learners position themselves in this debate and what this might mean for research and practice. Positioning is a conversational phenomenon. In any conversation actors are variously positioned either by themselves or others. Davies and Harré (1990) observe that when one has taken up a particular

position as one's own, one inevitably sees the world from the vantage point of that position and in terms of the particular images, metaphors, storylines, and concepts which are made relevant within the particular discursive practice in which they are positioned.

There is a general view in South Africa that most parents want their children to be educated in English and that most learners would like to be taught in English. While there is no systematic research evidence, it is also widely held that many schools with an African student body choose to use English as the language of learning and teaching (LoLT) from the first year of schooling (Taylor & Vinjevold, 1999). The TIMSS results in South Africa were very poor. Studies that have emerged from this argue that the solution to improving African learners' performance in mathematics is to develop their English language proficiency (e.g. Howie, 2002). What does this kind of recommendation mean for mathematics learning? The problem explored here relates to how the power dynamics of language play out in the mathematics classroom context, and whose or what interests they serve? Issues of power and access are by no means straightforward and so it is important that they be problematised. These issues are about the politics of language and the work on the politics of language is complex, not well developed in mathematics education and often misrepresented. To put this debate in perspective it is important that I provide a brief overview on the political role of language and its use in multilingual mathematics classrooms.

The political role of language and its use in multilingual mathematics classrooms

Language, like multilingualism, is always political (Hartshorne, 1987; Reagan & Ntshoe 1987; Mda, 1997; Friedman, 1997; Heugh, 1997; Granville; Janks; Mphahlele; Reed; Watson; Joseph & Ramani, 1998; Gee, 1999). It is one of the characteristics that are used in society to determine power (Gutiérrez, 2002). In South Africa the issue of language has always been interwoven with the politics of domination and separation, resistance, and affirmation. During apartheid, the language of learning issue became a dominating factor in opposition to the system of Bantu Education. Though not unmindful or ashamed of African traditions *per se*, the mainstream African nationalists have generally viewed cultural assimilation as a means by which Africans could be released from a subordinate position in a common, unified society (Reagan & Ntshoe, 1987). They therefore fought against the use of African languages as languages of learning and teaching because they saw it as a device to ensure that Africans remain oppressed. Lindi's views in the quotation above that the parents of learners in her school believe in English are therefore not surprising.

The political nature of language is not only at the macro-level of structures but also at the micro-level of classroom interactions. Language can be used to exclude or include people in conversations and decision-making processes. Zentella (1997) through her work with Puerto Rican children in El

Bario, New York shows how language can bring people together or separate them. Language is one way in which one can define one's adherence to group values. Therefore decisions about which language to use in multilingual mathematics classrooms, how, and for what purposes, are not only pedagogic but also political (Setati, 2003). Most research on mathematics education in multilingual classrooms has argued for the use of the learners' home languages as resources for learning and teaching mathematics (e.g. Addendorff, 1993; Adler, 2001; Arthur, 1994; Khisty, 1995; Merrit, Cleghorn, Abagi & Bunyi, 1992; Moschkovich, 1999, 2002; Ncedo, Peires & Morar, 2002; Setati, 1998; Setati & Adler, 2001; Setati, Adler, Reed & Bapoo, 2002). They have argued for the use of the learners' home languages in learning and teaching mathematics, as a support needed while learners continue to develop proficiency in the language of learning and teaching (e.g. English) at the same time as learning mathematics. While research in general education on language and minority learners is strongly rooted in the socio-political context of learning (Cummins, 2000), most research on multilingualism in mathematics education has been framed by a limited conception of language as a tool for thinking and communication. To ignore the political role of language in mathematics education research and practice would assume that power relationships do not exist in society.

Theoretical framework

In this article, I use the work of Gee (1996; 1999) as a theoretical framework to take the work on multilingualism in mathematics education further by explaining the language choices of teachers and learners in multilingual mathematics classrooms beyond the pedagogic and cognitive. Gee's work is relevant because he considers language as always political (1996; 1999). He argues that when people speak or write they create a political perspective; they use language to project themselves as certain kinds of people engaged in certain kinds of activity. Language is thus never just a vehicle to express ideas (a cultural tool), but also a political tool that we use to enact (i.e. to be recognized as) a particular 'who' (identity) engaged in a particular 'what' (situated activity).

Gee (1999) uses the theoretical construct of cultural models to explore the identities and activities that people enact. Cultural models are shared, conventional ideas about how the world works, which individuals learn by talking and acting with their fellows. They help us explain why people do things in the way that they do and provide a framework for organizing and reconstructing memories of experience (Holland & Quinn, 1987). Cultural models do not reside in people's heads, but they are embedded in words, in people's practices and in the context in which they live. The question that is relevant is what cultural models do teachers and learners in multilingual mathematics classrooms enact in relation to language and mathematics? In what follows I use the notion of cultural models to explore why teachers and learners prefer the language(s) that they choose for learning and teaching mathematics. There-

after I will look at the implications of such language choices for research and practice.

Data collection and procedure

The analysis presented here is drawn from two research projects involving teachers and learners in multilingual mathematics classrooms in South Africa. The first study involved six intermediate phase mathematics teachers who taught in multilingual classrooms in township schools in which they shared their main languages with the learners. The second study involved five Grade 11 mathematics learners from a township school in which they were learning mathematics in English, a language that was neither their first, home or main language.

These teachers and learners were multilingual; each of them could speak, read, write and understand at least four languages. The individual interviews conducted with both the teachers and the learners were guided by the following two questions: Which language do you prefer to teach mathematics in? and Why? In the case of the learners there were one or two follow-up questions asked depending on the learners' response. For example, if a learner indicated that they preferred to be taught mathematics in English the following follow-up question was asked: What if there are students who want to learn mathematics in Zulu or Sesotho, what would you say to them?

During the interviews each of the teachers and learners was given an opportunity to choose their preferred language for the interview. While translations are provided in brackets in the extracts presented here, it is important to note that analysis was done from the original utterances and not the translated version.

Teachers' language choices

Over and above all else, *English is international* emerged as a dominant cultural model that shaped the teachers' language choices. All the six teachers stated ideological and pragmatic reasons for their preference to teach mathematics in English. As the extracts show, these reasons ranged from the belief that English is an international language to the fact that textbooks, examinations and higher education are all in English.

Vusi: *I prefer to teach in English because it is a* ***universal language****.*

Kuki: *I think all the languages must be equal although English as the* ***international language****, it has to still be emphasised and mother tongue I think it's high time that the kids* ***learn mother tongue and be proud of it****.*

Lindi: *... it is said that [English] is an* ***international language*** *... I encourage them to use English ... The* ***textbooks are written in English****, the* ***question papers are in English****, so you find that the child doesn't understand what is written there.* (my emphasis)

These extracts suggest that these teachers are aware of the linguistic capital of English and the symbolic power it bestows on those who can communicate

in it. They see English as international and universal and thus 'bigger than' themselves. The way Kuki and Lindi express themselves in the above extracts also suggests that they do not want to take responsibility for the status of English. The status of English is what it is and they cannot change it. Kuki uses the phrase "*I think ...*", while Lindi uses "*It is said ...*," suggesting that they see themselves as being caught up in the dominance of English. They do not have any control over the international nature of English. All they can do is to prepare their learners for participation in the international world, and teaching mathematics in English is an important part of this preparation. It is therefore not surprising that all the teachers saw English as the only choice for use in mathematics teaching. They lived all their lives in an environment that values English more than any other language. Furthermore, as Lindi correctly points out, the mathematics textbooks and examinations are in English. Over the years, there have been no mathematics textbooks in South Africa published in an African language. During the time when 'mother tongue' instruction was enforced in primary schools, the mathematics textbooks at this level were translated from English or Afrikaans into the African languages. The secondary school mathematics textbooks have never been published in African languages in South Africa. Therefore, for many African teachers and learners, mathematics is associated with the English language because it is the language of mathematics textbooks and assessment. As a result, while according to policy African languages can also be used as languages of learning and teaching, English has become the only possible choice for teaching and learning mathematics. What is interesting is that none of the teachers challenged the power of English or the fact that textbooks and examinations are given only in English while learners are still developing fluency in it.

While the other three teachers did not explicitly highlight the international nature of English, they also indicated that they encouraged their learners to use English and their reasons focused on the social goods that learners can access through English.

Gugu: *I think English,* ***it empowers*** *them [the learners], you understand. At this stage of eight, nine years, they can be able to* ***speak English unlike us. We never did English in primary*** *and at college we were supposed to answer in English in lectures. So we had a problem with this language,* ***so at any early age they just become used to it.***

Mpule: *I* ***encourage them to use English*** *because if they do not learn the language how will they be able to* ***cope in higher classes,*** *they will not cope.*

Rosina: *I encourage them to use* ***English always*** *... So that they can* ***learn the language.*** (my emphasis)

Gugu wants to make English accessible to her learners early in their schooling. In her view, making English accessible would assist in undoing what she sees as the wrongs of the past, which she experienced as a learner. Gugu's view of making English accessible is similar to Granville *et al.*'s (1998). Gran-

ville *et al.* insist that while all South African learners must learn at least one African language they should also have access to English. They maintain that making English accessible would ensure that it is no longer an elitist language. In this way English could come to be seen as a resource, not as a problem (Granville *et. al.*, 1998). The challenge now is that even the learners who do not have access to English are learning mathematics in English. In Gugu's view the mathematics classroom must be used as an opportunity for learners to gain access to English. An important question to ask here is, what is the cost of focusing on making English accessible to the learners during mathematics teaching?

Mpule highlights the fact that English is the language of higher education. Higher education in South Africa is only available in English and Afrikaans. As a primary school teacher, she feels responsible for ensuring that the learners are ready for higher classes and the ability to speak English is an important part of preparation for that. What is interesting is that Mpule, like all the other teachers in the study, does not highlight the importance of ensuring that learners are mathematically competent for higher classes. While this absence of concern for mathematical competence may not be deliberate, it is important to note it. What is in the foreground in the teachers' cultural models above is English. Explanations for their preferred language(s) for mathematics teaching focus on English and not mathematics. These teachers position themselves in relation to English (which they consider to provide socio-economic access) and not mathematics (i.e. epistemological access).

Of all the teachers, Kuki was the only one who indicated some awareness of the fact that all the official languages in South Africa are equal. What is interesting is that even with this recognition, Kuki still maintains that English has to be emphasised. As the above extracts show, Kuki is working with conflicting cultural models of wanting to honour the African languages on the one hand, and on the other hand ensuring that the learners have access to English. During the focus group interview both Gugu and Lindi also displayed the same kind of conflicting cultural models.

Gugu: *To me those different languages must be respected, we must never look down upon different people speaking different languages. I think to me they are all important. Much as we are respecting English as an international language but I think it is high time that we realise that we need to interact with other languages.*

While Gugu wants to respect and honour the African languages, she still feels pressured by the international nature of English. During the pre-observation interview, she was emphatic about the need to focus on English and in the focus group interview, she emphasises the need to respect and interact with other languages.

Lindi: ... ***the past has already killed our nation*** *the only language that has been respected the most is English.* ***If you don't know English you look like a fool, and you are considered as not intelligent.*** *If someone knows English it means that person is intelligent, it seems*

as if they are associating this knowledge of English as having a good intellect. (my emphasis)

Lindi's reference to the lack of respect for African languages as a brutal act that "killed our nation" is typical of the emotive language that these teachers used at different times in the study. Gugu also used this language of 'killing' during the pre-observation interview. Gugu, however, talked about "killing the children" by not exposing them to English, while Lindi is talking about "killing our nation" by not allowing them to use and therefore develop their own languages. Lindi also shows her anger about the past and the status of English — the fact that to be respected one has to be fluent in English. Despite her anger, Lindi does not want her school to use an African language in teaching mathematics because her "school will be empty".

The analysis presented above highlights the teachers' preference for English as the language of learning and teaching mathematics and the cultural models that inform this preference. The discussion also shows the conflicting cultural models that teachers held. A glaring absence in the teachers' cultural models was any reference to how learning and teaching in English, as they preferred, would create epistemological access for the learners. This absence suggests that the teachers positioned themselves in relation to English and not mathematics. What is more prevalent in the reasons for preference of English are: economic, political, and ideological factors. The following section explores the learners' language preferences and how they relate to those of teachers.

Learners' language choices

Three of the learners interviewed indicated that they preferred to be taught mathematics in English while the other two felt that it really did not matter what language mathematics was learned in. For the learners who preferred to be taught English (Tumi, Sipho and Nhlanhla) the cultural model of English as an international language, which positions English as the route to success, was dominant in their discourse. Their preference for English was because of the social goods that come with the ability to communicate in English.

Tumi: *English is an international language, just imagine a class doing maths with Setswana for example, I don't think it's good.*

MS: Why?

Tumi: *I don't think it is a good idea. Let's say she taught us in Setswana, when we meet other students from other schools and we discuss a sum for instance and she is a white person. I only know division in Setswana, so I must divide this by this and don't know English, then he I going to have problem. So I think we should talk English. English is okay.*

Tumi saw English as an obvious language for learning and teaching mathematics. It was unimaginable to him for mathematics to be taught in an African language like Setswana. The use of English as a language of learning and teaching mathematics was common sense to him; he could not imagine mathematics without English. This resonates with the teachers' cultural

models above, which are exacerbated by the fact that mathematics texts and examinations are in English. Another factor that emerged from Tumi's views was the fact that he wanted to be taught mathematics in English so that he could be able to talk about mathematics in English with white people.

Sipho: *I prefer that ba rute ka English gore ke tlo ithuta ho bua English. If you can't speak English, there will be no job you can get. In an interview, o thola hore lekgowa ha le kgone ho bua Sesotho or IsiZulu, ha o sa tsebe English o tlo luza job.* [I prefer that they teach us in English so that I can learn English. If you can't speak English, there will be no job you can get. In an interview you will find a white person not able to speak Sesotho or IsiZulu, you will lose the job because you don't know English.]

Sipho's preference for English was largely because he saw English as a language that gives access to employment. He also connected employment with white people by arguing that during the interview one must be able to express oneself in English because it is white people who conduct interviews. The connection that Sipho is making between jobs, white people and English is as a result of the socio-political history of South Africa in which the economy was wholly in the hands of white people with English as the language of commerce. Hence Sipho's expectation that white people conduct job interviews and they do so in English. While the economic landscape is changing rapidly with more Africans acquiring wealth, for the majority of the African people like Sipho in, what President Thabo Mbeki recently described as, the second economy, survival is still dependent on the first economy. As Mbeki (2007) explained, South Africa is largely divided into two economies: the first economy, historically occupied by white people, is sophisticated and well adjusted to global economies. The second economy, historically occupied by black people, is largely dependent on the first economy. The point here is that while economy is no longer just in the hands of white people, for many Africans in the second economy this is not visible to them and so they still see their access to social goods as being connected to whites and therefore English. Clearly Tumi and Sipho regarded being in the mathematics class as an important opportunity for them to gain access to English — the language of power.

Unlike Tumi and Sipho, Nhlanhla, who also indicated a preference for English, positioned herself in relation to mathematics. Nhlanhla, however, had conflicting cultural models. While she acknowledged the power of English, she also accepted the fact that if she focused on wanting to understand mathematics she would choose her home language as the language of learning and teaching.

Nhlanhla: *... is the way it is supposed to be because English is the standardized and international language.*

MS: Okay, if you had a choice what language would you choose to learn maths in?

Nhlanhla: *For the sake of understanding it, I would choose my language. But I wouldn't like that* [English as language of learning and teaching]

to be changed because somewhere somehow you would not understand what the word 'transpose' mean, ukhithi uchinchela ngale [that you change to the other side], *some people won't understand. They would not understand what it means to change the sign and change the whole equation.*

As the above extract shows, Nhlanhla recognises the value of learning mathematics in a language that she understands better. However, she does not want English as LoLT to change because English is international and the African languages do not have a well-developed mathematics register. There are conflicting cultural models at play here: one that values the use of African languages for mathematical understanding and another that values English because of its international nature. It is important to emphasise that holding the cultural model that English is international suggests that the fluency in English makes accessible the possibility to access social goods not only in South Africa but also internationally.

MS: What if there are students who want to learn mathematics in Zulu, what would say to them?

Nhlanhla: *I would say its okay to have it but you have to minimize it because these days everything is done in English especially maths, physics and biology.*

MS: Why is it that maths, physics and biology have to be done in English?

Nhlanhla: *I don't know, think that's the way it is.*

Nhlanhla's conflicting cultural models are evident in the above extract. They are indicative of the multiple identities that she is enacting. As a multilingual learner who is not fully fluent in English, she does not want to lose the social goods that come with fluency in English. As a mathematics learner it is important that she has a good understanding of the mathematics she is learning and using her language, as she says, facilitates understanding. While the teachers (Kuki, Lindi and Gugu) also experienced conflicting cultural models, theirs were in relation to access to social goods and not to mathematics.

Basani and Lehlohonolo were the two learners who felt that it really does not matter what language is used for mathematics. Basani is an interesting case. Before coming to the school in Soweto, he was a student at a suburban school, which was formerly for whites only. At the time of the study, he was in his second year at the Soweto school, which he had came to because his mother could no longer afford the fees at the former white school. Basani's level of English fluency was clearly above that of the other learners interviewed. During the interview, he explained that he was doing Grade 11 for the second time because he had failed IsiZulu and mathematics the previous year. He however insisted that he had no problem with mathematics and that he had failed mathematics because he was not as focused as he should have been.

Basani: *Maths is also a language on its own, it doesn't matter what language you teaching it. It depends if the person is willing to do it.*

MS: What would you say to learners who want to be taught maths in their African languages?

Basani: *I would not have problem. If that's the way they want to do it it's their choice. I have a friend here at school he is Sotho, I help him with Maths. Sometimes when I explain in Sesotho he doesn't understand and when I explain it in English he understands.*

MS: Why is that?

Basani: *I don't know that's something I cannot answer because, how should I know, I never had a problem with maths before.*

As the above extract shows, Basani believed that mathematics is a language and therefore it does not make any difference what language it is taught and learned in. Basani was very confident about his mathematical knowledge and seemed to be working with a cultural model that the key to mathematics learning is the willingness to do it. Lehlohonolo, who was also very confident about his mathematical knowledge, shared the similar views to Basani that it does not matter what language is used for mathematics. As the mathematics teacher explained, Lehlohonolo was, at the time of the study, the best performing learner in mathematics in his class. He was clearly confident of who he was and what he had achieved. Another factor that highlighted this is that when I gave them the information letters and consent forms to participate in the study, Lehlohonolo immediately indicated that he wanted his real name to be used because he wants to be famous. During the interview with him he positioned himself in relation to mathematics rather than English.

MS: Does it matter which language you do maths in?

Lehlohonolo: *To me it doesn't matter just as long as I am able to think in all languages and I can speak and write in those languages then I can do maths in those languages.*

The manner in which Lehlohonolo is connecting language to thinking and learning in the above extract is very sophisticated. For him fluency in the language (ability to read, speak, write and think) facilitates ability to learn in that language. As he explains below, while fluency in a language is necessary it is not sufficient to make a learner successful in mathematics.

Lehlohonolo: *What I have realized is students that are I go with in class fail maths but they do well in English, I don't think English is the cause of why they failing maths. Some of them they chose maths because of their friends, some of them are in the wrong class. From my past experience they are not good in maths so they shouldn't have gone with maths. Even if you do it in IsiZulu, things will be the same, the problem is not with the language. They don't want to think, they don't want to be active; they don't interact with the teacher. If the teacher does the exercise and ask them if they are okay with this, they just agree, but when it comes to writing they don't understand.*

For Lehlohonolo, language cannot be blamed for failure or given credit for success in mathematics. Lehlohonolo's very rich insights appropriately challenged a view that is often echoed by some researchers (e.g. Howie, 2002;

2003; 2004) who claim that learners' improved proficiency in English will lead to an improvement in learner performance. Quality mathematics teaching and learning involves much more than fluency in the LoLT (in this case English). Fluency in English, while necessary, is not a sufficient condition for improving performance or learning in mathematics. While successful learning of mathematics is only possible in contexts where the learners are fluent in the LoLT, it is also important to recognise the fact the success cannot only be attributed to the learners' profiency in the LoLT. There are other factors such as the teacher's knowledge of the mathematics she is teaching; her knowledge of the learners and how she draws on the learner's fluency in the LoLT. As can be seen in the extract above, Lehlohonolo adds that succeeding in mathematics also depends on the choices that the students make about how they participate in the mathematics class. In the extract below I continue my conversation with Lehlohonolo.

MS: So if you had a group of students who want to do maths in Zulu, what would you say to them?

Lehlohonolo: *That's their own problem because if they out of high school, they cannot expect to find an Indian lecturer teaching maths in Zulu. English is the simplest language that everyone can speak so they will have to get used to English whilst they are still here.*

While Lehlohonolo does not connect failure or success in mathematics to language, in the above extract he seems to be suggesting that learners should choose to learn in English because lecturers in higher education institutions are only able to teach in English. While this view sounds pragmatic it also signals an emergence of a conflicting cultural model for Lehlohonolo, which says even if there is no causal link between success in mathematics and the language used for learning and teaching, English is the only sensible choice for learning and teaching mathematics.

The above suggests that the learners' positioning and cultural models are not as clear as those of the teachers. What we can see is that the learners who prefer to be taught in English positioned themselves in relation to English. Nhlanhla was the only one who preferred English and also positioned herself in relation to mathematics. Tumi and Sipho were more concerned with gaining fluency in English so that they could access social goods such as jobs and higher education. They enacted the same cultural model with the teachers that *English is international.* This cultural model emphasises the belief that the acquisition of the English language constitutes the major content of schooling. This is inconsistent with the content of schooling, which is about giving epistemological access. It is also inconsistent with research and the Language in Education Policy (LiEP) in South Africa, which promotes multilingualism and encourages use of the learners' home language. An important question to ask about this policy is how can anybody choose to learn and teach mathematics in any language other than English in a context like South Africa where English is as dominant as it is. The hegemonic power of English makes it the only possible choice for teaching and learning. The assumption

embedded in this policy seems to be that mathematics teachers and learners in multilingual classrooms together with their parents are somehow free of economic, political and ideological constraints and pressures when they apparently freely opt for English as LoLT. The LiEP seems to be taking a structuralist and positivist view of language, one that suggests that all languages are equal and can be free of cultural and political influences.

As indicated earlier, the learners who positioned themselves in relation to mathematics seemed to be working with conflicting cultural models — one that is about mathematical understanding and the other that is about English fluency. While teachers also worked with conflicting cultural models, they did not position themselves in relation to the mathematics.

What does this mean for research and practice?

The literature argues that to facilitate multilingual learners' participation and success in mathematics teachers should recognise their home languages as legitimate languages of mathematical communication (Khisty, 1995; Moschkovich, 1999; 2002; Setati & Adler, 2002). As indicated earlier, all the studies that recommend the use of the learners' home languages have been framed by a conception of mediated learning, where language is seen as a tool for thinking and communication. These studies foreground the mathematics but do not consider the political role of language. The analysis presented in this work shows that the language choices of teachers and learners who prefer English are informed by the political nature of language. The challenge is bringing together the need for access to English and the need for access to mathematical knowledge. Furthermore it suggests that when learners bring the two together, the need for access to English tends to dominate.

A detailed analysis of a lesson taught by Kuki suggests a relationship between the language(s) used, mathematics discourses, and the cultural models that emerged (Setati, 2005). During the lesson, Kuki switched between English and Setswana, the main language of her learners. Her use of English tended to produce procedural discourse while her use of Setswana tended to produce conceptual discourse (for a detailed discussion see Setati, 2005). While it can be argued that the observations made in Kuki's classrooms cannot be generalised to all the teachers in multilingual classrooms, they give us an idea of what the dominant use of English by teachers in multilingual mathematics classrooms in which learners are not fluent in English can produce.

Recent research in South Africa points to the fact that procedural teaching is dominant in most multilingual classrooms (Taylor & Vinjevold, 1999). In most cases, this dominance of procedural teaching is seen as being a function of the teachers' lack of or limited knowledge of mathematics. What the above discussion suggests is that the problem is much more complex.

Conclusion

The analysis presented shows that teachers and learners who position themselves in relation to English are concerned with access to social goods and are

positioned by the social and economic power of English. They argue for English as LoLT. Issues of epistemological access are absent in their discourse. In contrast, learners who position themselves in relation to mathematics and so epistemological access, reflect more contradictory discourses, including support for the use of the learners' home languages as LoLT. The work presented in this article could provide an important contribution in dealing with the complex issues related to teaching and learning in multilingual classrooms. Much remains to be done.

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Note

1. Setswana is one of the 11 official languages in South Africa. The other official languages are: IsiZulu, IsiXhosa, TshiVenda, Xitsonga, Sesotho, Isindebele, Siswati, Sepedi, Afrikaans, and English.

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