Mathematics education and language: Policy, research and practice in multilingual contexts

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Introduction

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

Lindi said the above after 18 months of being involved in a study focusing on language practices in multilingual mathematics classrooms in South Africa. Lindi's views in the above quote capture the views of many teachers who teach mathematics to English second language (ESL) learners in multilingual classrooms in South Africa. These teachers share main languages with the learners but teach mathematics in a language that is neither theirs nor the learner's main language. This paper explores the relationship between language and the teaching and learning of mathematics in multilingual contexts from the perspective of such teachers and their learners.

Language and the ability to communicate mathematically is generally seen by both research and curriculum policy as a central aspect of learning and teaching school mathematics. While some research has been done to explore what this emphasis on language and communication means for teaching mathematics in bilingual or multilingual classrooms (see for example; Adler, 2001, Setati, Adler, Reed and Bapoo, 2002, Moschkovich, 1999) there has not been much focus on the language choices of teachers in these classrooms and how they relate to those of learners. Multilingualism is increasingly becoming a common feature of mathematics classrooms around the world. As Francheschini (1998: 62) argues, monolingual speakers represent a minority rather than the majority of the world's population. By multilingual contexts I refer to contexts in which there is a presence (valued or not) of more than one language, whether at the level of individual students and teachers, classes, schools or societies.

Multilingualism is the result of immigration (e.g. USA, Australia, Singapore, and most European countries), colonisation (e.g. most African countries, India, Pakistan) and the presence of indigenous peoples (e.g. USA, New Zealand). The political movement and positioning of people is a major factor that contributes to the world becoming more multilingual. Multilingualism is a factor in individual learning, classroom interaction, approaches to teaching, curriculum planning and development, assessment and policy-making in mathematics education.

In my recent work I have argued for the importance of research into the relationship between language and mathematics education in multilingual classrooms to recognize and acknowledge the political role of language. The purpose of this paper is to elaborate this argument/proposition by presenting an analysis of data collected through interviews with mathematics teachers and learners. The data analysed is drawn from two research projects in multilingual mathematics classrooms in South Africa. The choice of South Africa as a focus for the paper is convenient but also appropriate since South Africa is one of the most complex multilingual countries in the world. While the multilingual nature of the South African mathematics classrooms may seem exaggerated, it is not untypical.

The paper begins with a theoretical discussion and a review of literature on the role of language and its use in multilingual mathematics classrooms. These discussions provide a theoretical context for a description and analysis of data collected through interviews with secondary school multilingual mathematics learners whose main language is not English and multilingual teachers who teach mathematics to English language learners. From these theoretical and empirical bases I draw the main argument of the paper which illuminate the language choices of teachers and learners in multilingual classrooms that schools, teachers, parents and learners are not free of economic, political and ideological constraints and pressures when choosing their preferred language of learning and teaching mathematics in multilingual mathematics classrooms in South Africa.

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

Language, like multilingualism, is always political (Hartshone, 1987; Reagan and Ntshoe 1992; Mda, 1997; Friedman, 1997; Heugh, 1997; Granville; Janks; Mphahlele; Reed; Watson; Joseph and Ramani, 1998; Gee, 1999). As Gutiérrez (2002) argues, language is one of the characteristics that are used in society to determine power. 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 (Reagan and Ntshoe 1992). African opinion never became reconciled to the extension of the home language being used as a language of learning and teaching beyond Grade 4, nor to the dual medium policy (of English and Afrikaans) in the secondary school (Hartshone, 1987: 70). The 1976 uprising, which began in Soweto and spread all over the country was initially sparked by the promulgation of a language policy, which prescribed the use of Afrikaans as a language of learning for all African children at secondary school. It is also well known that in South Africa and many other African countries change in political power has been linked to change in the language policy of the country.

Language is always political not only at the macro-level of structures but also at the micro-level of classroom interactions. I have previously argued that language can be used to exclude or include people in conversations and decision-making processes (Setati, 1998). Zentella (1997) through her work with Puerto Rican children in El Bario, New York argues that language can bring people together or it can separate them. Language is one way in which one can define one's adherence to group values. It can therefore be argued that decisions about which language to use, how, and for what, in multilingual mathematics classrooms are not only pedagogic but also political. While most research in general education on language and minority learners is strongly rooted in the socio-political context of learning (Cummins, 2000), in most research on multilingualism and mathematics education this political role of language is not considered in the analysis of data. For example Adler (2001) in her study in multilingual classrooms in South Africa highlights three dilemmas that teachers in multilingual classrooms are facing: the dilemma of transparency, the dilemma of mediation and the dilemma of code-switching. Adler's description of the dilemmas is crucial and highlights the fundamental pedagogic tensions in multilingual classrooms that cannot be resolved once and for all. However, she does not explain in specific detail why teachers in multilingual mathematics classrooms experience these dilemmas in the way that they do. All mathematics teachers face language challenges in their classrooms, however, these challenges become more complex in multilingual classrooms in which learners learn mathematics in a language that is not their home

language. According to Adler, teachers in multilingual classrooms face a challenge of keeping a balance between implicit and explicit teaching of the mathematics language (dilemma of transparency); between informal and formal spoken language (dilemma of mediation) and a continual dilemma of whether to switch or not to switch languages (dilemma of code-switching) in their day-to-day teaching. Adler's analysis helps us understand the complexity of language use in multilingual classrooms and highlights the fundamental pedagogic tensions that cannot be resolved once and for all.. While Adler posits an explanation that the dilemmas are at once personal and contextual, as mentioned above she does not explain in specific detail why teachers in multilingual contexts experience these dilemmas in the way that they do.

I agree with Gutiérrez (2002) that to ignore the political role of language in mathematics education research and practice would assume that power relationships do not exist in society. In their article entitled "Teaching mathematics in multilingual classrooms" Gorgorio and Planas (2001) explored the role of language as a social tool within the mathematics classroom and the role of language as a vehicle in the construction of mathematical knowledge. They argued that it is not possible to separate the social, cultural and linguistic aspects of mathematics teaching and learning. As the analysis of data in this paper will show, it is also not possible to ignore the socio-political aspects of language when exploring multilingualism in mathematics education. If we are to explain language choices and practices in a coherent and comprehensive way we have to go beyond the cognitive and pedagogic aspects and consider the political role of language in multilingual mathematics classrooms.

In this paper I use the work of Gee (1996, 1999) to explore and explain the language practices and choices of teachers and learners in multilingual mathematics classrooms beyond the pedagogic and cognitive. Moschkovich (1996, 1999, 2000), whose research focuses on Latino bilingual mathematics learners, argues that bilingual learners bring into the mathematics classroom different ways of talking about mathematical objects and different points of view of mathematical situations. In her analysis of mathematical conversations in a bilingual classroom in the USA, she highlights how a teacher supports Spanish-speaking third graders in their mathematical discussions in English within the public domain. The strategies the teacher used included "modeling consistent norms for discussions, revoicing learner contributions, building on what learners say and probing what learners mean" (Moschkovich, 1999: 18). She further argues that mathematics teaching in bilingual classrooms should focus on mathematical discourse rather than on errors in English vocabulary or grammar. She emphasises that a discourse approach can also help to shift the focus of mathematics instruction for English language learners from language development to mathematical content. Moschkovich's work highlights the dual challenge that teachers in bilingual and multilingual mathematics classrooms face; that of continuously needing to teach both mathematics and the language of learning and teaching (in this case English) at the same time. Moschkovich (1999, 2002) uses Gee's framework to look at mathematical discourses, but she does not acknowledge the political role of language in classroom interactions. She uses Gee's notion of discourses to focus on situated meanings and resources in bilingual mathematics classrooms. Like many researchers, Moschkovich emphasises the importance of valuing the learners' languages and mathematical discourses. But what does it mean to value the learners' languages in a context where those languages are not valued or do not have symbolic power?

Gee's work is particularly relevant in this paper because he considers language as always political (Gee, 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 not 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). Such is the situation with teachers and learners in multilingual mathematics contexts. Their decisions about which language to use, how and when do not only reflect curriculum and pedagogic decisions, but also the political context of their practice together with the identities and activities they are enacting.

Identities can be multiple and are inevitably connected to socio-political histories of people and their cultural practices together with the ideologies inherent in those practices (Wenger 1998; Nasir, 2002). Fairclough (1995) refers to institutional and social identities. According to Fairclough, institutions impose upon people ways of talking and seeing as a condition for qualifying them to act as subjects. This means that institutions impose particular identities, which shape and are shaped by individuals as they enact them. For example to be a mathematics teacher or learner one is expected to master the discursive (ways of talking) and ideological (ways of seeing and valuing) norms which mathematics education attaches to being a mathematics teacher or learner. That is, one must learn to talk like a mathematics teacher or learner and see and value things (i.e. things like learning and teaching) like a mathematics teacher or learner. These ways of talking, seeing and valuing are inseparably intertwined in the sense that in the process of acquiring the ways of talking which are associated with a subject position, one necessarily also acquires its ways of seeing and valuing (ideological norms). Any social practice can thus be regarded as a speech and ideological community.

Mathematics education is a speech and ideological community and thus imparts ways of talking, seeing and valuing that are relevant for that practice. This is a kind of shared knowledge which people in mathematics education need in order to be regarded as participants. In cognitive anthropology, this shared knowledge, which is rooted in the practices of socio-culturally defined groups of people, is referred to as *culture* (Holland and Quinn, 1987). When talking about culture in this way, they do not refer to people's customs, artifacts and oral traditions, but to what people must know in order to act as they do, make the things they make, and interpret their experience in the distinctive way they do. Thus, they would argue that to be a mathematics teacher, one needs more than the mathematics content knowledge - one also needs the cultural knowledge of mathematics teaching. According to Holland and Quinn this cultural knowledge is organized into schemas that are called cultural models. Cultural models are presupposed, taken-for-granted models of the world that are widely shared (although not necessarily to the exclusion of alternative models):

> "Cultural models are shared, conventional ideas about how the world works that individuals learn by talking and acting with their fellows. Defined cognitively, cultural models consist of "schemas" that guide attention to, drawing inferences about, and evaluation of, experience. These schemas also provide a framework for organizing and reconstructing memories of experience" (Holland and Quinn, 1987 cited in D'Andrade and Strauss, 1992: 86)

Gee has developed and uses the notion of cultural models in socio-linguistics as one of the tools of discourse analysis. He describes cultural models as our 'first thoughts' or taken-for-granted assumptions about what is 'typical' or 'normal'. They do not reside in people's heads, but they are embedded in words, in people's practices and in the

culture in which they live. They are learned from and shared with other people through the media, written materials and through interaction with others in society (Gee, 1996, 1999). The question that is relevant for this paper is what cultural models about language and mathematics do teachers and learners in multilingual mathematics classrooms work with? Are the cultural models of teachers similar or different from those of learners?

In this paper I use the notion of cultural models as an analytic tool to describe and explain the language choices and practices of teachers and learners in multilingual mathematics classrooms. Cultural models allow us to focus on factors, inside and outside the classroom, beyond pedagogy and cognition that shape interactions about multilingualism in mathematics education.

Exploring the cultural models

From 1998 to 2002 I conducted a study focusing on language practices in multilingual primary mathematics classrooms. Central to the study and the substance of this paper is an understanding that language is much more than just a tool for thinking and communication. The study was in three phases and involved six mathematics teachers in multilingual mathematics classrooms in primary schools west of Johannesburg. Data was collected through teacher individual interviews, focus group interviews and classroom observations. A detailed analysis of one lesson taught by one of the six teachers - an experienced, qualified and policy-consistent mathematics teacher - suggested a relationship between the language(s) used, mathematics discourses and cultural models that emerged. The use of English tended to produce procedural discourse while the use of the learners' home languages tended to produce conceptual discourse.

The second study that I discuss focuses on the languages that multilingual secondary school mathematics learners prefer to be taught mathematics in. The data I analyse here is drawn from a wider study still in process, in which two groups of learners were interviewed. These learners are multilingual as they speak at least four languages. At the end of Grade 12 they will write a matriculation mathematics examination, which is set only in English and Afrikaans. The first group are Grade 11 learners from Soweto, the largest and most multilingual African township in South Africa with a population of about 3 million people. It is in Soweto where the uprisings against the use of Afrikaans as a language of learning and teaching erupted in 1996. The second group of learners are Grade 12 learners from Lulekani in Phalaborwa, to north in South Africa. Unlike Soweto, Lulekani has a limited English language infra-structure. While English is the language of learning and teaching in the school, the learners' exposure to it is mainly limited to the school context. The interviews with learners focused on their language preferences for learning mathematics. The Soweto learners were interviewed individually while the learners from Lulekani were given a task to interact on as a group.

The data on which I draw in this paper is from individual interviews and focus group interviews with the teachers, interviews with the learners. All data was transcribed and for this paper I have selected all extracts in which the teachers and learners talk about their language preferences for teaching and learning mathematics. To enable a focused analysis the transcripts were studied and the following questions from Gee (1999: 78) were asked for each utterance to guide the analysis of the cultural models that the teachers and learners are working with.

- What cultural models are relevant?
- How consistent are the relevant cultural models?
- Are there any competing or conflicting cultural models at play?
- What could have given rise to these cultural models?

To ensure a focus on language(s) and mathematical discourses, I paid specific attention to the following:

- Does the utterance focus on mathematics and its teaching and learning?
- Does the utterance focus on the symbolic power of language?
- Does the utterance focus on the Language in Education Policy (LiEP)?

Cultural models that emerged

Over and above all else, *English is international* emerged as a dominant cultural model throughout the interviews with both the teachers and the learners. All the six teachers stated ideological and pragmatic reasons for teaching mathematics in English. As the extracts below 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. Below are extracts from interviews with the teachers.

> 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*." (my emphasis).
>
> 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. Because all the time you encourage them to speak in English and then you give him the question that has been written in English you find that they trying to give you answer. Like for instance let me make an example, last year during exam time we had a problem children asking, raising their hands asking the invigilator all the question that they do not understand and the problem was the language not the question itself "(my emphasis).

The way in which the three teachers speak about English in the above extracts suggests that they are aware of the linguistic capital of English and the symbolic power it bestows on those who can communicate in it. These teachers see English as international and universal and thus 'bigger than' themselves. The way in which Kuki and Lindi express themselves in the above extracts suggests that they also do not want to take responsibility for the status of English. Kuki uses the phrase "I think", while Lindi uses "It is said". These expressions suggest 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 they see English as an important part of this preparation. None of the teachers challenged the power of English or the fact that textbook and examinations are in English while learners are not fluent in it.

For Lindi the additional motivation for using English is the fact that the mathematics texts and examinations are in English. Over the years, no mathematics textbook in South Africa was written originally 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, since this is the language of mathematics texts. As a result English has become the natural choice for teaching and learning mathematics.

Of all the teachers Kuki is 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. Kuki's utterance above suggests a tension between wanting to honour the African languages on the one hand, and on the other hand ensuring that the learners have access to English.

While the other three teachers did not explicitly highlight the international nature of English, they also indicated that they encourage their learners to use English. Below are the extracts:

> Gugu: "I think English, *it empowers* them [the learners], do you understand and 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 not to answer in English in lectures. So we have a problem with this language, *so at any early age they just become used to it"* (my emphasis).
>
> 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).

During the interviews, Gugu drew from her own experiences as a learner. As a teacher of multilingual learners who are still learning the English language, Gugu wants to make English accessible to her learners early in their schooling. In her view, making English accessible will assist in undoing the wrongs of the past, which she experienced. Gugu's view of making English accessible is consistent with Granville *et al.*'s (1998) recommendation that English should be made accessible to everyone in South Africa. Their argument is that "If everyone had access to English, English would no longer be an elitist language. In this way English could come to be seen as a resource, not as a problem" (Granville, et al., 1998: 259).

Mpule in the above extract highlights the importance of English for secondary school and higher education. Higher education in South Africa is offered in English and Afrikaans only. As a primary school teacher Mpule feels responsible to ensure that the learners are able to cope in higher classes and in her view the ability to speaking 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 a concern for mathematical competence may not be deliberate it is important to note.

The cultural model of English as an international language which positions English as the route to success was also evident during the interview with learners. Tumi, a Grade 11 learner in Soweto explains in the extract below why mathematics should be taught 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".
> Researcher: "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 I'm going to have problem. So I think we should talk English. English is okay." (Tumi, Grade 11 - Soweto)

Tumi sees English as an obvious language for learning and teaching mathematics. It is 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 is like common sense to him. Another factor that emerges in the extract above is the fact that Tumi wants to be able to talk about mathematics in English with white people. It is interesting that he is not concerned about the white people speaking his language. Tumi was not the only student who mentioned the importance of English for communication with white people. Below is an extract from another learner from Soweto (the English translation is in brackets):

> 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 Sizulu, 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 Sizulu, you will loose the job because you don't know English.] (Sipho,Grade 11 learner, Soweto)*

The extract above indicates that Sipho's preference to be taught mathematics in English is related to his view of English as a language that gives access to employment. Sipho also connects employment ('jobs') with white people by arguing that during the interview one must be able to express oneself in English because interviews are conducted by white people. This connection of jobs to white people is as a result of the socio-political history of South Africa in which the economy was and still continues to be in the hands of white people, hence Sipho's expectation that a job interview will be conducted by a white person in English. Basani, a Grade 12 learner in Lulekani also thought about jobs.

> Basani: "English is an international language 'cause, if we are not taught maths in English, we are going to have a problem when

> we go to the universities. When we … want ummm….Jobs, you find that ummm… you are given an interview in English. So, how … how are you going to pass ummm… that interview? How are you going to cope in the universities, cause its obvious, the lectures are going to use English?" (Basani, Grade 12, Lulekani)

Basani in the above extract also recognises the international nature of English and its importance in higher education. As indicated earlier higher education in South Africa is in English or Afrikaans and learners need to pass a school-leaving examination in English as a first or second language if they are to enter and succeed in any professional training programme in South Africa.

During their interaction with each other, the learners from Lulekani were adamant that English should be emphasised in their school. They viewed fluency in English as a critical aspect of what it means to be successful. They compared themselves with learners in former white schools and felt disadvantaged by their limited access to English. Lulama explains the disadvantage in the extract below.

> Lulama: "Ok, one thing ummm…I think that's a real issue ok, the people that are in Frans du Toit school, when they are like ok, with their friends, ok, for example, during break, they talk English, when they are outside they talk English. We here at school we don't talk English at all. We only talk English when we are learning. When we go outside we speak our languages with our parents, when we go outside we speak our languages with our friends, not actually English. But the people at Frans du Toit they are like ok, when they are with their friends they talk English, with their teachers they talk English. Most of them at home they talk English with their parents. So I think that's another problem that we actually don't speak English at all." (Lulama, Grade 12, Lulekani).

While Lulama is not explicitly discouraging the use of their home languages in the above extract, she is suggesting ways of improving their fluency in English. It is important to note that Frans du Toit is a former white school that desegregated after 1994 and now accepts learners of all races. Only parents who can afford to pay the fees send their children to schools such as Frans du Toit. Unlike at Lulekani, learners at Frans du Toit are required to take English at first language level. In essence, Lulekani caters for learners from a lower socio-economic class. Since the desegration of schools, the most explicit marker of difference between schools such as Frans du Toit and Lulekani are the learners' fluency in English. Lulama's preference for English and desire to have the situation that is happening at Frans du Toit can thus be assumed not to be only about language.

The analysis presented in this paper highlights the teachers and learners' preference for English as the language of learning and teaching mathematics. Furthermore, it suggests that while the teachers are experiencing the tension between encouraging the use of English and encouraging fluency in the learners' home languages, this tension was not necessarily experienced by the learners. A glaring absence in both the teachers' and learners' interactions above is any reference to how learning and teaching in English, as they prefer, would impact on the quality of the mathematics that is learned and taught. This silence suggest that the teachers and

learners' language choices and practices are indeed not necessarily shaped by pedagogical or curriculum factors. What is more prevalent in the reasons for preference of English are: economic, political and ideological factors.

Discussion

The dominance of the cultural model that English is international that emerged in this analysis is inconsistent with the Language in Education Policy (LiEP) in South Africa which promotes multilingualism and encourages use of the learners' home language. While the teachers and learners were clear about the language they prefer to teach and learn mathematics in, their reasons for choosing English were not related to mathematics. None of them mentioned the mathematical benefits or constraints of learning and teaching in English suggesting that their preference to learn and teach mathematics in English is not related to the quality of teaching and learning.

The *English is international* cultural model emphasises the belief that the acquisition of the English language (both oral and written) constitutes the major content of schooling. There is a sense, in South Africa, that the purpose of school is to teach English. This identification of schooling with the learning of a second language enabling wider communication (English) is not unique to South Africa. Richard Benton, for example, describes the same attitude to formal education among the Maori in New Zealand in the seventies. "Learning a second language has become almost synonymous with schooling for those people who continue to use the local vernacular at home and in familiar settings." (Benton, 1978: 126 in Hornberger, 1988).

According to Hornberger (1988), the same situation exists in Peru, where education has always meant learning Spanish (a second language enabling wider communication). The identification of English with schooling in South Africa is therefore not surprising, since English is ideally suited to both functions of education in South Africa. It is both the vehicle of acculturation, and an easily identifiable trait for maintaining privilege. In the same way, an African language is an easily identifiable trait of lower status and disadvantage. The dominance of English in school and in multilingual mathematics classrooms is a reflection of the status that has been given to this language outside school.

English is dominant in politics, commerce and the media in South Africa. It is seen as a key to academic and economic success, and therefore being fluent in it is seen as opening doors, which are closed to vernacular speakers (Friedman, 1997). According to Pennycook (1994) the dominance of what he refers to as 'the discourse on English as an international language' is experienced all over the world. This discourse is linked to social and economic power, both within and between nations. In linguistics and applied linguistics circles, the spread of English as an international language is considered to be natural, neutral and beneficial (Platt, Weber and Ho, 1984; Kachru, 1986).

> "It is considered natural because, although there may be some critical reference to the colonial imposition of English, its subsequent expansion is seen as a result of inevitable global forces. It is seen as neutral because it is assumed that once English has in some sense become detached from its original cultural context (particularly England and America), it is now a neutral and transparent medium of communication. And it is considered beneficial because a rather blandly optimistic view of international communication assumes that this occurs on a cooperative and equitable footing." (Pennycook, 1994: 9).

While I do not agree with the view that English, as an international language, is natural, neutral and beneficial, the analysis in this paper has shown that in South Africa some teachers and learners see English as a necessary and neutral choice for the language of learning and teaching LoLT). It seems therefore that no amount of posturing on multilingual policies can untrammel the dominance of English, until the larger power structures have been changed. Lindi's words, which I started the paper with, clearly show the challenges that teachers in multilingual contexts have to deal with when it comes to language choice and use.

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

Lindi is concerned that her school should not loose learners as a result of using Setswana as a LoLT. She also highlights the fact that parents' of the learners in her school want their children to be taught in English. Like all the other teachers and learners who were interviewed, Lindi does not say anything about the learning and teaching of mathematics. It is clear from this analysis that while the progressive language policy that South Africa has introduced is necessary it is not sufficient to deal with the dominance of English. The assumption embedded in this policy is 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 which suggests that all languages can be free of cultural and political influences. Given the dominance among teachers and learners of the cultural model that *English is international*, the freedom to choose the LoLT in South African schools does not exist in reality. It is a chimera.

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