

Talking about Multilingual Classrooms: A Critical Discourse Analysis of Mathematics Teacher Educators' Talk.

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This paper forms the initial stage of a wider study of my doctoral research exploring the language practices of mathematics teacher educators in initial Teacher Training Colleges (TTCs) in Malawi. Four mathematics teacher educators from two different TTCs were involved in this study to establish the language practices that mathematics teacher educators produce as they prepare the students teachers in their mathematics classrooms. In this paper I use principles of critical discourse analysis (Fairclough, 1989, 2003) in order to identifying and describe the mathematics teacher educators' perceptions about a multilingual classroom and how the language that they use positions them and the student's teachers. An analysis of the data based on the pre-observation interviews suggests that there are two different viewpoints that these teacher educators hold about a multilingual classroom that arise from the traditional view that the society holds about teachers. In this study it is evident that the mathematics teacher educators can be seen to position themselves in a situation of holding a relative traditional view of powerful position as assumed by the larger society in a classroom.

Introduction

Research on the teaching and learning mathematics in multilingual classrooms provide clear and concrete information on the kind of problems and challenges that primary mathematics teachers meet in these types of environments. This information illuminates to some extent the kind of learning environment that needs to be created in order for all learners to have access to mathematics in their formal education. In a multilingual classroom, the teaching and learning of mathematics is complex (Adler, 2001; Moschkovich, 1999, 2002; Setati, 2005). It has its own register and a range of discourses (Pirie, 1998) that needs to be learned. Not only that, in most cases the language of learning and teaching in a mathematics classroom is different from the first or home language of the learners which adds to the already complicated situation.

In the mathematics classroom, learners come with their unofficial discourses (Bourne, 2001) which according to the author have been identified as not worthy of serious consideration in relation to learners learning. These discourses include the use of their home languages which is immediate and active in a mathematics classroom. As these learners learn in a mathematics classroom, these unofficial discourses are also present and this is referred to as informal way of talking mathematics. However, what matters in a mathematics classroom or school setting is the official or formal way of mathematics talk (Setati, & Adler, 2000), of course which is itself a reflection of power relations in a society. Therefore, learners need to learn the distinction between the legitimate and illegitimate way of talking mathematics. In most cases they learn these discourses in a mathematics classroom through their teacher. And a lot has been reported on how mathematics teachers struggle to help these learners to develop a formal mathematical talk, for example (Moschkovich, 1999; Halai, 2001; Adler, 2001).

However, in all these ways that teachers employ in a mathematics classroom to help learners develop a formal mathematical talk that will be acceptable in a school environment, there are problems and difficulties that arise as they teach. They find themselves in different dilemmas that need to be handled sometimes right there and then. For example Adler (2001) gives us a clear account of the problems that

exist in the classrooms of multilingual South Africa. She describes three dilemmas for teachers in multilingual classrooms; the dilemma of code switching, when learners and or teachers switch from the language of instruction to the first language, the dilemma of mediation, when teachers move towards the learner's preferred language, and the dilemma of transparency, when the teacher spends time explicitly teaching mathematical language.

With all these issues at hand, teachers training programs have a lot of work of how they can help the teachers to cope with the challenges that exist in a multilingual mathematics classroom. It is because of the argument above that for mathematics teacher educators to be in a better position to portray the ideal practices and provide meaningful ways that reflect a mathematics multilingual classroom, they need to understand what a multilingual classroom is, what it entails to teach in those environments. They need to be aware of what goes on in the teaching and learning mathematics in a multilingual classroom, what challenges teachers go through in these environments and therefore act accordingly.

In this paper, I present a discussion of mathematics teacher educators' subjective reality of a multilingual classroom. I found out that the educators interviewed present two different viewpoints of a multilingual classroom which reflects in turn on how they position themselves. These views and positioning become apparent in the pre-observation interviews.

Theoretical orientations and the analysis of the data

In this study I used Critical Discourse Analysis (CDA) as developed by Fairclough (1989, 2001) to analyze the language practices (language use) of the mathematics teacher educators. CDA for Fairclough, is concerned with the investigation of the relation between two assumptions about language use; that language is both socially shaped and is socially shaping (Fairclough, 1995, p 131). Through the notion of different functions of language in texts, Fairclough identifies the theoretical assumption that texts and discourses are socially constitutive: "language use is always simultaneously constitutive of identities, social relations and systems of knowledge (Fairclough, 1995a, p.134) where texts in Fairclough's terms, refers to the written or spoken language produced in a discursive event, (Fairclough, 1993, p. 138), and a discursive event is an instance of language use, analyzed as text, discursive practice, social practice" (Fairclough, 1993, p. 138). Thus discursive event refers to text, discursive practice (production and interpretation of text), and social practice.

Waller, (2006) explains that the ideational function of language comprises systems of knowledge; the interpersonal function creates identity and the relationship between them; and the textual function creates discourse. Thus every text contributes to the constitution of these three aspects of society and culture. Fairclough (1995a) claims that these three aspects are always present simultaneously and one may take precedence over the others.

Besides, CDA aims at raising awareness of how peoples' subjectivities are shaped, influenced and constrained by institutional social structures by demonstrating the extent to which texts produced by an individual constructs or position the participants' in the community (Fairclough, 1989). For Fairclough, these structures determine the role people act out in particular social situations, the identities and interpersonal relationships they perform, and the representation of the world that gets taken for granted as they interact with others. Thus, CDA gives tools to analyze how language symbolize the community in particular interests and how texts position the members of the community and produce the relations of institutional power at work in classrooms. It assigns special significance to the structure of speech

and texts and provides methods for specifying the linguistic features of different types of discourse units and the way they are connected together into larger units of meaning.

Background and research methods

Language in Education Policy (LiEP) in Malawi

Malawi uses English as official language and Chichewa as a national language. The language in education policy requires that learners in the first four years of schooling should be taught in their home languages, (Ministry of Education, Sports and Culture (MoESC), 1996) and English as the language of learning and teaching (LoLT) for all the upper classes in primary, secondary schools and tertiary education.

Teachers training colleges in Malawi, Mathematics teacher educators and their home languages

In Malawi, there are six TTCs located in all the three regions. Two of them are owned by churches while four are government owned and all are responsible to the Ministry of Education which provides salaries of staff and stipends for trainees. In this study, data was collected from two TTCs, Chayamba (CTTC) (not real name) from the central region and Kachere TTC from the southern region. Both institutions are owned and run by the government and they are mixed college with the capacity of 700 students in each college.

The four mathematics teacher educators to be presented here come from different regions and have different home languages. Two of them, Mrs. Joshua and Mr. Lukhere, come from the northern region of Malawi and Chitumbuka is their home language. Both of them were teaching at Kachere TTC. In their classes there were four major languages which included Sena, Lomwe, Chichewa and Yao. At the time of study both teacher educators had a bachelors degree in education obtained from University of Malawi – Chancellor College majoring in mathematics in the year 2002, and both had three years teaching experience at the TTC. The other two teacher educators, Mr. Otani and Mr. Chipasula, come from the central region and they both speak Chichewa as their home languages. These two were teaching at Chayamba TTC. In their classes, there were two major languages, Chichewa and Chitumbuka. At the time of the study Mr. Otani had a T2 certificate in education obtained from one of the TTCs in Malawi and he had eleven years of teaching experience. Mr. Chipasula had a bachelor's degree in education majoring in mathematics obtained from the University of Malawi – Chancellor College.

In my analysis, I am concerned to highlight the mathematics teacher educators' language practices, how the language that they use positions them, the teaching of mathematics and their student's teachers from the pre-observation interviews. My concern here is to identify the predominant discourse in mathematics teacher educator's texts during the pre-observation interviews. My question is thus: **What discourse is predominant in mathematics teacher educator's texts during the pre-observation interviews?**

The pre-observation interviews were fully transcribed and then analyzed. The data analysis involved the establishment of formal features in the text and interpretation of the text which involved the identification of the ways of acting and ways of being and also positions being presented in the talk by the mathematics teacher educators. The process then included comparing and contrasting the mathematics teacher educator's language used. In this approach I looked for common as well as different assumptions, identities, positions, as well as what differences in representations exist. This analysis then grouped together the differences and similarities (Miles & Humberman, 1994; Thompson,

2004) to identify themes. The themes were then reduced by fusing them together. The differences were looked at within the context of social practice that is; shared or different beliefs, values, and dominant influence, in an attempt to explain the differences and or similarities.

Findings and Discussion

Who is multilingual in a mathematics classroom?

From the pre-observation interviews analyzed, it was found out that all the mathematics teacher educators agree that a multilingual classroom is where different languages are spoken. However they seem to differ on who speaks these languages. Two of them explained that “*multilingual classroom is where students speak different languages*” and the remaining two seemed to say that; “*multilingual classroom is where we use two or more languages*”. These two explanations were given in response to the question regarding their understanding about a mathematics multilingual classroom. Extract one below represents two texts from the two mathematics teacher educators who hold the first view and then extract two represents the two texts of the second view.

Extract one

Mr. Otani: alright, a multilingual classroom is a classroom where by ah, Students express themselves in different languages, such as Chichewa, English, Tumbuka or Yao. So that one, that’s what we call a multilingual classroom.

And Mr. Lukhere:

Mr. Lukhere: multilingual classroom may be should refer to a classroom where the combination of students is that, ah which those students they speak different languages.

The educators’ knowledge in these extracts, about a multilingual classroom concern speaking different languages. However, the choices of the language used in these texts represents the way in which they assume “who” speaks these different languages in the multilingual classroom. The discourse being represented in the first two texts of Mr. Otani and Mr. Lukhere suggests that a multilingual classroom is where *students* speak different languages. Their statements are silent about them speaking another language in the classroom. The assumption here is that the only language that these teacher educators speak in their classrooms is the language of learning and teaching, which in this case is English. And therefore they exclude their home languages from the languages present in the classroom. Their perception is that a multilingual classroom is where students speak different languages.

The view that “students speak different languages” reveals that the teacher educators and the students’ teachers are on different positions and have different identities. The assumption behind this text as will be seen in the next section may be that speaking different languages signifies failure to speak English in class and therefore, these educators do not want to associate themselves with that. Therefore we can say that the language used by these two mathematics teacher educators represents the way in which teachers are considered as holding the powerful positions and identity which is different from the students, which is the dominant approach by most teachers globally. In other words, these texts project the dominant global assumptions about teachers. Thus, the language displayed by Mr. Otani and Mr. Lukhere, confirms the dominant ways of how mathematics teacher educators may see and position themselves in a multilingual mathematics classroom. This view however does not peel away the layers of power and authority that were legitimated by the education policies and the society at large.

On the other hand, the next two texts represent the other two mathematics teacher educator's views who explained that a multilingual classroom is where "we" (meaning both the mathematics teacher educators and the students teachers) use two or more languages.

Extract two

Mr. Chipasula: multilingual classroom is a classroom where by we use two or more languages

And Mrs. Joshua

Mrs. Joshua: multilingual in my understanding, multilingual is about using different languages

It appears that Mr. Chipasula and Mrs. Joshua hold a different belief from the other two mathematics teacher educators. The use of this language suggests the inclusion of the mathematics teacher educators being involved in the use of different languages in their mathematics classroom. It implies that, they too, speak other languages different from English. The assumption here may be that the mathematics teacher educators speak other languages in class apart from the language of learning and teaching. Unlike the previous two texts, Mr. Chipasula and Mrs. Joshua's text appear to include their home languages as part of the languages present in the classroom and it reveals that they are part of the system just as students. They represent the classroom languages and its involvement by the phrase "we use". This language represents the way in which the mathematics teacher educators may be considered as holding the same identity and sharing power with the student's teachers.

In summary the first view being presented here excludes the home language of the mathematics teacher educators from the languages present in the classroom, and represents the dominant discourse in the society that students do not have the same identity and position with their teachers. The second view however represents a different discourse where students and teachers hold the same identity and that power is perceived as something that can be shared among students and teachers.

These allegations are also supported by analysis of other parts of the interview data as discussed in the next section below'.

Multilingual because students fail to express themselves in English

From the data collected it was also found that the two mathematics teacher educators interviewed in this research explain that their classes are multilingual because "*their students fail to express themselves in English and so they use other languages such as Chichewa and Chitumbuka*" This explanation is a dominant discourse among all the participants. For instance, consider the following texts:

Mr Otani: yah, that one is multilingual because there are some who can not express themselves in English so we accept Chichewa

And Mr Chipasula

Mr Chipasula: yes it's multilingual in the sense that our, sometimes, our students fail to express themselves, so they are free to use Chichewa

Of the many things which this text suggests, what comes to the forefront is the mathematics teacher educators association of "multilingualism" and "failing to express themselves in English". According to the explanations given by the educators as to why their classrooms are multilingual, Mr. Otani and

Mr. Chipasula explain that their classes are multilingual because there are (some) students who fail to communicate in English and so the students are allowed to express themselves in Chichewa. Subsequently, their classes are multilingual not because students speak different home languages but because the students are allowed to speak Chichewa if they fail to speak in English. However, the question may be, if the students' teachers were able to explain themselves in English, would the class cease to be multilingual.

Mr. Chipasula on the other hand, uses a different pronoun that reveals his change of positioning and identity. He says "... **our students fail to express themselves** ..." Since this is now going together with failure, he regains his legitimate identity as a teacher that he can not fail to express himself in English. It's only the students who can fail to do that. Even though he positioned himself at the same level with the students in the definition of multilingual classroom, he disassociates himself with the identity of being a failure to express himself in English. In other words, he may speak a different language in his mathematics classroom not that he has failed to express himself but he wants to help his students. This gives us another angle to see how he maintains his identity and maintaining his power as a teacher at the same time positioning himself at the same level with the students. He does not use the phrase "**we accept**" as in Mr. Otanis' case, rather he says "**so they are free to use Chichewa**". It seems he tries to distribute power in the classroom equally.

As explained above Mr. Chipasula used "our" meaning that he posses and have control on the student's teachers, and his use of "free" here seems to contradict himself. It seems that he wants to balance his language so as not to appear having full control of the students but someone who shares his power with the students. This type of empowerment if practiced may be important, or rather a "safe" way of ensuring educators – students participation. However, in his language, it seems that this empowerment is limited as Mr. Chipasula explains that it's only Chichewa with a bit of Chitumbuka which is commonly used despite the presence of other languages in his classroom. This is not surprising because Chichewa is the educators' home language. He does not understand Chitumbuka or the other languages present in his classroom. However, just because those speaking Chitumbuka are in a majority in his class, so "they are free" as he says, to speak it although not to a greater extent. This is seen in the extract below.

Extract four

R: so what about like may be like chitumbuka, you said most students are Chichewa and chitumbuka, I don't know, are they allowed to use chitumbuka

Mr Chipasula: laughing sometimes they, when they fail to express or to say anything in Chichewa they speak tumbuka but not to that extent

So we may as well say that mostly in Mr. Chipasula's words it appears to be the Chewa speaking students that are more empowered than the other students. However, the use of Chitumbuka in his class despite that he does not understand it, may be a structure and mechanism for establishing 'one'-ness of the classroom. That is, a sense of solidarity among the participants in the classroom, around the practice of language.

Mrs. Joshua appears not to be very sure of her class. She says "**it should be multilingual.**"

Extract five

R: how would you classify your class?

Mrs Joshua: it should be a multilingual.....

R: apart from English and Chichewa any languages that you use

Mrs Joshua: ah I should say no because these other languages, like others want understand ah but for Chichewa because its almost anyone, yah, so that's why, but we are supposed to use English but just for the sake of making yourself clear at the same time making them understand, yah,

The language used in this extract suggests that Mrs. Joshua is not very sure whether her class is multilingual or not. She says “**it should be multilingual**” when she was asked if her class is multilingual. She explains that they use two languages, English and Chichewa, in her class. She further says that she does not use any other languages apart from these two. She refers to languages that are not used in her class as “*these other languages.*” Mrs. Joshua then makes a statement that “*but we are supposed to use English.*” English as explained earlier is the official language in Malawi and the language in Education policy for all tertiary education. This phrase indicates that Mrs. Joshua understands that they are supposed to use English in their classrooms, however for the sake of making herself clear at the same time making the students teachers understand her, and she uses Chichewa. “*We are supposed to*” embeds the turn in Mrs. Joshua’s use of local languages and through her use of “*but*” she establishes a contrast between what she does and what she is supposed to do. Her statement reveals that she only uses Chichewa out of her wish to make herself clear and the students to understand but otherwise she is not supposed to do like that. What compels her to use Chichewa is the failure of students to understand her when she talks in English, which is different from what compels the other mathematics teacher educators discussed above. What compels the other mathematics teacher educators to allow their students use other local languages is the failure of the students to express themselves in English.

The question that one would wonder is why these mathematics teacher educators do described a multilingual classroom in this way. There might be several different factors, either taken together, or individually. For example the view that African language is inferior to English and the view that language is an element of the discipline of linguistics (that is outside the realm of mathematics). It is possible to argue that these issues have made these mathematics teacher educators to describe multilingual classrooms as such.

Another reason as to why these mathematics teacher educators seem to mention of using different languages is because they want to help the student teachers on how they would implement the language in education policy. It seems that in their classrooms, Chichewa is used because of the requirement in education policy which indicates that the LoLT for the first four years of schooling should be the “mother” tongue language of the learners. So they do that to help the student teachers be able to implement this LiEP in their schools. This is evidenced by a number of texts from the mathematics teacher educators and the way in which the use of a different language (Chichewa) is represented. For example

Mr. Chipasula: sometimes when we are discussing how to teach and the topic is from STD one, two or up to four, they also use Chichewa ... because they will use Chichewa when teaching

And minutes later he said

Mr. Chipasula: mainly we use Chichewa when we are, I think as I have already said when we are discussing something about primary school teaching yah for example we say, how can we

introduce addition in standard one, can expect, express in English, but we say but you will use Chichewa when teaching, can you try to express in Chichewa

The other mathematics teacher educators also explained the same thing.

Mr. Otani: they use Chichewa now, instead of English they should use Chichewa, why because they are now going to teach in Chichewa

Mr. Lukhere: However when it comes to practicing they are supposed to, they are in a classroom situation the teacher is supposed to peer teach a certain topic that applies to may be standard two or three may be four, the normal practice is, that student is supposed to use Chichewa and for purposes of peer teaching ah the same applies to teaching practice, the teaching practice which normally happens at the demonstration school, if the students teachers are teaching standard one to four has to use Chichewa and for standard five to eight it has to be English. That's all that I can say

Mrs. Joshua: yah, of course that have an effect, ah I take that into consideration especially when doing micro teaching, when doing micro teaching if they are given lower classes like standard one to four they are supposed to do that in Chichewa,

Thus the use of Chichewa is intended to engender the student's teacher's ability to be able to implement the LiEP when they begin the actual teaching in various primary schools. Thus the language used in the texts, the responses and the discourses they represent and discussed above in this section suggest that the use of different languages are the tools that (1) help the students teachers "learn" to express themselves as teachers in training and (2) to comply with the LiEP.

Conclusion

What this paper has shown is its observations that the mathematics teacher educators say about multilingual classroom. What appears to be evident from the four mathematics teacher educators is that they hold certain perceptions about a multilingual classroom and that these perceptions tell them that both students and teachers can engage in speaking different languages in a classroom whereas other perceptions tell them that it is only the students that use different languages in the classroom. However, these views seem to be borne with the way they associate multilingualism with failure to speak in English in the classroom as required by the language in education policy.

As already indicated there are several different factors, either taken together, or individually, that may explain the type of talk of the mathematics teacher educators. Some of these may include: the view that African language is inferior to English; the view that language is an element of the discipline of linguistics (that is outside the realm of mathematics); a possible disconnect between linguistics and mathematics and the perception that including language in mathematics teaching might be too complex to combine. It is possible to argue that these issues have made these mathematics teacher educators not to accommodate or tackle the possible language challenges that mathematics teachers meet in multilingual classrooms.

However, the language used here represents the way in which the use of different languages are mystified by the society in general, which itself is the reflection of the dominant approach to the use of home languages in the mathematics classroom. Every body expects teachers to comply with the language in education policy and help the teachers to learn to express themselves. In other words, these texts project the dominant perspectives that both the mathematics teachers educators and the students

teachers assumptions about using a different language from English. Indeed such a discourse has apparently influenced the mathematics teacher educators into believing, socially constructing, acting and organizing on the assumption that the use of home languages are tools to help the students teachers and a way of training the students teachers to implement the language in education policy.

Also the language used above are in many ways what Fairclough (2003) would refer to as “untransformed language” of institutional discourses distributed by those in power. Untransformed suggests that they have a striking resemblance to the ways in which teachers are represented in the larger society (which includes, the structure of the school, the expectations of the administrators, parents, community members and all kinds of curriculum materials), which is thought to influence use of their power in a classroom. In other words the extra-discursive practices also play an important role in influencing these identities and positioning.

Acknowledgements

I would like to acknowledge the contribution and support of my supervisors, Professor Mamokgethi Setati and Professor. Richard Barwell, in the production of this work.

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