Preparing Student Teachers to Teach Mathematics in Local Languages: Whose Responsibility?

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In this article I present a discussion on mathematics teacher educators' descriptions of their practice, and how they see their role in promoting local languages as the LOLT in schools. It also explores how mathematics teacher educators prepare the student teachers to teach mathematics in local languages. The study subjects were 4 mathematics teacher educators from two different initial teacher training colleges in Malawi. The research instruments included classroom observations, pre-observation and reflective interviews and focus group discussions. Data was collected during their residential sessions in January and February 2007. The results show that the mathematics teacher educators abdicate the responsibility of preparing students teachers to teach in the local languages. This is mainly caused by the Language in Education Policy which does not allow the mathematics teacher educators to use local languages in their classrooms. These results in turn have promoted a more in-depth understanding of the challenges that exist for mathematics teacher educators who are training student teachers to teach mathematics in local languages. The article argues for the need to encourage the change in mathematics teaching approach at college level that will allow for a more productive way of preparing the student teachers for mathematics teaching in multilingual classrooms.

Keywords: Mathematics teacher educators, Language in education policy, Student teachers, Local languages

Introduction

The aim of this article is to present some of the findings of a broader study exploring the discourse practices of the mathematics teacher educators in a college mathematics classroom. In particular, this paper tends to present the tensions that mathematics teacher educators face when they are preparing the student teachers who are going to teach mathematics in multilingual classrooms using the Language-in-education Policy (LiEP) that encourages the use of different languages.

Related Literature

There has been a lot of research in this area albeit not much of it focuses on mathematics teacher education. For the purpose of this study the focus of the discussion that follows is on what is happening in teacher training institutions in some countries in Africa that have teacher training policies targeting teachers who are going to teach in bi/multilingual classrooms. In most countries, there is not much that is happening in training the teachers for bilingual classrooms, therefore, this section provides a discussion of countries such as Burkina Faso, Niger, Ghana, and Malawi. Furthermore, this section indicates some of the programmes put in place by various countries in trying to prepare teachers for multilingual classrooms.

In Burkina Faso, teachers who receive regular pedagogical support from the University of Ouagadougou linguists and are familiarized with the first and official languages used as Language of Learning and Teaching (LoLT) in schools are those teachers who teach Ecoles Bilingues (Brock-Utne & Alidou, 2005). Ecoles Bilingues, according to the authors, are learners (nine years or older) who have not had a chance to be enrolled in formal primary schools. Brock-Utne and Alidou further explain that these learners are more mature and have already developed full language skills in their home languages before enrolling in Ecoles Bilingue.

In Niger, studies conducted by Chekaroua (2004) support the idea that multilingual teacher education is very important for teachers who are implementing the new Language-in-Education Policy. In her study, she found that school teachers who are transferred from monolingual schools to bilingual schools have a negative perception of learner-teacher interactions in bilingual schools. Chekaroua argues that this is so because they are used to controlling the classroom due to the use of a language which is unfamiliar to learners while trained bilingual teachers hold different views about the interactions. The main problem that Niger and other African countries have is that they have a significant number of untrained teachers (GTZ, 2005) to implement the new language-in-education policies. The majority of these teachers are those who are enthusiastic about teaching in mother tongue or new graduates from secondary schools who are waiting for other employment opportunities (Benson, 2002; Traore, 2001). According to Benson (2002), both categories of

teachers receive very limited training in teaching using the mother tongue and have no adequate school-based support.

In 1996, the Malawi government invested significantly in teacher training programmes to help teachers cope with the implementation of the then LoLT, which was Chichewa (Chilora, 2000). Teachers were trained in teaching in Chichewa as the LoLT. Textbooks were also produced in Chichewa except teachers' guides that were produced in English to accommodate teachers who were not fluent in Chichewa (Chilora, 2001). Although the new LiEP is in place, little has been done in teacher training colleges to help teachers cope with the implementation. It is not surprising, therefore, to see mathematics teachers struggling to cope with the demands of LoLT when teaching mathematics in bi/multilingual classrooms. Their prior educational experiences, including teacher training programmes, do not have proper training programmes in language practices as regards the LoLT. Teaching behaviour is frequently moulded by prior educational experiences (Shiundu & Mohammed, 1996) and language practices are likely to emerge in schools if teacher education programmes engage their student teachers in language practices early in their career preparation. This is quite a challenge as noted by Gay and Ryan (1999). They argue that student teachers bring into the programme their prior knowledge, beliefs and experiences, which affect their assimilation and construction of new knowledge. They continue to argue that teacher educators are themselves products of their own prior experiences in traditional settings.

The research summarized in the foregoing section shows that there is an awareness of bi/multilingual teacher education and at least something is being done towards the move to bi/multilingual education. The literature shows, however, that African countries have not gone very far with teacher training in bi/multilingual education. Furthermore, what is it that mathematics teacher educators do in regard of preparing the student teachers to teach mathematics in multilingual classrooms? Therefore in this paper I present what the mathematics teacher educators say and do in their college mathematics classroom in terms of training teachers to teach mathematics in local languages, whether or not they take the training of student teachers in local languages as their responsibility.

Language in education policy 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). In other words Malawi government policy indicates that English still remain the major LoLT for all the upper classes in primary, secondary (high) schools and tertiary education.

Sample

The sample in this study included two teacher training colleges in Malawi, four mathematics teacher educators, two from each college, were selected purposefully.

The four mathematics teacher educators come from different regions and have different home languages. Mrs. Joshua[1] and Mr. Lukhere come from the northern region of Malawi and Chitumbuka is their home language. Apart from Chitumbuka, these teacher educators can speak Chichewa (since it is a national language) and English as the official language. Both of them were teaching at Kachere TTC in the southern region of Malawi. In their classes there were four major languages; Sena, Lomwe, Chichewa and Yao. These classes had very few students who could speak the teacher educators' home language, Chitumbuka.

The other two teacher educators, Mr. Otani and Mr. Chipasula come from the central region and they both speak Chichewa as their home languages. The other language that they can speak is English as the official language. These two were teaching at Chayamba TTC located in the central region of Malawi. In their classes, there were two major languages; Chichewa and Chitumbuka. However, both of these mathematics teacher educators neither understand nor speak Chitumbuka.

Research Methods

Qualitative methods were used to uncover the ways in which mathematics teacher educators in teacher training colleges constructed a multilingual classroom. The research methods employed in this study included pre-observation interviews with each mathematics teacher educator separately; up to five hours of mathematics lesson observation of up to five consecutive lessons in one of each mathematics educator's classes; reflective interview with each mathematics teacher educator on the classes observed; These interviews depended on the lessons observed and were facilitated by showing the mathematics teacher educators selected video recordings of their lessons; Mathematics teacher educators' focus group discussions were conducted two weeks after the lesson observations with all the teachers involved per college.

Theoretical Orientations

In this study I use Critical Discourse Analysis (CDA) as developed by Fairclough (1989, 2001) to analyze the language practices of the mathematics teacher educators. CDA helps to explain systematically how discourse builds description of the multilingual classroom, and positions participants in relations of power.

Fairclough in his three dimension analysis, views the production and utilization of text (and discourse practices) as parts of the system that connect language and power. Faircluogh focus on processes of production and consumption which gives critical discourse analysis a merit for looking

beyond individuals. Thus for example, the production of a mathematics lesson in teachers training colleges involves not just the work of the mathematics teacher educators but also the work of the social institution including its discourse practices, material resources, and its political and economic location.

Faircloughs' analysis moves back and forth between text analysis (description), and power relations among the people in the event (interpretation), showing that the interpretation as well as the linguistic features of the conversation are circumscribed by the discourse practices of the particular institution within which they take place. However in my analysis, I do not only focus on the list of linguistic features outside of their context of use. Apple (1996) argues that one cannot simply make a linguistic feature and code a transcript to illuminate power relations. The explication of power relations requires a dialectical praxis – a movement back and forth among social and linguistic theories and across methodological approaches to the analysis of texts and event.

The Analysis of the Data

This article specifically focuses on the pre-observation and reflective interviews with the four mathematics teacher educators. In this study I use Critical Discourse Analysis as developed by Fairclough (1989, 2001) to analyze the language practices of the mathematics teacher educators. CDA helps to explain systematically how discourse builds description of the multilingual classroom, and positions participants in relations of power.

The interviews with the mathematics teacher educators 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.

Findings

This article highlights the role that mathematics teacher educators, play in helping the student teachers to express themselves, by allowing them to use Chichewa in their college mathematics classrooms. Another reason why these mathematics teacher educators seem to mention using different languages is because they want to train the student teachers about how to implement the Language-in-Education Policy when they begin to teach. As indicated previously, the LoLT for the first four years of schooling in Malawi is the "mother" tongue language of the learners. So in a college mathematics classroom, Chichewa is sometimes used to equip the student teachers on how to implement this LiEP when they begin to teach. This article, therefore, highlights the role that mathematics teacher educator's play in not only addressing the needs of the student teachers but also directly helping the student teachers with how they can implement the LiEP in primary classrooms. Furthermore, this paper shows that there is no strategy that is put in place as to how the mathematics teacher educators will help the student teachers and, as a result, every mathematics teacher educator applies the LiEP as he/she sees it fit in his/her classroom.

First, I will present the mathematics teacher educators' responses indicating that they use Chichewa in their classrooms because they want to help the student teachers on how to implement the LiEP. This is evident in a number of texts from the mathematics teacher educators and the way in which the use of a different language (Chichewa) is represented. The example is presented in extract 1.

Extract 1

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

R: oh okay

Mr Chipasula: yah, for example we say, how can we introduce addition in standard one,

R: okay

Mr Chipasula: one can expect, express in English, but we say but you will use Chichewa when teaching, can you try to express in Chichewa

In these extracts, Mr Chipasula indicates that Chichewa is used when the content under discussion is for the first four years of schooling. One point that comes to the fore is that, when the student teachers are practising how to teach and the content that is under discussion is for lower primary schools, they use Chichewa. It is the student teachers who practice teaching in Chichewa, while the mathematics teacher educator uses English. That is, the mathematics teacher educators themselves use English while student teachers use Chichewa. The other mathematics teacher educators also explained the same thing.

Extract 2

Mr Otani: they use Chichewa now, instead of English they should use Chichewa, why, because they are now going to teach in Chichewa [meaning when the content is for the lower primary school]

Extract 3

Mr Lukhere: However when it comes to practising, they are supposed to, they are in a classroom situation the teacher is supposed to peer teach a certain topic that applies to maybe standard two or three maybe 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 student 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.

In all these extracts, the mathematics teacher educators point out that the student teachers use Chichewa when they are practising teaching and if the content under discussion is for lower primary schools. The use of Chichewa is, therefore, intended to enable the student teachers to implement the LiEP when they begin the actual teaching in various primary schools. This is not surprising as teachers are expected to comply with the Language-in-Education Policy and so it is the duty of the mathematics teacher educators to help the student teachers with how they are going to implement it. However, in these extracts, there is no mention that the mathematics teacher educators themselves use Chichewa at this particular point. This reveals that student teachers do not observe their mathematics teacher educators on how to teach in Chichewa, because the mathematics teacher educators use English. All the mathematics teacher educators were observed to use English throughout their lessons even though the content they were discussing was for the lower classes. It is only the student teachers who teach in Chichewa. This raises a question as to what the role of the mathematics teacher educators is in helping the student teachers how to implement the LiEP. Do they have to use Chichewa themselves or not?

Although the mathematics teacher educators do not teach in Chichewa, allowing the student teachers to teach in the local language helps them to progress to some extent. However, as the above extracts show, the mathematics teacher educators do not commit themselves fully to the use of local languages because of the LiEP at tertiary education. In other words, the LoLT at tertiary education level makes the mathematics teacher educators shift the responsibility of teaching in local languages to the student teachers. At college level, the requirement is that English is to be used as the LoLT. At the same time, the policy does not elaborate on how the mathematics teacher educators should integrate the local language in their classes when the content under discussion is for lower primary schools. The question is: should the mathematics teacher educators use the local language or not? As a result of this unanswered question, it seems that there is tension as mathematics teacher educators battle within themselves when and how to use English or Chichewa, and who should use Chichewa in their classes. Also, because of this unanswered question, mathematics teacher educators leave the responsibility of teaching in local languages to student teachers.

Mr Lukhere makes another point that, when the content under discussion is for the lower primary school, the mathematics teacher educators do not necessarily concentrate on using Chichewa, meaning that they do not teach in Chichewa, they teach in English as shown in extract 3.

Extract 3

Mr Lukhere: we use English, however, in circumstances where the topic under discussion it's supposed to be taught maybe in the infant, then maybe standard one to four, then we normally switch we don't necessarily concentrate on Chichewa, we teach in English, but use some of the words in Chichewa.

Extract 3 shows that when they are discussing in their classrooms, it is English that is being used. Chichewa comes in only for specific words. So, although the content under discussion is for the lower primary school, the whole lesson is not done in Chichewa. This means that Chichewa is used only when the student teachers are practising as discussed above.

Discussion

The discussion in this paper shows some disconnection that exists between the LiEP followed in schools and the LiEP being followed in primary teacher education programmes. As mentioned above, the LiEP in Malawi stipulates that the home language(s) of the learners should be used as LoLT for the first four years of schooling (that is standard 1 to 4) and English be the LoLT for the upper primary, secondary and tertiary education.

While all the mathematics teacher educators explained that using a local language is important in a college mathematics classroom, the implementation of this remains problematic. At one level, student teachers are not allowed to use their local language as this is seen as violating the official policy; while on the other hand, the official language is not the home, first or main language of both mathematics teacher educators and student teachers. Obviously, being able to understand what the mathematics teacher educators are teaching and being able to express oneself is important for all the student teachers. An interesting question is whether the mathematics teacher educators' concern with following or using the official language is exaggerated in a multilingual setting.

The mathematics teacher educators modelled the teaching of lower primary school in English, and then the student teachers were practicing the teaching in Chichewa as shown in Table 1. When I followed up on this issue, all the mathematics teacher educators involved in this study indicated to me that it is the student teachers who are going to use the home language when they begin to teach, and so they are the ones who have to practice in Chichewa.

	Content for standard 1 – 4	**Content for standard 5 – 8**
Mathematics Teacher educators	Modeling the teaching of mathematics in English	Modeling the teaching of mathematics in English
Student Teachers	Practice the teaching of mathematics in Chichewa	Practice the teaching of mathematics in English

Table 1: Mathematics teacher educators and student teachers practices in a college mathematics classroom

Through the extracts of the four mathematics teacher educator's lessons, the study illustrated the influence of the LiEP on the nature of the language practices of the mathematics teacher educators on how the student teachers are being assisted and on how to implement the LiEP. It showed that while all the mathematics teacher educators moved towards helping the student teachers use the local language in mathematics teaching, they all faced the challenges of how to demonstrate the teaching of school mathematics in Chichewa. The findings of this research seem to suggest that, the mathematics teacher educators shift the responsibility of preparing the student teachers on how to use local languages to the student teachers themselves. In other words, the mathematics teacher educators do not commit themselves fully to the use of local languages because of the LiEP at tertiary education and also because they are not the ones to teach in the local languages in primary schools. This raises a question as to what the role of the mathematics teacher educators is in helping the student teachers to implement the LiEP. And whose responsibility is it anyway, student teachers or mathematics teacher educators? How can the LiEP be implemented if the mathematics teacher educators do not model the teaching and learning of mathematics in local languages, and yet expect their student teachers to do so?

By way of concluding this paper, I pose the following questions: How can the teacher education address the challenges which have been revealed in the literature pertaining to the language practices in multilingual classrooms when policy in teacher education bars teacher educators from using local languages in their teaching? LiEP in teacher education is in conflict with the LiEP in schools, and yet the dilemmas have been established pertaining to the language practices. How can these dilemmas be resolved in such a context?

Notes

[1] All the names of the participants and the colleges used in this article are pseudonyms.

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