Roles of Code Switching in Multilingual Public Primary Schools in Ile-Ife, Nigeria

Olusegun O. Jegede

Department of English, Obafemi Awolowo University, Ile-Ife, Nigeria

Abstract   The study investigated roles of code switching in multilingual public primary schools in Ile-Ife, Nigeria. It also determined the effects of the languages used on teaching and learning mathematics with a view to presenting code-switching as a viable medium of instruction to facilitate the development of literacy in children. The data for the study were obtained from five mathematics teachers and fifty pupils from five purposively selected primary schools through ethnographic observation and structured interviews. Data collected were analysed using Myers-Scotton's Matrix Language Framework model, as well as descriptive and inferential statistics. The results showed that teachers in the schools used code switching, where Yoruba was the matrix language and English was the embedded language, as a communicative strategy in their classrooms. Code-switching was also found to be used as an approach to the acquisition of literacy in that it allowed each pupil to use each of his/her languages in a natural, meaningful way as the various classroom activities were being implemented. The study concluded that the use of code switching in multilingual mathematics classrooms does not result in a deficiency in learning, but is a useful strategy in classroom interaction and efficient way of transferring knowledge to students. In this case, one language might help the other, and sometimes both together may create a new idea, image, thought, behaviour, outlook, organization, and adaptation.

Keywords   Code Switching, Language, English, Mother Tongue, Multilingualism

1. Introduction

With linguistic globalization as a growing trend in the modern world, most of the world's speech communities have become multilingual, as in[1]. Thus, contact between languages has become an important force in the everyday lives of most people.

In Sridhar's list of factors that lead to societal multilingualism, the most significant factor is "migration", as in[2]. As people move from one country or region to another, there is contact with various speech communities in a natural setting, which brings about multilingualism. Hence, even as individuals maintain their home languages, an area where several languages are spoken becomes, over time, a place of multilingualism. When viewed as a phenomenon, multilingualism raises issues such as how one acquires two or more languages, how the languages are cross-accessed for communication in multilingual communities, and how the use of two or more languages embodies and shapes one's cultural identity.

In a multilingual society, each language uniquely fulfils certain roles and represents distinct identities, and all of them complement one another to serve "the complex communicative demands of a pluralistic society", as in[3]. For example, in Nigeria, English functions as the medium of education, administration, legal system, the press and media outlets, and communication among different language users, whereas indigenous languages essentially serve to establish and reinforce the ethnic identities of their speakers and their communities. Moreover, in order to meet the complex communicative demands, speakers who live in a community and household where two or more languages coexist frequently switch from one language to another, either between or within utterances. This phenomenon, known as code switching (CS), has recently attracted a great deal of research attention, especially in the classroom (see[4],[5],[6],[7]).

The medium of instruction or the language in which education is conducted has far reaching consequences in all educational systems. The language in which education is conducted is the language in which basic skills and knowledge are imparted into the population and the language in which the production and reproduction of knowledge is done. It is observed that the language in which education is conducted is very important as the selected language may enhance or impede the quality of education. Therefore, language is an important issue, especially in multilingual classrooms where we have children from different linguistic and socio-cultural backgrounds.

The language of instruction can also be a problem, especially when the content or concepts being taught are not in the learners' home language. Learning certain subjects, such as Mathematics, in English may be a problem for pupils whose home language is not English. Learning such subjects in the pupils' home language or supplementing English with the pupils' home language (code switching) can lead to a better understanding of the contents being taught.

In this study, we investigated the roles of code switching in multilingual public primary schools in Ile-Ife, Nigeria and how they contributed positively to literacy.

2. Literature Review

2.1. Code-Switching in Multilingual Mathematics Classrooms

Historically, code-switching has had an inferior status, as in[8]. As a result, many people still regard it as a grammarless mixture of languages. Some monolinguals see it as an insult to their own rule-governed language. It is generally believed that people who code switch know neither language well enough to converse in either one alone. It is because of these attitudes that some bi/multilinguals prefer not to code switch, while others restrict their switching to situations in which they will not be stigmatized for doing so, as in[9]. For instance, in a multilingual classroom learners may choose to switch only when interacting with other learners and not with the teacher.

Though code switching has received a lot of criticisms from purists, there are researchers who see it as a valuable communication resource. On the basis of an ethnographic observation of classroom interactions in three primary schools in Kenya, code-switching provides an additional resource for meeting classroom needs. Grosjean argues that code switching is a verbal skill requiring a large degree of competence in more than one language, rather than a defect arising from insufficient knowledge of one or the other, as in[10]. Some researchers also see code-switching as an important means of conveying both linguistic and social information, as in[11] & [12].

In most classrooms, code-switching seems to be motivated by cognitive and classroom management factors, as in[13]. It helps to focus or regain the learners' attention, or to clarify, enhance, or reinforce lesson material, as in[14]. They note that teachers make individual moment-to-moment decisions about language choice that are mostly determined by the need to communicate effectively.

Multilingual teachers do not only teach lessons and inculcate values having to do with conservation of resources, but they, perhaps unconsciously, are also socialising pupils into the prevailing accepted patterns of multilingualism, as in[15]. Within the Nigerian classroom environment that tend to encourage switching, it is important that researches focus not only on whether code switching is used or not in the teaching and learning of mathematics but also on how and why it is used or not used. Most bi/multilingual persons switch when they cannot find an appropriate word or expression or when the language being used does not have the necessary vocabulary item or appropriate translation. This kind of switching usually occurs in multilingual mathematics conversations.

To describe bilingual students' choice of language in mathematics classrooms, we can start with questions such as: (a) What are the mathematical aspects of the situation? For example, is a student doing computation or engaged in more conceptual activities? What is the mathematical topic (algebra, geometry, etc.)? and (b) What are the student's experiences with each language in and out of school, in particular, past experiences with mathematics instruction in each language[16]?

The type of mathematics problem and the pupil's experience with mathematics instruction can influence which language a pupil uses, as in[17]. For example, some students may choose to use their first language when working alone on arithmetic computation. After completing a computation, a bilingual pupil may or may not translate the answer to the other language, depending on who else is involved in the conversation. On the other hand, if bilingual pupils have not been exposed to mathematics instruction in a particular topic in their first language, it seems reasonable that they would talk about that topic primarily in their second language. In other situations, pupils might switch between two languages. Pupil's will have had varied experiences with the mathematics register and mathematical discourse in each language. A pupil who may be less proficient in the vocabulary for a specific topic in mathematics in one language may be proficient in another aspect of mathematical discourse in that language such as making comparisons between quantities and presenting a mathematical argument. These examples point to the importance of considering the specifics of each situation in understanding the relationship between mathematical activity and a student's choice of language or code switching.

3. Research Methodology

3.1. Research Design

This study focused on the roles of code switching in multilingual mathematics classrooms in primary schools in Ile-Ife. Questionnaires were designed to elicit responses from respondents. We also attended lessons and took notes of classroom interactions between the teachers and the pupils. This design enabled us to be able to identify the languages used in multilingual mathematics classrooms; we were also able to analyse the roles of these languages and discuss their effects on the teaching and learning of mathematics.

3.2. Research Population and Sampling Technique

The research population included five public primary schools in Ile-Ife, five mathematics teachers (one from each school) and fifty pupils, ten from each school. These teachers and pupils were chosen from primary four. We chose primary four because it is at this level that the teachers are expected to transit from the use of the mother tongue to English. Five schools of the thirty-eight public primary schools in Ife Central Local Government are chosen. These five schools are used to represent the three major languages in Nigeria. Two schools, Anglican Central School, Sabo and St. Peters Primary School, Sabo, were taken from the area where we have people of Yoruba extraction; another two schools, A.U.I. Primary School, Sabo and Methodist Primary School, Sabo, were taken from the area where we have people from Hausa extraction, while one school, St. Bernard's Primary School, Lagere, was taken from the area where we have people from Igbo extraction.

However, the schools have a good number of pupils and teachers who are predominantly Yoruba speakers, as well as Hausa and Igbo children who are also able to speak and interact in Yoruba in and outside the classroom.

3.3. Data Collection

Data for this study were gathered through both structured and unstructured interviews and participant observation. The interviews contained questions regarding language use in multilingual mathematics classrooms. A teacher of mathematics and ten pupils, five boys and five girls, were interviewed from each school. The teacher's interview contained questions on (1) what language(s) they usually use during mathematics lessons and why they use it/them, (2) whether they code switch or not, (3) why they code switch if they do, and (4) what they think are the effects of using code switching as a communicative strategy in mathematics classrooms. The pupils' interview contained questions regarding their preference for or against code switching and the reasons for their preferences.

3.4. Data Authentication

To ensure that the respondents give authentic responses, we attended mathematics lessons in the schools. During each lesson, we observed and took note of classroom practices regarding language use. After each lesson and interview with the respondents, we compared and contrasted their responses with what actually took place in the classroom. This is a way of making the study feasible, viable and authentic.

3.5. Procedure for Data Analysis

The language(s) used in the mathematics classrooms visited were identified. The roles of the languages were analysed and their effects on the teaching and learning of mathematics were discussed. Incidences of code switching were also analysed and their effects on mathematics

learning were discussed. The implications of code switching as a communicative device in English as Second Language classrooms were also discussed. The analysis of the data was carried out using the matrix language framework model proposed by Myers-Scotton, as in[18].

3.6. Theoretical Framework

3.6.1. Matrix Language Framework Model (MLF Model)

While some studies analyse the linguistic features of code switching in the classroom (see[19]), Myers-Scotton proposes the matrix language framework model (MLF model) which lays emphasis on identifying the matrix language and the embedded language in a sentence. The model benefited from the insights of earlier researchers who recognised the unequal participation of languages in code switching, as in[20].

The model holds that in a code switched sentence, one language acts as a domain or matrix language (ML) and the other as a subordinate or embedded language. The matrix language plays the main role in setting the sentence frame where the code switching arises and the embedded language is considered as having been inserted in a matrix language frame to achieve a purpose. The introduction of the embedded language is necessary because it helps pupils to understand the subject matter; it helps teachers to motivate, discipline and praise pupils; it facilitates interpersonal relation between the teacher and the pupils, as in[21]. The model can be applied to describe the roles or functions played by the matrix and embedded languages in the classroom.

The theory is applicable to the study because it enabled us to identify the matrix (or dominant) language and the embedded (or subordinate) language used in a multilingual mathematics classroom, where code switching is used. It also enabled us to analyse and discuss the roles played by these languages in the classroom and how they contributed to the effective teaching and learning of mathematics.

4. Data Analysis and Discussion

The languages used in multilingual mathematics classrooms in Nigeria have some basic roles that are beneficial in the classroom. Examination of the data revealed that code switching by teachers served some kind of pedagogical purposes. The roles played by these languages are discussed below.

4.1. Repetition

In Anglican Central Primary School, Ilare, Ile-Ife, the role of code switching for repetition was very prominent in the mathematics lesson. In some instances of repetition, the teacher simply used Yoruba to translate each sentence she uttered. It has become, more or less, a habitual practice to repeat the expressions and sentences she uttered in Yoruba. Consider the following excerpt:

Teacher: The factors of a number are numbers that divide the number without a remainder. For example, 1, 2, 3 and 6 divide 6 without a remainder. *1, 2, 3 ati 6 nikan la le fi pin 6 lai seku nkankan.* (To the pupils) What are the factors of six? Ki ni factors 6?

Pupils: (Together) 1, 2, 3 *ati* 6 (1, 2, 3 and 6).

The repetitive function of code switching was also evident in St. Peters Anglican Primary School 'A', Sabo, Ile-Ife. The teacher switched from English to Yoruba when reinforcing or repeating what she has said, which also has the effect of clarifying her points. In the following extract, after explaining 'multiplication' in English, she repeted her explanation by reiterating it in Yoruba:

Multiplication tumo si ilopo (Multiplication means multiples). Fifty ni ilopo meji a fun wa ni one hundred, ogorun (Fifty multiplied by two will give us one hundred).

Just like what we have in St. Peters Anglican Primary School, Sabo, the teacher used Yoruba in order to reinforce the importance of her explanation, first, by asking in English and then rephrasing it in Yoruba. The concern of the teacher was to get the meaning and contents of the lesson conveyed to and understood by the pupils.

However, in St. Bernard Primary School, Lagere, Ile-Ife, Yoruba was used to interpret the contents of the lessons at intervals. Consider the following excerpts:

Excerpt 1
We have mathematics now. A maa se Maths ni isin yii.
Excerpt 2
Teacher: What did we learn yesterday? ki la ko lana. Who can tell me?
Pupils: (No response)
Teacher: Division. Bi a se n fi number ge number.
Excerpt 3
Teacher: If you divide 10 by 2, what will you get? Ti o ba fi 2 ge 10, ki lo ma ni.
Pupils: 5

4.2. Ease of Expression

In Anglican Central Primary School, Ilare, Ile-Ife, the teacher switched from English to Yoruba for ease of expression. The teacher started the lesson in the medium of English. It seemed that our presence in the class prompted the teacher to choose this medium, but unfortunately for her, she could not express herself well in English. As a result, the pupils did not show any sign of comprehension. The class was dull. Seeing that the pupils were not responding to her questions, she decided to switch to Yoruba. This switch changed the lesson and her methodology dramatically. She was now able to express herself in a more relaxed way and the pupils could respond to her questions mainly in their mother tongue.

Also, in Methodist Primary School, Sabo, Ile-Ife, we observed from the way the teacher taught that he could not really teach the pupils in Hausa for a long time, since he is of Yoruba extraction. He had to switch from Hausa (the main medium of instruction) to English for ease of expression. The following are some of the switches he made:

(When the class was about to start) Shiga class (Enter the class).

(At the beginning of the lesson) Rubuta date (Write today's date).

During our interaction with him, he said that he had to learn Hausa in order for him to express himself and teach the pupils effectively; because Hausa is the language they understand well. He used both Hausa and Yoruba mainly as the media of instruction. All the four pupils in the class are of Hausa extraction and could speak Yoruba, averagely well. This made it easy for the teacher to teach in Yoruba and Hausa, and English, occasionally.

In Ansarul Islam Primary School, Sabo, Ile-Ife, the mathematics teachers are native speakers of Yoruba. The teachers have little skills and knowledge in the target language, English. It was observed that the mathematics teacher in this school was unable to explain open sentence in English. As a result of this, she decided to switch to Yoruba. Consider the following excerpt:

(The teacher is explaining the meaning of open sentence) Open Sentence means a sentence that is … open. That is, ki aye ti eyan le ko nkan si wa ninu sentence, bi fill-in the gaps ti a maa nse ni English. (This means leaving a space { } where one can insert a figure just like fill-in the gaps you do in English.)

From the above excerpt, it was observed that the teacher's silence in the first sentence was due to lack of competence in English. This was also noticed from the teacher's fluency and the way she pronounces her words. However, she was able to express herself with ease when she code switched between English and Yoruba. Thereby, imparting subject matter into the pupils.

4.3. Elaboration

Elaboration occurred when additional information or details on a topic were added in the mother tongue of the pupils in Anglican Central Primary School, Ilare, Ile-Ife. The teacher switched from English to Yoruba to elaborate on the topic she was teaching them.

The topic for today is Highest Common Factor, *awon* number *ti a le fi gera won lai seku* (Numbers we can use to divide another number without a remainder).

The teacher used code switching to elaborate on the topic she was teaching. After giving them the topic in English, she decided to elaborate on the topic in their mother tongue. The teacher believed that the pupils would get the meaning of the topic better in their mother tongue.

Also in St Bernard Primary School, Lagere, Ile-Ife, code switching was used to elaborate on how to divide during the lesson:

Teacher: Ti a ba fe calculate 68 ÷ 4, a maa koko ya igi division bayi √ (If we want to calculate 68 ÷ 4, we will first draw division diagram). A a wa ko 68 sinu igi naa bayii √68 (We then write 68 inside the symbol like this √68) . So 4 a

wa nita 4√68 (4 will be outside the symbol 4√68). Eje ka wa divide e bayii (Let us divide 68 by 4 now). Four melo lo wa ninu six (How many times can four go in six)?

Pupils: Eyokan (One).

Teacher: A a ko one soke (We will write one on top). Melo lo ku (How many do we have left)?

Pupils: O ku meji. (There remains two.)

Teacher: A maa wa fi two yen siwaju eight (Now put two before eight). A wa di twenty-eight (to make it twenty-eight). Four melo la le ri ninu twenty-eight (How many times can four go in twenty-eight?

Pupil 1: Four.

Teacher: Rara o. (No.)

Pupil 2: Eight.

Teacher: Clap for her. So, 68 divided by 4 is 17. So ye? (Do you understand?)

The use of code switching to elaborate on the questions allowed the pupils to participate well in the lesson. It also enabled the pupils to show some confidence when responding to the teacher's questions.

4.4. Explanation of Unfamiliar Words

In Ansarul Islam Primary School, Sabo, Ile-Ife, the teacher's concern for vocabulary or expressions that the pupils were not familiar with prompted her to code switch. When the teacher was not sure whether the pupils knew the meaning of 'open' and 'sentence' in mathematics, she code switched to let them know that they ('open' and 'sentence') don't exactly mean the same thing with 'open' and 'sentence' in English. This is exemplified in the following excerpt:

Open ni mathematics tumo si box (Open in mathematics means box) (Draws Box[ ] on the black board). Sentence tumo si bi box yen ati awon numbers se sopo (Sentence means the addition of the box and figures). So, ti e ba wo sentence yii:[ ] + 10 = 60. Box yii (points to the box) ni o mu sentence yii wa open. If you look at this sentence, the box is what makes it open).

From the excerpt above, the teacher tried to explain the meanings of 'open' and 'sentence' in Yoruba, so that the pupils would not be wondering if they would be taking English lessons in a Mathematics lesson. Our observation show that the pupils felt more relaxed and fulfilled after the teacher's explanation.

In Methodist Primary School, Sabo, Ile-Ife, the teacher used Yoruba and Hausa to translate number in English and some English expressions. Consider the following excerpts:

Excerpt 1:

Teacher: E maa ka bi mo se n ka. (Read with me). One
Pupils: One
Teacher: Two
Pupils: Two
Teacher: Three
Pupils: Tiri (Three)
Teacher: One means ookan. two means eeji, three means eeta, four means eerin, five means aarun.

The teacher sometimes explained the English words in Yoruba and then again in Hausa to make sure that the pupils understood the concepts. The pupils, in turn, demonstrated the same style as they asked or answered questions in both Yoruba and Hausa so that they could make sure that the teacher understood their intended meaning.

Excerpt 2:

Teacher: One means ookan, daya (the teacher shows the pupils a piece of chalk); two means eji, meji, Bin (show two pieces of chalk); three means Eta, meta, Huku (showed the pupils three pieces of chalk).

Pupil: (Showing two pencils) se pencil meji re (Are these two pencils)?

Teacher: Yes. (To another pupil) Pencil melo lo ni (How many pencils are these)?

Pupil: Daya. Eyokan. (One).

Teacher: Good! One.

4.5. Emphasis

In Anglican Central Primary School, Ilare, Ile-Ife, emphasis occurred when the teacher stressed or under scored a point in the alternate language, Yoruba. This switch was also accompanied by a change in voice intonation which exhibited a higher pitch level. Consider the following excerpt.

(The teacher explains to the pupils how to find the HCF of 6). The product of 2 and 3 is 6; 2 x 3 = 6; so, 2 ATI 3 JE factors 6 (Two and three are factors of six).

The teacher explained to the pupils how to determine the factors of a particular. She emphasized the factors in Yoruba, because the factors were more important to her than how to find them.

4.6. Asking for Explanation

In Ansarul Islam Primary School, Sabo, Ile-Ife, the pupils most often used their mother tongue to negotiate conversational involvement while seeking explanations during the mathematics lesson. The teacher was teaching the pupils open sentence. After making some explanations, she asked the pupils to find an answer to the following question:[?] + 10 = 20).

Pupil 1: Se o mo answer question yen (Do you know the answer to that question)?

Pupil 2: O dabi pe ten ni (It seems to be ten).

Pupil 1: (To the teacher) Ten.

Teacher: Ten. That's right.

Pupil 3: (To the teacher) Bawo lo se je ten (How is it ten)?

Teacher: Ti a ba yo ten kuro ninu twenty, a ku ten (if you remove ten from twenty, there will remain ten). Ten ti o ku yen ni answer (The remainder is the answer). E o ripe ten plus ten a fun wa ni twenty (Thus, ten plus ten is twenty).

In the example above, two pupils (Pupil 1 and Pupil 2) switched from English to Yoruba to check with each other their understanding of the question, while pupil 3 used CS to ask for an explanation when he did not understand how

the teacher arrived at the answer.

This is also common in the four other schools surveyed. The pupils first discussed the question their teachers asked them among themselves in Yoruba This method employed by the pupils show that they use the language which they feel most comfortable with and have greater confidence in during peer interaction and classroom discussion. It was also observed that those pupils with the greatest degree of bilingual communicative competence were the ones who most frequently used CS as a communicative strategy in the classroom and with their peers.

4.7. Giving Directives

CS was used to give directives in St Bernard Primary School, Lagere, Ile-Ife. As the lesson was about to start, the teacher discovered that there was no chalk and instructed a pupil to get some pieces of chalk from the next class.

Tola, lo gba chalk die wa ni primary five (Tola, go and get me some pieces of chalk from primary five).

The teacher also ordered another pupil to clean the blackboard

Ki enikan clean blackboard (Let someone clean the blackboard).

4.8. Addressee Specification

In St. Peters Anglican Primary School 'A', Sabo, Ile-Ife, the occurrence of CS during the lesson suggested that CS is triggered by who was speaking and who was listening. For example, the teacher's switches were mostly used for clarifying the meaning of certain concepts and helping her pupils to understand what she was teaching because the pupils could not really learn in the medium of English. However, the teacher's conversation with the researcher was basically in English. No code switching was used.

The pupils' choice of CS depended on whom they were talking with. The conversation with their teacher was basically in Yoruba, while their conversation with the researchers was basically English. This is shown in the following example:

Researcher: (During a chat with one of the pupils after lesson)

How was the lesson?

Pupil: It was fine.

Researcher: Did you understand what you were taught?

Pupil: Yes.

Researcher: Can you tell me something you learnt from the lesson?

Pupil: I learn how to …

Researcher: OK, what is ten multiplied by five?

Pupil: Fifty

Researcher: Good!

As we can see from the extract, in spite of the pupils' preference for Yoruba during the lesson, she used English when speaking with the researcher.

Similarly, in Ansarul Islam Primary School, Sabo, Ile-Ife, this occurred when the teacher switched between English and Hausa as she addressed a Hausa pupil who did not really understand Yoruba and English. Consider the excerpt below:

Teacher: Ka ci ko (Are you with us?).

Pupil: Unji (Yes).

4.9. Showing Emotion

In St. Peters Anglican Primary School 'A', Sabo, Ile-Ife, the teacher used CS to show her emotional state. During the lesson, the teacher was upset by the inability of the pupils to give an answer to a particular question she had provided answer to three times in the course of the lesson. She expected the pupils to answer the question without having to think twice. In her displeasure, she said:

Eyin o ti e ni common sense ni tiyin (You do not have common sense). You can't think for yourself, unless ti aba think fun yin (… unless we think for you).

5. Summary of Findings and Conclusions

The study has shown a number of interesting outcomes. First, the study has demonstrated that English and the mother tongue (here, Yoruba and Hausa), when used alternatively, serve as a valuable resource for teaching certain subjects, especially mathematics.

Furthermore, the pupils used both languages freely during classroom interaction as they responded to the teacher's questions and the researchers' questions, thus communicating in a natural and effective way. The use of code switching allowed each pupil to use each of his/her languages in a natural and meaningful way as the various classroom activities were being implemented.

In addition, the teachers in the study used their perceptions of their pupils' proficiency in each language, especially their mother tongue, to enhance communication, teaching and learning of mathematics as they used either or both languages appropriately.

Code-switching was also found to enhance communication as the class participants strived to relate their thoughts to others who had varying proficiencies in the mother tongue and English.

The study also shows that pupils during peer interaction use the language with which they both feel most comfortable and have greater competence in. The results also indicate that those pupils with the greatest degree of bilingual communicative competence are the ones who most frequently use CS as a strategy to meet their conversational goals and to communicate with their peers.

There is enough evidence in this study to support the theory that pupils who use their mother tongue while learning in English perform better than those who don't. The study has shown that code switching in multilingual classrooms is both inevitable and necessary. It is not only a part of communicative resources of a bilingual repertoire but also an active part in the learning experience.

REFERENCES

[1] Musau, M. (2003). Linguistic Human Rights in Africa: Challenges and Prospects for Indigenous Languages in Kenya. Language, Culture and Curriculum, 16(2).

[2] Sridhar, K. K. (1996). "Societal Multilingualism". In: S. L. McKay & N. H. Hornberger (Eds.) Sociolinguistics and Language Teaching. Cambridge: Cambridge University Press.

[3] Verschik, A. (2004). Aspects of Russian-Estonian Code Switching: Research Perspectives. International Journal of Bilingualism, 8/4, 427–448.

[4] Adler, J. (2001), Teaching Mathematics in Multilingual Classrooms. Dordrecht, The Netherlands: Kluwer Academic Press.

[5] Aichun, L. (2002). Teacher Code Switching between English and Chinese in English-as-foreign-language Classroom. [Online] Available: http://www.beiwaionline.com/tutor/2003 collection/liuaichun.htm

[6] Zabrodskaja, A. (2007). Russian-Estonian Code Switching in the University. Arizona Working Papers in SLA & Teaching, 14, 123-139.

[7] Setati, M., Adler, J., Reed, Y., & Bapoo, A. (2002). Incomplete Journeys: Code Switching and other Language Practices in Mathematics, Science and English language classrooms in South Africa.[Online] Available: http://www.multilingual-matters.net/le/016/0128/le0160128.pdf

[8] Adler, J. (1998), A Language of Teaching Dilemmas: Unlocking the Complex Multilingual Secondary Mathematics Classroom. For the Learning of Mathematics, 18, 24-33.

[9] Grosjean, F. (1982). Life with Two Languages. Cambridge, MA: Harvard University Press.

[10] Merritt, M., Cleghorn, A., Abagi, J. O., & Bunyi, G. (1992), Socialising Multilingualism: Determinants of Code Switching in Kenyan Primary Classrooms. Journal of Multilingual and Multicultural Development, 13(1 & 2), 103-121.

[11] Ncoko, S. O. S., Osman, R. & Cockcroft, K. (2000). Code Switching among Multilingual Learners in Primary Schools in South Africa: An Exploratory Study. International Journal of Bilingual Education and Bilingualism, 3(4), 225-241.

[12] Setati, M. (2002). Researching Mathematics Education and Language in Multilingual South Africa.[Online] Available: http://math.coe.uga.edu/tme/v12n2/v12n2.Setati.pdf

[13] Simon, D. L. (2001). "Towards a New Understanding of Code Switching in the Foreign Language Classroom". In R. Jacobson (Ed.) Code Switching Worldwide II, pp. 311–342. Berlin: Mouton de Gruyter.

[14] Skiba, R. (1997). Code Switching as a Countenance of Language Interference.[Online] Available: http://iteslj.org/Articles/Skiba-CodeSwitching.html

[15] Setati, M. (2005). Teaching Mathematics in a Primary Multilingual Classroom.[Online] Available:http://my.nctm.org/eresources/view_media.asp?article_id=7229

[16] Torres, L. (1997). Puerto Rican Discourse: A Sociolinguistic Study of a New York Suburb. Mahwah, NJ: LEA.

[17] Latu, V. F. (2005), Language Factors that Affect Mathematics Teaching and Learning of Pasifika Students.[Online] Available: http://www.merga.net.au/documents/RP532005.pdf

[18] Myers-Scotton, C. (2001), "The Matrix Language Frame Model: Development and Responses". In R. Jacobson (Ed.), Code Switching Worldwide II (pp.23-56). Berlin: Mouton de Gruyter.

[19] Brice, A. (2000), Code Switching and Code Mixing in the ESL Classroom: A Study Of Pragmatic and Syntactic Features. Journal of the Speech Pathology Association of Australia, 20(1), 19-28.

[20] Myers-Scotton, C. (2006). "How Code Switching as an Option Empowers Bilinguals". In J.A. Aertselaer, M. Pütz & J.A. Fishman (Eds.) Along the routes to Power (pp. 73-86). Berlin: Mouton de Gruyter.

[21] Ferguson, G. (2003), Classroom code switching in post-colonial contexts: Functions, attitudes and politics. AILA Review, 16, 38-51.