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Code Switching and Its Implications for Teaching Mathematics in Primary Schools in Ile-Ife, Nigeria

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Abstract

The study investigated code-switching and its implications for teaching Mathematics in selected primary schools in Ile-Ife. 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 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.

Keywords: Code Switching, Mathematics, Mother Tongue, Language, Medium of Instruction, Classroom Interaction

1. Introduction

Education serves the purpose of equipping an individual with what is necessary to be a productive member of the society. According to Cloud, Genesee and Hamayan (2000), the central tenet of education typically includes the imparting of knowledge. The fact that education entails the impartation of knowledge and skills as well as awakening and developing the intellectual potentials of the learner underscores the point that the role of language use in instruction is important. According to Kyeyune (2003:173), the effectiveness or otherwise of the teaching-learning process at whatever level depends on whether or not effective communication has taken place between the teacher and the learner.

The medium of instruction or the language in which education is conducted has far reaching consequences in all educational systems. According to Cummins (2000:510), 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 (Salami, 2008:2). 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 code switching and its implications for teaching mathematics in primary schools in Ile-Ife Nigeria. In particular, we will focus on the use of two languages (English and Yoruba) in mathematics classrooms in Ile-Ife.

1.1 Language-in-Education Policy in Nigeria

Earlier, in 1976, the cultural charter for Africa, articulated by the Organisation for African Unity (OAU) in Article 6(2) stated that member states should promote teaching in national languages in order to accelerate their economic, political and cultural development (Afolayan, 1999). Musau (2003:156) observes that the implementation of these charters and declarations has, however, been problematic. According to him, in Africa only, the languages of the former colonial masters seem to be favoured, while the indigenous languages seem to be losing out. Adegbite (2003:186) notes that the dominance of the language of the former colonial masters matches the status of English in Nigeria. Apart from the generally positive attitudes that Nigerians have towards English, they tend to have a negative attitude towards their indigenous languages (Adegbija, 1994:47; Babajide, 2001:3 & Afolayan, 1999:83). In order to free its citizens from the yoke of an imperial language, English, the Nigerian Government at various times proposed various forms of language policies to encourage and stimulate the growth and development of its over 400 indigenous languages. According to Ajayi and Oyetayo (2002: 61), all these policies are geared toward strengthening the indigenous languages and particularly the three majority languages recognized by the Nigerian constitution, namely Igbo, Hausa and Yoruba.

The principles on which the educational language policy is based are equal opportunity of access to the language of education, thorough grounding in the child's own language, thorough mastery of English, and bilingualism in two Nigerian languages (Ajayi and Oyetayo, 2002:62). However, the role of language in education is usually taken for granted by linguists (Bamgbose, 1994:2). Since acquisition of knowledge is most effectively carried out through the mediation of language, it comes naturally to linguists to assume that any educational policy must devote a substantial part to language.

The little attention given to language in the *National Policy on Education* (NPE, 2004) is as a result of the nature of the Report of the 1969 curriculum conference from which the NPE emerged. According to Bamgbose (1994:2), the main pre occupations of the Report are with purpose, objectives, goals, structures, teacher training, ownership, funding etc. He notes that only one paper in chapter one has a section on the 'Language of Instruction' arising from which there is a recommendation that the Nigerian primary school child should be well-grounded in his mother tongue as well as learning English and/or any of the regional languages as second and/or third language. Against this background, the few language provisions in the NPE could be seen as major advances on the Report of the 1969 curriculum conference.

The NPE is one of the various forms of language policies proposed by the Nigerian Government to encourage and stimulate the growth and development of the over 400 indigenous languages in it. The NPE stipulates a mother tongue or the language of the immediate community as a medium of instruction both at pre-primary and primary levels of education, except that at a later stage in the primary school, English will become a medium of instruction. In other words, as Salami (2008:3) and Omoniyi (2003:135) have noted, the mother tongue or the local indigenous language is expected to be used for content area instruction in all subjects, except English, from pre-primary and primary 1 to 3, and later English takes over from primary 4 to 6 while the mother tongue is taught as a subject.

This policy envisages a transitional bilingual education model. According to Salami (2008:4 citing Putz, 2004:76), the model allows children, temporarily, to use their home languages, and they are taught through

that medium until they are considered proficient enough in the official language (English) as their new teaching medium. In transitional bilingual education programme, teachers are bilingual. They are able to switch from the learners' mother tongue to English according to the learners' needs. It is observed that a child who acquires basic literacy or numeracy concepts in one language can transfer these concepts and knowledge easily to second or third or other later-acquired languages (Fafunwa, 1998:98; Salami, 2008:3).

Salami (2008), in his study of mother tongue education and bilingual classroom practice in Nigeria, observes that rather than implementing the transitional bilingual education policy envisaged by the NPE, practitioners in the field have resorted to evolving a varied 'policy' of bilingual instruction. According to him, English is used as early as the first year of the child's primary school education while the mother tongue continues to be used throughout the fourth year when the transition to English should have commenced. The reason for this is that using English in multilingual context often leads to unsatisfactory quality of educational performance (Kyeyune, 2003:174). For instance, studies (such as Setati, 2002, 2005; Adler, 1998, 2001; Plüddemann, et al, 1999) on Mathematics learning in multilingual classrooms have shown that pupils perform poorly in mathematics due to the specialised concepts such as divisor, denominator, standard deviation, quotient, radius, circumference, etc, which cannot be well explained in English.

If the use of English as a medium of instruction creates a learning problem in multilingual mathematics classrooms, then it is necessary to find solutions which are workable in the classrooms. Salami (2008), Setati, M. (1998), Setati and Adler (2001), Ncedo, Peires & Morar (2002) and Moschkovich, (2004) have advocated the use of the learners' first language to supplement English. These studies have presented the learners' main languages as valuable resources for learning mathematics. This study supports these earlier studies and also tries to show code switching as a valuable communicative resource in mathematics classroom.

1.2 Statement of Research Problem

The education community has paid little attention to the simultaneous development of the two languages in bilingual children. In particular, bilingual children's mixing of languages in the process of language acquisition has been viewed unfavourably by the mainstream society, and it has been "the least systematically studied" (Tabors & Snow, 2001: 166). As a result, there is a great need to examine bilingual children's code switching behaviours in an educational setting so that a more comprehensive understanding of this phenomenon can be reached and be used to inform the instructional practices of the teachers of bilingual children in Nigerian schools.

In multilingual mathematics classrooms in South Africa, studies such as Ncedo, Peires & Morar (2002), Setati, Adler, Reed & Bapoo (2002), and Howie, (2003) have shown that code switching is a valuable communicative strategy for learning mathematics contents. However, in Nigeria, the use of code switching in multilingual mathematics classrooms has not been well-examined. Therefore, the present study focuses on the use of code switching and its implications for teaching mathematics in primary schools in Ile-Ife Nigeria in order to show its implication in teaching and learning mathematics in Nigerian primary schools.

2. Methodology

2.1 Research Design

This study focused on the use of code switching and its implications for teaching mathematics in primary schools in Ile-Ife Nigeria. 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 mathematics classrooms; we were also able to analyse the features of these languages and discuss their implications on the teaching and learning of mathematics.

2.2 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.

2.3 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 implications 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.

2.4 Data Authentication

To ensure that the respondents give authentic responses, we sat in in 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.

2.5 Procedure for Data Analysis

The language(s) used in the mathematics classrooms visited were identified. The features of the languages were analysed and their implications on the teaching and learning of mathematics 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 (2001).

2.6 Theoretical Framework

2.6.1 Matrix Language Framework Model (MLF Model)

While some studies (for example, Brice 2000) analyse the linguistic features of code switching in the classroom, Myers-Scotton (2001) 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 (Myers-Scotton 2006: 234).

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. According Myers-Scotton (2001: 23), 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. Ferguson (2003: 39) observes that 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.

The theory is applicable to identify the matrix or dominant language and the embedded or subordinate language used in a multilingual mathematics classroom, where code switching is used and to determine the implications of both languages on Mathematics learning.

3. Data Analysis

3.1 Teachers' Choices of Language

Table 1 shows languages mostly used in the classroom from the schools and lessons sampled in Ile-Ife. Question 1a was asked to find out, from teachers, what language they tended to use most for instructing pupils during mathematics lessons.

The data show that all the five teachers responded to the question. Two teachers (40%) claimed to use English; two teachers (40%) claimed to use English and Yoruba, while one teacher (20%) claimed to use Yoruba and Hausa. Our observation and record from sitting in at the lessons show that the claims of the first two teachers are true because the teachers taught the greater part of the lesson in English. The two teachers are from Ansarul Islam Primary School, Sabo and St Bernard Primary School, Lagere. The claims of the two teachers that they taught mostly in the mother tongue and English are also right. The teachers actually taught the lessons in English and interpreted each sentence in Yoruba. The teachers are from Anglican Central School, Sabo and St. Peters Anglican Primary School 'A', Sabo. The only teacher that claimed to use Yoruba and Hausa as the main medium of instruction was from Methodist Primary School, Sabo. The teacher, being a Yoruba man, had to learn Hausa to be able to teach the pupils, because most of them were Hausas.

3.2 Reasons for the Teachers' Choice

From table 1, we observed that two teachers indicated that they tended to use English most as the medium of instruction in mathematics classrooms. The teachers are from Ansarul Islam Primary School, Sabo and St. Bernard Primary School, Lagere.

Question 1b was asked to find out the reasons for the teachers' preferences in question 1a.

The teacher from Ansarul Islam Primary School, Sabo responded that:

> English Language is an official language in Nigeria and it enables pupils to do external exams. We also use English because we are not expected to use Yoruba language to teach in upper classes.

The teacher observed that the status of English in Nigeria should not be underrated by using the language of the immediate environment solely as the medium of instruction in education at the expense of English, which is Nigeria's official language. She also observed that external examinations are in English, as a result, pupils should be taught in the medium of English for the greater part of their lessons. She noted this would allow the pupils to be able to read and write in English during the exams.

The teacher from St. Bernard Primary School, Lagere responded that:

> English is the medium the school authorities and local inspectors said we should be using and that is why it is the main language.

The teacher observed that the school authorities and the local inspectors of education (LIE) said the medium of instruction from primary four upward should be English. During the lesson, the teacher tried to teach in the medium of English alone. The teacher was trying to conform to the instructions of the LIE. However, the pupils had a hard time coping in the medium of English. The teacher had to switch back and forth between English and Yoruba for the pupils to really understand what she was teaching them.

Table 1 also shows that two teachers indicated that they tended to use both English and Yoruba most in the classroom. The schools involved are St. Peters Anglican Primary School 'A', Sabo and Anglican Central Primary School, Sabo.

The teacher from St. Peters Anglican Primary School 'A', Sabo responded that:

> It would let them (the pupils) understand the teaching.

The teacher believed that the use of Yoruba together with English would aid the pupils understanding of the topic taught. Our observation and record show that the pupils actually enjoyed the lesson more in their mother tongue (Yoruba) than in their second language (English). Their responses also show that they had some measure of understanding of the topic.

The teacher from Anglican Central Primary School, Sabo responded that

> If we use only English, they will not cooperate.

The teacher observed that the pupils show more cooperation when she used their mother tongue (Yoruba) than when she taught in English. Our observation and record also confirmed this. The pupils paid more attention to the teacher each time the teacher switched from English to Yoruba. This showed that they were ready to cooperate with the teacher, provided she taught them in Yoruba.

We will also observe from table 1 that only a teacher (from Methodist Primary School, Sabo) indicated that he used Yoruba and Hausa most. He responded that:

The pupils show low interest in the English Language.

Our observation from sitting in at the mathematics lesson in this school showed that the pupils did not understand English at all. The way they watched the teacher teach them in English showed that they did not even have interest in the English-medium. They were all from Hausa extraction and only speak Hausa at home, and Yoruba, only when they are interacting with pupils from Yoruba extraction. Their major language is Hausa while their second language is Yoruba. As a result of this, the teacher used Yoruba and Hausa as media of instruction.

3.3 Other Languages Teachers used in Mathematics Classrooms in Ile-Ife

Table 2 shows the other languages used in the schools sampled.

Question 2a was asked to find out the other languages used by the teachers during mathematics lessons.

The data collected show that all the five teachers responded to the question. The table above shows that Yoruba is the other language mostly used in the schools surveyed. Four teachers (80%) claimed that they used Yoruba while one teacher (20%) claimed that he used English. Our observation shows that the four teachers used Yoruba as a supplement because majority of the pupils in their classrooms were of Yoruba extraction. The only teacher that indicated that he used English as an additional language had pupils from Hausa extraction. As noted earlier, the pupils did not understand English and solely relied on Hausa their mother tongue. The teacher, thus, taught in Hausa and Yoruba in order to make the pupils learn, and occasionally switched to English when the content could not be interpreted in both Yoruba and Hausa.

3.4 Reasons for the Teachers' Choices in Question 2a

Question 2b was asked to find out the reasons for the preferences of the teachers in question 2a. The teacher from Anglican Central Primary School, Ilare, Ile-Ife said that she used Yoruba because "it makes the lesson more effective. The Pupils will be able to contribute more to the lesson". According to her, the use of Yoruba makes her teaching effective, such that the pupils will be made to learn in the language they are familiar with. As a result, they will be able to give their feedback in the language they understand fluently. Through this, the teacher is able to really determine which pupil is doing well and which of them is not doing well.

The teacher from Ansarul Islam Primary School, Sabo, Ile-Ife said that she used Yoruba "to enable them understand very well. It facilitates the teaching of mathematics." From the response of this teacher, we could observe that the teacher used Yoruba to help the pupils understand what she taught them in English. The teacher believed that a subject such as mathematics needed to be taught in a language that the pupils were familiar with.

The teacher from St Bernard Primary School, Lagere, Ile-Ife said that she used Yoruba because "the best way to teach the pupils effectively is to interpret what you teach them in Yoruba, their mother tongue". This teacher believed that the best way to teach pupils mathematics is by using their mother tongue as the medium of instruction. This is also the idea of the two teachers discussed earlier.

Similarly, the teacher from St Peters Anglican Primary School 'A', Sabo, Ile-Ife said that she used Yoruba "to arouse their interest because it is their mother tongue." This teacher believed that the best way to attract the pupils' attention in the classroom is by using their mother tongue. This makes the pupils feel at home and

forget the tension and anxiety they usually have in their English classroom. It is worthy of note that speaking English in answering questions in English could be a dilemma for a pupil. However, answering questions or giving comments in Yoruba makes things easier for the pupils, and even, the teachers.

The teacher from Methodist Primary School, Sabo, Ile-Ife is the only teacher who indicated that he used English as an additional language. The reason he gave was that "English is an official language. So, must force them to learn it." Our observation during the lesson was that English was used only when some concepts could not be taught in Yoruba and Hausa.

3.5 Pupils' Language Choices

Table 3 shows pupils' language preferences in the schools sampled in Ile-Ife.

The table above shows that all the pupils preferred being taught mathematics in their mother tongues to English in order to learn effectively. From the responses of the pupils, we observe that a higher percentage of the pupils, 40 (90.9%) of the 44 pupils interviewed said they preferred Yoruba, while 4 (9.1%) of the 44 pupils said they preferred Hausa. No pupil indicated any interest in the medium of English and code switching. Just like the teachers' claim that the pupils learnt better in their mother tongues, the pupils, in turn, believed that being taught in their mother tongue had great gain. Their preferences could also be linked to their teachers' use of CS in the schools and their inability to speak and understand English well. Their socio-cultural background is another factor.

3.6 Code Switching in Mathematics Classroom

Table 4 shows the evidence of CS in the schools surveyed.

Question 4a was asked to find out if teachers code switch during their lessons. The data show that all the five teachers responded to the question and they all said they do code switch while giving their lessons. Our observation and record also show that CS was used throughout the lessons and by both the teachers and the pupils. In other words, Yoruba-English CS and Yoruba-Hausa CS are practised in public primary schools in Ile-Ife.

3.7 Reasons for Code Switching

Question 4b was asked to find out why teachers code switch in their lessons. The data collected show that the teachers had different reasons for code switching. The following quotations are the reasons given by the teachers. The schools are used to represent the teachers.

3.7.1 Anglican Central Primary School, Ilare, Ile-Ife

> To be more effective. To be more interesting. The pupils will be able to share their interests.

The teacher in this school claimed that she used code switching so that her lesson would be effective. In other words, teaching a lesson in the language the pupils understood well would make the lesson effective. The pupils would understand what the teacher was teaching them. Our observation and record show that the pupils showed some enthusiasm and readiness to learn in their mother tongue. They were also able to answer

some of the questions asked by the teacher. It was also observed that the lesson was interesting and the pupils were able to share their thoughts with the teacher.

3.7.2 Ansarul Islam Primary School, Sabo, Ile-Ife

> To be able to impact the knowledge thoroughly and the pupils will understand better.

The teacher in this school claimed to use CS so that she would be able to impact the knowledge of mathematics, or better still, the content and concepts of mathematics well on the pupils for better understanding. This complements the findings of Salami (2008) and Cummins (2000) that a child learns better when he is taught in his mother tongue. This is because the child is familiar with his mother tongue.

3.7.3 Methodist Primary School, Sabo, Ile-Ife

> I use the languages in explaining the subject.

The teacher in this school claimed that he used two languages – Hausa and Yoruba in his lessons. Our observation show that he used Hausa to explain the content while he used Yoruba to list and enumerate points. For instance, the teacher listed 1, 2, 3, etc in Yoruba as Ookan, Eeji, Eeta, etc and explained them in Hausa as Daya, Biu, Huku, etc.

3.7.4 St. Bernard Primary School, Lagere, Ile-Ife

> I use the two languages where the pupils cannot understand the lesson.

The teacher in this school claimed that she alternated between English and Yoruba when the pupils did not understand the content in English. However, our observation and record show that the teacher used CS throughout the lesson. Our observation also reveals that the main reason why the teacher employed CS was to make the pupils understand the lesson well. The teacher's claim could be right in this regard.

3.7.5 St. Peters Anglican Primary School 'A', Sabo, Ile-Ife

> To let the pupils participate fully in the lesson. I also use it for more understanding and explanation.

The teacher in this school claimed that she used CS in the classroom so as to carry the pupils along and to make them participate well in the learning process. Our observation and record show that the teacher's reason was justified. The pupils showed interest in the lesson and they responded to the teacher's questions. Our observation and record also show that the teacher used CS to explain and to make the pupils understand the content he was teaching them. The teacher claimed he was aware of the success of the Six-Year Primary Project carried out in Ile-Ife and this was the motivation she had for teaching the pupils in their mother tongue.

3.8 Implications of Code Switching in the Schools Surveyed

Question 5 was asked to find out the implications of CS in the schools surveyed. The implications of CS in each school are discussed below.

3.8.1Anglican Central Primary School, Ilare, Ile-Ife

The teacher we interviewed in this school said that CS improves the pupils' academic performance; and as a result of it, many of them scored high marks in their class work and continuous assessment. Our observation show that the pupils responded well to the teacher's questions.

3.8.2Ansarul Islam Primary School, Sabo, Ile-Ife

The teacher we interviewed in the school said that CS aided teaching and learning in the school. The teacher emphasized that she used CS to make them understand the contents thoroughly. She added that using CS made the pupils to have interest in mathematics. Our observation showed that CS aided the teaching and learning of mathematics in the classroom. The teacher was able to teach well and fluently. The pupils were also able to respond to the teacher's questions. The pupils were at home with the use of Yoruba during the lesson and this really aroused their interest in the lesson. Another interesting thing we observed was that the pupils always expected the teacher to explain in Yoruba whenever they didn't understand a particular aspect of the lesson. It seems that the use of CS in multilingual classrooms is more effective than teaching in English-only medium.

3.8.3 Methodist Primary School, Sabo, Ile-Ife

The teacher we interviewed in this school said that the pupils were not ready to learn in English because their minds were biased. As a result of this, he compared English with Hausa when teaching them. This is because the pupils were of Hausa extraction. Our observation showed that the pupils didn't understand English. They could only speak Hausa and Yoruba fluently. Thus, learning in the medium of Hausa and Yoruba make them more comfortable with the teacher and the lesson. The teacher in turn alternated between Yoruba and Hausa to make sure that the pupils understood what he was teaching them.

3.8.4 St. Bernard Primary School, Lagere, Ile-Ife

The teacher we interviewed in this school said that the use of CS in the school was effective. She said that the use of code switching in the lessons gave the pupils understanding of the content being taught. She also said that alternating between English and Yoruba enabled her to explain to the pupils very well, and as a result, the pupils had retentive memory.

Our observation shows that the teacher code switched at some key points, when explaining important concepts, when the pupils were getting distracted and when praising and reprimanding them. The use of CS in this classroom reduced the overall comprehension burden and made it easier for the pupils to concentrate on the message conveyed.

3.8.5St. Peters Anglican Primary School 'A', Sabo, Ile-Ife

The teacher we interviewed in this school said that the use of code switching in the school enabled the pupils to understand the contents being taught very well. She said that CS also enabled the pupils to participate well in the classroom. Our observation also shows that the use of CS in this classroom gave room for the teacher to maintain solidarity and express emotional understanding with the pupils by switching to their mother tongue. This also contributed to the smooth flow of the classroom interaction and communication.

3.9 Summary of Findings

The study has shown a number of interesting outcomes. First, the study has demonstrated that English and the mother tongue (here, Yoruba and Hausa) are still being used in upper classes in public primary schools in Nigeria. This finding is similar to Salami's (2008) study, where he finds that English and the mother tongue (Yoruba) are being used variably across the curriculum and across classes and levels in primary schools in Ile-Ife.

Moreover, contrary to the claims of the teachers interviewed that they use English as the main language of instruction, our observation revealed that they use CS, where Yoruba is the main (matrix) language and English is the additional (embedded) language. Perhaps these teachers claimed to use English as the main language so that they would not be seen as not following what the National Policy on Education stipulates. In the case of the teacher in Methodist primary school, Sabo, his claim was right. He used Hausa and Yoruba as the main (Matrix) languages, while English was used as an additional (embedded) language.

Furthermore, the pupils used both languages freely in 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 or all the 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.

Again, The findings of this study challenge the view of CS as a sign of communicative incompetence. Instead, it calls for attention from teachers, parents, and educators to draw on children's language resources to help students achieve academic and communicative competence.

In the interactions between teachers and pupils, CS functions as a communicative strategy to clarify or reinforce the speaker's point, overcoming the gap of linguistic competence between the two languages. Moreover, CS is employed to meet the classroom communicative and linguistic need for appropriate word or a lack of appropriate expression due to different cultural values.

Finally, code-switching was found to have a function of facilitating and supporting thinking and communication, no matter how the information, concept or content may appear. An important finding is that the pupils should share the same mother tongue, if code switching will be applied effectively. In this respect, the competence of the teacher in mother tongue of the pupils also plays a vital role, if positive contributions of code switching are expected.

With respect to all points mentioned above, it may be suggested that code switching in language classroom is not always a blockage or deficiency in learning a language, but may be considered as a useful strategy in classroom interaction, if the aim is to make meaning clear and to transfer the knowledge to students in an efficient way. 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, and thus move culture to new adaptive places in the dynamics of cross-cultural life.

4. Conclusion

Our findings in this study are going to open new aspects of research for linguists to examine the relevance of code switching as a learning resource in Nigerian primary schools. The study offers useful suggestions to mathematics teachers on how to promote effective teaching and learning process.

The study also makes it possible for Nigerian primary school teachers and learners to use CS and enjoy its educational benefits in a multilingual classroom where pupils have low English proficiency and limited material resources in the mother tongue.

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