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Negotiating Teaching Mathematics in English Medium Schools in Tanzania: A Case Study

By Dr. Lisa Kasmer, GVSU Faculty and Paige Laurain, GVSU Student

Introduction

Most Tanzanian students are fluent in at least two languages; their tribal language and Kiswahili, a unifying trade language for the 120 tribes in Tanzania. Kiswahili is spoken in Tanzanian parliament, lower judicial courts, and primary schools, yet most secondary schools are taught in English (Brock-Utne, 2003).

In 1995, the Education and Training Policy set forth goals for students and teachers in Tanzanian secondary schools. One goal for both Tanzanian students and teachers is the development of competency in linguistic ability and effective use of communication skills in Kiswahili and at least one other foreign language (Qorro, 2006). To meet this goal, students are taught in Kiswahili in primary school yet are expected to be prepared for English instruction in their secondary schools. Basic communication skills in a new language typically require 2-3 years of study while gaining grade-level competence takes 4-10 years (Lucas, Tamara, & Katz, 1994). These language limitations suggest that most Tanzanian students matriculating from primary school will not be adequately proficient to be instructed in English. In this article we share our experiences instructing such students in the context of secondary mathematics classrooms in Arusha, Tanzania in a multilingual environment.

Case Study

Fifteen mathematics education majors along with two university professors spent the month of May (2011) teaching mathematics to secondary students participating

in an ongoing program between a university in the United States and three secondary schools in Arusha, Tanzania. English was used as the language of instruction. Students attending these schools are expected to speak English at all times. Signs posted throughout the school grounds, remind students of this requirement. While observing the Tanzanian teachers we noted that when the teacher posed a question, students would either not respond or respond with very few simple words in English. According to Puja (2001) she found that students feel uncomfortable speaking English in a classroom as it is poses artificial situation since they speak Kiswahili or their tribal language outside the classroom.

At the onset of our teaching experience, students did not understand key mathematical terms such as variable, equation, or proportion. In order to orchestrate lessons successfully, we needed to repeat words such as variable and equation in Kiswahili to help students make sense of the vocabulary. We also drew pictorial representations such as graphs to help communicate meaning of these concepts. This approach is considered *code switching*, where the teacher will use more than one language to explain an idea. We found this instructional strategy to be valuable in teaching mathematics as understanding mathematical vocabulary facilitates learning.

Discussion between students and teachers is an important aspect to learning, yet, the Tanzanian mathematics teachers we observed seldom posed questions that required students

to respond with their reasoning. We suspect the reason is two-fold, the classroom teachers may have felt ill at ease carrying out a discussion in English, as their own proficiency level was somewhat limited. In addition, students appeared hesitant to respond to questions in English, as they feared making a language-related mistake in front of their peers.

As we taught our initial lessons, we noted the same small number of students volunteered to answer the questions we posed. As expected, these students seemed more comfortable speaking English. In an attempt to engage all of the students, we asked students who never seemed to take the initiative to respond to specific questions. While some sheepishly answered the questions or reluctantly went to the board to solve a problem, many just stared at us or answered the question in Kiswahili. Since they did not understand what was being asked or taught, they could not respond to the questions.

In order to be more effective, we modified our instructional methods. The first modification involved seating arrangements; we moved students capable of understanding English near students who did not understand as well. While we were not able to teach mathematics in Kiswahili, the students could translate what was being taught to each other. According to Brooks and Brooks (2003) students retain 90% of the information they teach each other. This seating arrangement created a classroom environment that encouraged students to interact and work with one another even though the students were not used to working in groups. We also modified our planning process as we determined word choice was crucial because of the students' limited knowledge of English vocabulary. Addressing ways to incorporate simpler sentences and common words in order for students to better understand what we were saying was essential. When possible we incorporated Kiswahili words and phrases into instruction, introducing a concept using both the English and Kiswahili words and asked students to write both in their notes. This documentation ensured that students had a reference throughout the lesson. We also purposely integrated relatable contexts into the lesson, infusing common Kiswahili words and contexts such as cattle, *ng'ombe*, and money, *shilingi* so students

could connect with the ideas. The students were more willing to assist us with our Kiswahili and attend during the lessons once they realized we were trying to convey the material in a way that best suited their needs.

Summary

Studies have demonstrated that the lack of proficiency in the language of instruction results in poor performance in the subjects taught when the language is not the students' primary language (Cummins, 1981; Krashen, 1985). Rudagumya (1990) suggests that integrating students' native languages into their educational experiences can enhance learning, thus giving their languages a status more comparable to that of English. While English was the required language of instruction in this classroom, it was apparent that students were finding minimal success understanding English. These modifications, purposeful seating of students, code switching, using relatable contexts, and simplifying our word choices seemed to benefit the students in this secondary mathematics classroom.

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