ABSTRACT

SCIENCE TEACHERS’ CHALLENGES IMPLEMENTING RWANDA’S ENGLISH AS A MEDIUM OF INSTRUCTION POLICY: A CASE STUDY OF NYARUGENGE DISTRICT RURAL SECONDARY SCHOOLS

In 2008 Rwanda replaced French with English as the language of instruction in all its schools. The abruptness and comprehensiveness of the change created problems for teachers and students, especially in rural areas largely devoid of English in print forms or everyday communication. In order to identify some of the challenges and begin to suggest solutions, 15 of the 17 secondary science teachers in the rural schools of Nyarugenge District were surveyed. Both teachers and students had very low English language proficiency and few resources to help them raise their proficiency levels. Other challenges to policy implementation identified were teachers’ lack of job motivation and school and home environments that were not conducive to or supportive of the use of English as the instructional language. These challenges led teachers to consistently use their mother tongue rather than English in class and rendered them unable to modify lesson content to accommodate their students. Teachers have attempted to overcome the difficulties by reading English grammar books, enrolling in private classes, and attending government-provided language training sessions.

Emmanuel Uwambayinema
May 2013
SCIENCE TEACHERS’ CHALLENGES IMPLEMENTING
RWANDA’S ENGLISH AS A MEDIUM OF
INSTRUCTION POLICY: A CASE STUDY
OF NYARUGENGE DISTRICT RURAL
SECONDARY SCHOOLS

by
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DEDICATION

To Felicite Mukamanzi, my beloved wife;
To Gaelle Uwambayinema, my daughter;
To Brian Uwambayinema, my son;
To all well-wishers.
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This work is the fruit of the combined efforts of many people to whom I am sincerely grateful. I am particularly indebted to Dr. Ellen Lipp, who, despite many other commitments, eagerly agreed to supervise this work. Her encouragement and advice have earned my heartfelt gratitude.

I am also grateful to the professors of the Linguistics Department in the College of Arts and Humanities at California State University, Fresno, for their helpful support throughout my education. I particularly acknowledge the contribution of Dr. Barbara Birch, who introduced me to the world of academic writing and agreed to be a member of my thesis committee. The consistent encouragement of other professors—Doctors Jidong Chen, Chris Golston, Brian Agbayani, and Sean Fulop—helped me finish my studies. May my editor, Ann Byers, also find here my sincere thanks for the parental attitude she showed me throughout the thesis editing.

I am also indebted to the Rwandan secondary school science teachers in Nyarugenge District who participated in this research. I hope this work will contribute to the improvement of science education in Nyarugenge District in particular and in Rwanda in general.

Last, but not least, my thanks goes to my family in general, and to my beloved wife, Felicite Mukamanzi, in particular. She endured my absence from home during the course of my studies at California State University and helped in
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CHAPTER 1: INTRODUCTION

After the 1994 war and genocide, many Rwandans returned from where they had lived in exile for more than 30 years. These returnees came mainly from Anglophone and Francophone countries. The quick and necessary integration of so many returnees who spoke English motivated the Rwandan government to change its language policy. The new policy mandated the addition of English to Kinyarwanda and French as official languages of Rwanda (LeClerc, n.d.; Samuelson & Freedman, 2010).

In May 1998, the government began to promote multilingualism in the Rwandan education system. As a result, teachers were obliged to introduce the teaching of the English language at the primary school level through the tertiary level in order to enable students to better integrate themselves into the larger society. At this point, the education system was operating as smoothly as it had before because English was introduced and taught as one subject among several others. The education system experienced no disturbances because one teacher of English was enough to serve a whole school.

In 2008, the government made a shift in the education system. At a cabinet meeting held on October 28, the decision was made that English would replace French as the language of instruction (LoI) at all levels of education in Rwandan schools and French would be taught as a subject (Gahigi, 2008). The reasons for this change were practical; some of the rationale was that making English the LoI would enable people to integrate more easily in sub-region organizations and promote economic growth by facilitating access to international markets. However, even though the language shift was very practical and came when it was needed for various reasons, its implementation still poses very challenging
problems for a country that was originally Francophone. In addition, implementation of this language shift is obviously more difficult in rural schools than in urban ones because of some issues that particularly affect rural schools (Adedeji & Olaniyan, 2011). In 2007, 97% of teachers in secondary schools in urban areas were qualified to teach at that level whereas only 75% of teachers in rural secondary schools were qualified. Because 85% of all Rwandan secondary schools are located in rural areas, the shortage of qualified teachers in those schools presents a problem for the entire country. Officials from the Ministry of Education and headmasters of all secondary schools in Rwanda met at La Palice Club in Nyandungu, Kigali, on January 9, 2007, to discuss the deficiencies of rural Rwandan secondary schools and decided that deploying more teachers to those areas was among the resolutions (Niyibizi, 2010).

As far as material resources are concerned, urban schools are overtly better equipped than rural ones due to the higher socioeconomic status of the parents and other education stakeholders in urban areas. However, the language environment in Rwanda is very far from being conducive to English language teaching and learning. Language environment encompasses everything the language learner hears and sees about the new language, such as exchanges in restaurants and stores, conversations with friends, content on television, street signposts and newspapers. Yet, as Dulay, Burt, and Krashen (1982) stated, language environment is of paramount importance in the learning of a language.

Generally speaking, of the 12,000 secondary school teachers in the country at the time the new policy was announced, just 600 had been taught the language in which they would soon be expected to teach, and the more qualified teachers were not likely to accept deployment to rural areas (Adedeji & Olaniyan, 2011; Bennell & Akyeampong, 2007). These realities have made the implementation of
the new language policy very challenging in Rwandan secondary schools in general and in rural schools in particular.

As the matter stands today, typical Rwandan rural teachers and learners use the English language only in classroom situations. At home, on the streets, and with friends, they use only Kinyarwanda. There are no television programs, no street signs, no newspapers, and no conversations in English outside the classroom in rural areas. Additionally, although no clear evidence is available to support this contention, the researcher has observed that rural parents in Rwanda have negative attitudes towards foreign languages. The negative attitudes are detrimental to implementation of the new policy because the home environment has been shown to influence learning/teaching a second or a foreign language (Feenstra & Gardener, 1968; Krashen, 1982).

As a result of the above discussion, the implementation of the new language policy in the Rwandan education system—shifting the LoI from French to English—clearly has many problems that will hinder its success in one way or another. These problems are likely to be much more pronounced and difficult to deal with in rural schools. These difficulties were the main motivation behind this study, which investigated the problems and challenges that Rwandan secondary school teachers, especially those teaching science subjects, have encountered in their effort to implement the new language policy.

The study examined how the challenges regarding English as a medium of instruction (EMI) have affected the science teachers’ daily teaching activities and what strategies, if any; teachers have adopted to tackle the challenges. Science teachers were chosen for examination because they receive very limited training in the English language throughout their education as compared to their counterparts in other subjects. Also, teaching science subjects was problematic even before the
introduction of the new EMI policy due to lack of adequate teaching materials such as laboratories and textbooks.

This study took into account both students’ and teachers’ perspectives in accordance with Van den Berg and Ros’s (1999) suggestion that because teachers are the grass roots implementers of policy and students are at the receiving end of the new product, the perspectives of both are necessary to demonstrate either the success or the failure of the very new product (which, in this case, is EMI).

Statement of the Problem

From colonial times until 2008, the LoI in schools in Rwanda was French. Using French as the academic language gave every educated individual in Rwanda the feeling of being Francophone. When government officials felt a pressing need to replace French with English, their decision to initiate the shift was made suddenly. However, a number of problems are making implementation of this shift very difficult. These problems include psychological/attitudinal, material, and human resource issues. These constraints as well as some others not stated above must be overcome in order to achieve a successful instructional language shift in the country’s schools. These issues constitute a major problem for the education system of Rwanda and are the focus of this study.

Research Questions

This study was guided by the following research questions:

1. What are the main challenges rural secondary school science teachers in Rwanda face as they implement the EMI policy in the education system?

2. Are teachers’/students’ attitudes toward English language learning and their home and school environments likely to play positive or negative roles in the implementation of the EMI policy?
3. What impact do the challenges identified above have on science instruction in Rwandan rural secondary schools?

4. Do science teachers in rural secondary schools engage in activities aimed at addressing the challenges?

Theoretical Framework

The research questions in this study factor in Krashen’s (1982) notion of comprehensible input, which highlights the importance of using the target language in the classroom. Krashen believed that teachers who work with students in a language that is not the students’ first language make input comprehensible, or understandable, to the students by using a maximum amount of the target language without reverting to the mother tongue. He felt that teachers would help students understand the target language when they used as much of it as possible in conjunction with a host of other tools. These tools include, but are not limited to, the following:

Facial expressions, gestures, intonation, visual cues, drawing something, using a graphic organizer that builds on itself so that students can actually see a process over time, using multiple examples that have been thought through and that build on the vocabulary the students already know in the TL [target language], creating a context through which they would be able to grasp whatever that vocabulary might be, using cognates, speaking more slowly, using a repetition of terminology on a regular basis so that there are key times when you are not overloading students with too much new information. (Bellack, Kliebard, Hyman, & Smith, 1966, p. 2)

The notions above (Bellack et al., 1966; Krashen, 1982) put classroom interaction and communication at the center of any teaching and learning
experience and suggest a fundamental requirement for successful use of a foreign language as a medium of instruction: that teachers be able to use the language and other resources to provide comprehensible input. In a study of Filipino students, Maminta (1985) found out that the use of EMI in cognitively demanding subjects such as science and mathematics was the main reason for students’ poor performance in those subjects, especially in cases where teachers did not have a strong command of the English language.

No matter what subject is being taught, the language that is used in the instruction is also being taught. That is, students are exposed to the vocabulary and syntax of the language of instruction as they hear it, comprehend it, and later use it for whatever purpose.

These concepts form the framework for the current study. The research investigates the challenges that Francophone teachers face in their effort to teach science using a new language namely, English. Does their ability or inability in the target language help or hinder them in their job of teaching science?

**Background of the Study**

This research examined schools in the Nyarugenge District of Rwanda. The district covers an area of 134 km² and has a population of 284,860. It has 10 sectors and 47 cells. Almost 87% of the district is rural. The rural area has a lower population and poorer infrastructure than other parts of the district and a high rate of poverty (Republic of Rwanda, Nyarugenge District, n.d.).

Nyarugenge District has 32 secondary schools. Fifteen of the schools have the complete secondary education cycle, from Senior 1 to Senior 6 (S1-S6), which correspond to American grades 7 through 12. Seventeen schools have only the lower secondary levels, S1-S3, together with the six levels of primary school in a
structure commonly called “nine-year basic education” (NYBE), or “trone commun” (TC) in French. At the end of NYBE/TC, students take an examination and those who pass it go on to schools with S4-S6 programs. For the unfortunate ones who fail to pass the test, the examination marks the end of the educational journey. Of the 15 secondary schools with the complete secondary cycle, 12 are located in rural areas; these are the sites for this study.

Generally speaking, these schools, like all secondary schools operating in rural areas in Rwanda, have many challenges, notably the lack of qualified teachers because teachers do not like to work in rural areas. Their reluctance is usually due to the limited modern infrastructure in the rural settings. The absence of modern amenities reduces the enjoyment teachers have in their jobs and limits opportunities for professional growth.

District infrastructure is not the only lack in Nyarugenge. The rural schools there do not have adequate material resources because the schools’ parents, who normally must contribute a third of what is necessary to operate public schools, are victims of acute poverty. Nyarugenge District’s rural schools rarely have some of the modern educational infrastructures found in urban schools such as computer and science laboratories and libraries. Still, the district’s rural teachers are required to follow the same national curriculum as teachers in urban areas.

All the schools are coed, but the number of girls is generally smaller in upper classes and boys are visibly dominant in science subjects (Republic of Rwanda, Nyarugenge District, n.d.). The schools are both boarding and day schools; they accommodate students from all over the country who live in the school’s dormitories as well as students from the school’s neighborhood, who live in their parents’ or relatives’ houses near the school. Educators generally believe that those who live at the schools do better academically than those living in their
families’ homes because the day students are obliged to help with the family’s chores and they use traditional lighting to do their homework, lighting that is poorer than what is available in the dormitories.

The district’s rural students have limited exposure to English language instruction. An S6 student in a science subject studies English only 2 hours weekly. Prior to admission to the upper secondary classes, the student had received 6 hours of English instruction weekly in the NYBE/TC classes.
CHAPTER 2: LITERATURE REVIEW

The EMI policy in the Rwandan education system is fairly new; the law establishing the policy was passed on October, 28, 2008 (Republic of Rwanda, Office of the Prime Minister, n.d.) and implementation in the education system began in the 2009-2010 academic year. Because the policy is so new, little research has so far been done on it. In an attempt to find what information was available, this literature review examined three topics. The first topic was the EMI policy, including the motives for instituting the policy in Rwanda. Second, teachers’ and students’ preparedness or unpreparedness, attitudes, and motivation regarding the change were investigated as well as school environment to see if these factors do or do not facilitate the implementation of the policy. Finally, literature was explored that described the experiences of other countries that have introduced and implemented EMI in their education systems.

**The English as a Medium of Instruction Policy in the Rwandan Education System**

Given the complexity of the language backgrounds of Rwandan students after the 1994 war and genocide, a multilingual policy was adopted in the Rwandan education system, ostensibly to help pupils learn in the language in which they are more conversant (Niyibizi, 2010). At the time of the adoption of the multilingual policy, Kinyarwanda was used as a LoI from primary one (P1) to primary three (P3) grades and English and French were taught as subjects. From P4 upward, pupils were permitted to choose either French or English as their LoI according to their respective language backgrounds, and Kinyarwanda was taught as a subject (Republic of Rwanda, Ministry of Education [MINEDUC], 2003).
Despite some drawbacks, this system helped pupils develop cognitive academic language proficiency (CALP), especially at nursery and primary levels (Niyibizi, 2010). CALP is proficiency in the language used in the classroom. It includes the ability to listen, speak, read, and write about subject area content, and it is essential for success in school (Haynes, n.d.). CALP is particularly important when the academic language is not the language students use in everyday situations. Thomas and Collier (1995) showed that children whose primary language is not the language of the classroom may take 7 to 10 years to catch up to their peers academically if they have no support in school language development. Therefore, a language policy that helps pupils develop CALP is beneficial to their performance in all subjects.

Under the former language policy, teacher scarcity was not as acute as it is under the new language policy. Having children start school using their mother tongues was very helpful in fighting early frustration with school and increasing school likeability; the young children could see the school setting as similar to being home with their families. The policy presumed that at the P4 level learners would be able to identify their foreign language preference in line with their own language background and use that language for the rest of their academic journey.

However, on October 28, 2008, the Rwandan cabinet made a profound language shift in the country’s education system, mandating that the English language be the only LoI throughout the system from the very beginning of every child’s education (Gahigi, 2008; McCrummen, 2008; Mwaura, 2008; Republic of Rwanda, Office of the Prime Minister, n.d.). This new policy meant that English had to be used as the only LoI from nursery schools to the tertiary level, and it also had to be taught as a school subject at all levels. The whole experience was dubbed the “English as the Medium of Instruction policy.”
The reasons for this language shift were various, and some were political (McGreal, 2008; Nogic, 2009). Some viewed the policy as evidence of a commitment from the political elite to search for paths to sustainable socioeconomic growth for the nation (Samuelson & Freedman, 2010)

According to Nogic (2009), two political frameworks explain the need to initiate a language policy change in any nation, namely the rational choice theory and the incrementalism theory. The rational choice theory describes what happens when policy makers make a deliberate choice among alternatives whereas incrementalism theory is applicable when an existing situation is changed over time. The framework that best explains the Rwandan case is the rational choice theory because the political elite of the nation decided to institute a specific change that made English the sole LoI in the Rwandan education system. The elite group viewed the action as a rational choice among other alternatives such as making French or Kinyarwanda the LoI, allowing students to select the language they preferred, or using different languages in different schools.

The government officials saw English as the language of preference for use not only in education, but also in business and information technology. Rwanda became a member of the East African Community (EAC) in July 2007 and a member state of the Commonwealth on November 28, 2009 (“Rwanda joins the commonwealth,” 2010) despite the fact that it had never been colonized by Britain. In both of these international organizations, English is the official and exclusive language, which made teaching English to Rwandan citizens a rational choice if the country wanted to play an active role in these organizations. One of the main reasons cabinet members gave for replacing French with English was to make Rwanda more competitive in both the EAC and the international community at large (Kimenyi 2008; Republic of Rwanda, Office of the Prime Minister, n.d.).
As James Musoni, the former Minister for Local Government stated, the change to EMI meant that the Rwandan “financial sector [would] operate better . . . because all the financial transactions in the region are done in English” (as cited in Majyambere, 2008, p. 10).

Some researchers suggested other reasons for the language shift. McGreal (2008), for instance, believed Rwandan officials were eager to abandon French because they all had Anglophone backgrounds. The officials were born and raised in exile, where they were educated in English only. McGreal also suggested that the new language policy was motivated by the continuing deterioration of diplomatic relations between Rwanda and France. The erosion of diplomatic relations was brought about by the fact that Rwandan officials accused French military personnel of having aided the Hutus in carrying out genocide against the Tutsi population. France accused Rwanda’s top military officials of having had a hand in the shooting down of a plane that was carrying the former president of Rwanda.

Some other scholars also think the bitterness in the two countries’ diplomatic relations was the main reason behind the push to say goodbye to French and embrace English (Mamdani, 2001; Wallis, 2006). Their theory, however, is subject to criticism in light of the overall failure of French as an international language or a language of preference in business. The decline of the French language is obvious to everyone, including French people themselves. Xavier Darcos, French minister of education (from May, 18, 2007, to June, 23, 2009) admitted that French was losing the battle against English and announced that French students must not only start learning English intensively at school, but also take additional English lessons during their holidays. He warned that “very few people outside France will be able to speak French in the future” (as cited in
Allen, 2008, para. 4). He also said, “The secret to success is speaking better English. . . . Poor English is now a ‘handicap’ because all international business is conducted in the [English] language” (as cited in Allen, para. 2-3). The French minister observed that English is overtaking French in other traditionally Francophone countries such as Canada and Belgium.

The literature to date suggests that adopting the EMI policy was a rational choice for Rwandan government officials. It gave them a means to equip students with the skills necessary to compete internationally and, in so doing, improve their future socioeconomic status. But did the country have the tools needed to successfully implement the policy? Answering this question was the core goal of this study.

**Challenges to the Implementation of the EMI Policy in Rwanda**

A 2009 survey conducted by the British Council identified the teacher as the weakest link in the chain of implementation of the new language policy in Rwanda in particular and in the improvement of the educational quality in the country in general (Lynd, 2010). Therefore, the discussion below demonstrates the truth behind the statement above.

**Low Teacher Motivation**

Lynd (2010) explained that a major problem in implementing the policy was teachers’ lack of motivation. The fact that teachers’ salaries are lower than those of other Rwandan workers with similar qualifications sapped from many teachers any motivation to adopt a difficult policy that would not profit them. Lynd conducted a study in various African countries and found that Rwandan teachers were the lowest paid of all the countries studied and yet the pupil-to-
teacher ratio in Rwanda was the highest of all the sampled countries. The ratio of pupils to teacher was as high as 67:1 in Rwanda whereas in Ghana it was 33:1. Teachers’ salaries in Rwanda were lower than those of other government employees with the same qualifications. Tables 1 and 2 illustrate some of these discrepancies.

Table 1

<table>
<thead>
<tr>
<th>Country</th>
<th>No. Pupils</th>
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<tbody>
<tr>
<td>Rwanda</td>
<td>62-67</td>
</tr>
<tr>
<td>Benin</td>
<td>47</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>50</td>
</tr>
<tr>
<td>Burundi</td>
<td>54</td>
</tr>
<tr>
<td>Eritrea</td>
<td>47</td>
</tr>
<tr>
<td>Ghana</td>
<td>33</td>
</tr>
<tr>
<td>Kenya</td>
<td>40</td>
</tr>
<tr>
<td>Madagascar</td>
<td>48</td>
</tr>
</tbody>
</table>


Table 2

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Teacher</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor’s degree</td>
<td>113,000RwF (USD 173.84)</td>
<td>200,000RwF (USD 307.69)</td>
</tr>
<tr>
<td>Diploma</td>
<td>89,000RwF (USD 136.92)</td>
<td>144,000RwF (USD 221.53)</td>
</tr>
<tr>
<td>Certificate</td>
<td>27,012RwF (USD 41.55)</td>
<td>80,012RwF (USD 123.09)</td>
</tr>
</tbody>
</table>

As Tables 1 and 2 show, Rwandan teachers have a heavy student load and receive little compensation for their work. The inadequacy of teachers’ salaries is exacerbated by the fact that teachers sometimes have to wait 2 to 3 months to get their paychecks. Some teachers feel the financial necessity of having more than one job, and some work night shifts. As a result of their low wages, teachers are often not able to pay their rent on time or meet other day to day obligations and are thus considered second-class citizens. They cannot afford expenditures that would make their lives comfortable, and their economic plight undoubtedly affects the quality of the education they deliver. Bennell and Akyeampong (2007) observed that “low pay forces teachers to find additional sources of income” and “secondary income activities create divided attention and loyalty to teaching and impact negatively on the quality of schooling” (p. xi).

In their research on teachers’ motivation and incentives for teachers in Rwanda, Bennell and Ntagaramba (2008) found that low job satisfaction affected Rwandan teachers’ performance. They found high teacher absenteeism; 42% of the participants in their study reported that teachers are “only available sometimes.” Sickness was given as a reason for absence only 2.5% of the time, suggesting that teachers do not go to work regularly. Such conditions obviously affect the quality of education.

Among the factors that depress teacher motivation is lack of professional development opportunities for teachers and the absence of any kind of school-based support. Lynd (2010) found that at the time of his research only 10% of teachers in the study had completed or were undertaking further studies in order to acquire additional qualifications; this percentage is low compared to other African countries. Moreover, only 8% of the surveyed teachers had benefited study leave.
The absence of professional development opportunities is tough because it means that Rwandan teachers do not have a chance to grow their salaries; without the potential to acquire new qualifications that might lead to promotions, teachers will see their salaries remain stagnant for the duration of their teaching careers. This state of affairs definitely impacts teacher motivation negatively. Teachers’ motivation, ability, and satisfaction with the situation in which they work seriously affect their performance (Leithwood, Day, Sammons, Harris, & Hopkins, 2006; Mulkeen, Chapman, DeJaeghere, & Leu, 2007).

Teachers’ Lack of Proficiency in English

Another factor in the success of the policy implementation is the ability of teachers to actually carry out the new language policy. The survey conducted by the British Council in 2009 (as cited in Lynd, 2010) showed that most Rwandan teachers did not have even intermediate levels of proficiency in English. The survey found that 85% of primary teachers and 66% of secondary teachers had only beginner, elementary, or pre-intermediate levels of English proficiency based on the Common European Framework for Languages. This means that in secondary schools, which are the focus of this study, 34% of the teachers have little or no grasp of English and yet are expected to teach all their classes in that language. The in-service training in English that the government envisages cannot help these teachers because they do not have a basic knowledge in the language upon which the training builds.

In 2009, the Ministry of Education (Republic of Rwanda, MINEDUC) surveyed secondary school teachers to ascertain their backgrounds in the English language and their teaching experience. The researchers found that only 35% of the teachers had studied English formally during their secondary school education.
The remaining 65% had acquired some knowledge of English informally, either through evening classes or by simply picking up some of the language through various means.

These statistics are disturbing given the fact that these teachers are now required to transmit knowledge to students using a language they did not study in an adequate way (English). They are not equipped to teach by implementing the theory of comprehensible input described previously that suggests that teachers use the target language (English) in the classroom to facilitate the flow of communication between them and their students because teachers have not received adequate comprehensible input in English themselves during their education.

Commenting on the challenges of the implementation of the EMI policy, Ssenyonga (as cited in Republic of Rwanda, MINEDUC, 2009) cautioned that transforming the more than 90% of French-speaking teachers into competent users, let alone English instructors, was too overwhelming a task to complete in a short period of time. He believed that the language shift was a good idea but teachers and students should be given sufficient time to assimilate the new language before starting to use it as a medium of instruction. Several other researchers were of the same view (Lynd, 2010; Niyibizi, 2010; Norudin, Badarudin, & Mat, 2011; Nzitabakuze, 2011; Othman & Saat, 2009; Samuelson & Freedman, 2010).

Language is only one area of professional inexperience that has been challenging when implementing the new policy. Another challenge is fact that many teachers have not been in the classroom for very long. The MINEDUC survey (Republic of Rwanda, MINEDUC, 2009) found that 40% of all teachers in both primary and secondary schools have less than 5 years of teaching experience.
Teachers’ Negative Attitudes Toward English

Given the history of the use of languages in Rwanda, some teachers have a negative attitude toward the English language. The facts that the English language was introduced fairly recently to a population that had considered French the only language of academia and that the people were required to replace French with English immediately did not endear the new language to many Rwandans (Rosendal, 2009; Samuelson & Freedman, 2010). Teachers in particular worried that being forced to carry out their job tasks in English was likely to cause them to lose those jobs, and this fear created great resistance to the language policy change. According to Samuelson and Freedman, some Rwandans think of English as a language of the invaders, the victors, because it was an official language of Uganda, a country where the rebellion to liberate Rwanda (Rwandan Patriotic Front) originated. However, it is hard to document what teachers in particular and the population in general really thinks about the introduction of the new language because the entire process has been backed by strong political motives that make getting people’s honest opinions difficult.

Students’ Lack of Preparedness

Even if teachers had been ready and eager to implement the new language policy, Rwandan students were not. The problem of students’ readiness for the new language policy has not attracted many researchers. Some researchers have even tried to convince the general public that the readiness of students should not constitute a big challenge because students can always learn (Republic of Rwanda, MINEDUC, 2009). Perhaps they are somewhat correct, especially regarding younger learners, because most children can learn in any language if they have no challenges other than language. However, language can be a major challenge for
secondary school students, especially if their earlier education was done in a language other than what they must use in secondary school, as is the case with the subjects of this study. One reason older students have difficulty learning in a second language is that teachers at the secondary level rely heavily on spoken instruction. As Klaassen and De Graaf (2001) observed, “Students’ attention span and listening comprehension skills may not be sufficient to meet the demanding task of listening to long stretches of talk, performing in seminars or other academic activities” (p. 282).

The school environment is another important factor in the implementation of a language policy. Several prominent researchers have demonstrated the paramount role of school environment in the teaching and learning of a second or a foreign language (Briere, 1978; Dulay et al., 1982; Feenstra, 1969). The environment both at school and at home can affect the smoothness with which a second language is learned either positively or negatively.

Dulay et al. (1982) defined a language environment as everything that second-language learners “hear and see in the new language,” including but not limited to a “wide variety of situations like exchanges in restaurants and stores, conversations with friends, watching television, reading street signs and newspapers, etc.” (p. 13). This definition indicates how problematic the teaching and learning of the English language in typical rural schools in Rwanda can be because the language environment in Rwanda in general does not promote the teaching and learning of English, and the situation is even more difficult in rural settings.

The absence of English in everyday encounters reduces rural school students’ chances for learning, much less mastering the language. Urban students
have more exposure to English and thus have greater opportunities to learn the new language.

The home environment of rural students is another factor hindering rural students from mastering the English language. Not only is the typical rural household devoid of any materials in English, but many rural parents harbor negative attitudes toward the language. What happens or does not happen in the home has an important influence on the learning of a foreign language. Parents’ positive attitude or lack thereof towards the second-language community is of paramount importance in encouraging or discouraging their children’s learning of that language (Feenstra & Gardener, 1968).

Furthermore, the majority of rural parents in Rwanda are illiterate. Because they do not have an education, they have difficulty encouraging their children to go to school. Briere (1978, p. 171) noted that “parents’ need and ability to speak a second language is among the predictors of successful learning of that language by a child.”

Strategies for Addressing the Challenges

After the wars and genocide in Rwanda ended, many of the elite in the country began to learn English. The new ruling class—those who had returned to Rwanda from Uganda—spoke English and promoted its use everywhere, and French- speaking Rwandans of any standing saw the need to learn English. But learning a language takes time and resources. Private institutes began programs that taught English to the general public, but their fees were high and beyond the reach of many Rwandans. Thus, even though the Francophone elites attempted to learn the new language, English “remains largely the domain of the elite and
powerful Anglophones, mostly Ugandan returnees” (Samuelson & Freedman, 2010, p. 195).

Teachers, however, had to learn English as a requirement of the language policy introduced in 2008. Despite the fees and other challenges connected with learning the new language, teachers had no alternative other than to take English language courses in private if they wanted to keep their jobs. Primary and secondary school teachers were obliged to take night and weekend classes in English; many learned at night and passed their new skills on to their students during the day (Niyibizi, 2010; Nzitabakuze, 2011; Samuelson & Freedman, 2010).

The government of Rwanda, as the agency that oversees and monitors teachers’ activities, provided teachers with some help for improving their English skills, although the help was minimal compared to what the teachers needed. Lynd (2010) described two major schemes the government of Rwanda set up to improve teachers’ proficiency in English. One involves trainings in the English language during the long school vacation that goes from the close of one academic year at the end of June to the start of the next in mid-September. These trainings are conducted by Rwandan teachers with good proficiency in English and a few teachers from Uganda and Kenya who have relatively good English proficiency. This program is quite effective, but it reaches a very limited number of teachers because each training session can accommodate only 150-250 teachers countrywide (Republic of Rwanda, MINEDUC, 2009). It is also prone to many other limitations: teachers enrolled in the programs are at different levels of English proficiency, the English proficiency of some of the trainers is somewhat low, and materials and other resources are few.
The second government initiative worth mentioning here is the “Teacher English Radio” or “teacher training by radio” program (Lynd 2010). This initiative is a radio series consisting of twelve 15-minute programs targeting teachers who have large classes and few resources. Content includes language-specific topics such as “teaching listening skills” as well as more general pedagogy such as “making the classroom motivating.” This program is helpful because its essence is increasing listeners’ exposure to English with a native accent, but the program is in an embryonic phase and is not likely to reach a large number of teachers. It is especially unlikely to help those in rural parts of the country who might have difficulty getting a radio receiver set.

Language of Instruction Shifts in Other Countries

Rwanda is not the only country to decide to use EMI in its education system. Throughout Western Europe and Asia as well as Africa, governments and educators have introduced English as a LoI to improve their citizens’ linguistic competitiveness. Several African countries have attempted remarkable changes in their language policies, notably Namibia (Harlech-Jones, 1990), Botswana (Magogwe, 2007), Mali (Canvin, 2007), and South Africa (Heugh, 2007; Uys, Van der Wait, & Botha, 2007; Webb, 2004). In this chapter, the introduction of EMI in Malaysia, Belgium, Indonesia, and Tanzania is discussed. Some of the challenges to EMI in these countries are similar to those in Rwanda. The introduction of a new LoI in Canada is also discussed because implementation of the change there was relatively easy and the results have been good.
Malaysia: Compulsory EMI in Science and Mathematics

Teaching science in English at the school and university levels is one of the most important changes Malaysia made in its education policy recently. The change was made to react to and arrest the decline of English in the country; officials felt that if not remedied, the gradual loss of English was likely to have a negative impact on the country’s economic development (Othman & Saat, 2009). Nunan (2003) believed the introduction of EMI in the teaching of science and mathematics is among the ways Asian Pacific countries can keep up with the pervasive view that the English language is becoming globally important and will also help countries such as Malaysia achieve its vision of being a developed country by 2020.

However, Malaysia faced the same challenge in implementation as Rwanda: teachers’ proficiency and competence in the English language were very low. Pandian and Ramiah (2004) observed that mathematics and science teachers had to cope with the double demand of transmitting content as well as language to their students. The situation was even more challenging for prospective teachers, many of whom were overwhelmed when first thrust into the classroom. Teaching mathematics and science to Malaysian students using EMI posed a tremendous challenge because the students’ levels of proficiency in English were very low.

In an effort to address these challenges, the Malaysian government made it compulsory for all prospective science teachers to take their courses and conduct their practicums in English (Leemk, 2009). This requirement may have helped preservice teachers, but it ignored those who were already teaching; nothing was done for them to raise their levels of English proficiency. Several researchers have suggested that greater focus needs to be given to developing better teacher training
if the government wishes to see the language policy it set successfully implemented (Chan & Abdullah, 2005; Pandian & Ramiah, 2004).

Belgium: EMI in Flemish Higher Education

In Belgium, language is a “highly sensitive and divisive issue” (Donaldson, 1983). The issue of language is especially sensitive in Flanders, the Dutch-speaking part of Belgium. Donaldson explained: “Flanders in particular has established close links between its language and identity which would act as a negative force against innovative undertaking as far as language policy is concerned” (p. 31). However, language usage in Flanders has been changing. Although Dutch is the primary language throughout the region, English has largely replaced French as a second language. And throughout much of Europe, English has become a medium of instruction in institutions of higher learning.

Academic professionals in Flanders have resisted the inclusion of English or any language other than Dutch for teaching purposes. But Flemish government officials have argued for the introduction of EMI in education. Although its use as a medium of instruction is restricted, its use as an academic language is increasing. Many students and lecturers regard language in general—including foreign languages—as part of their identity (Van Splunder, 2010).

The broad context for the push among many in Flanders to remove restrictions on the use of English as a LoI at the college level is globalization, “the growing importance of English as a lingua franca in European higher education” (Van Splunder, 2010, p. 14). Van Splunder observed that the wider acceptance of English in academia was an unintended side effect of the 1999 Bologna Declaration. That document launched the European Higher Education Area, a collaboration of 46 nations that agreed to some synchronization among their
colleges and universities. The agreement resulted in greater movement of students and scholars among countries with different languages and required a lingua franca as a practical matter. A lingua franca is “a contact language used among people who do not share a first language” (Jenkins, 2007, p. 1). After the Bologna Declaration, English gained prominence as the lingua franca, and therefore the LoI, in schools throughout the European Higher Education Area.

The most important challenge to the use of EMI in Flemish higher education has been the negative attitude of some of the citizens who resisted the acceptance of English and were very protective of French and Dutch. Another obvious problem has been difficulty in raising the level of English proficiency among lecturers and students (Van Splunder, 2010). This discussion makes clear that the introduction of EMI in Flanders—English as a medium of instruction but not the sole medium—was not motivated by political beliefs; rather, it was a practical way to deal with social, economic, and educational changes that were taking place in the country. Implementing EMI as a practical solution to changing realities appears to also be the case for many other contexts worldwide.

**Indonesia: EMI in Public Junior Secondary Schools**

An EMI program was started in Indonesia in 2006 under the provisions of the National Education Law enacted on March 20, 2003. The Directorate General for Primary and Secondary Education Management (2009) tested the new program at its international school and the remaining secondary schools countrywide soon adopted it. The main objective for introducing EMI was the need for bilingual education. EMI was implemented in the nation’s secondary schools under various names: dual language education (Lindholm-Leary, 2001), bilingual immersion (May, 2008) and its variants such as one way/two way immersion (Fortune &
Tedick, 2009), content and language integrated learning (Seikkula-Leino, 2007), teaching English for mathematics and science (Hashim, 2009), or simply English as a medium of instruction (Wannagat, 2007).

EMI was employed as a form of content-based foreign language learning; it was used for certain subjects such as mathematics and science, and its overall aim was to improve subject and linguistic competitiveness. The most challenging problem in the implementation of the EMI policy in Indonesia was poor human resources; that is, most teachers in the country had relatively limited proficiency in English (Kustulasari, 2009; Sundusiyah, 2010)

Tanzania: Resisted Introduction of the EMI Policy

When Tanzania gained independence in 1961, the country inherited a colonial education that used Swahili and English as languages of instruction, but when socialism was introduced in 1967, Swahili was declared the only LoI. As the English language gradually rose in status worldwide, some educationalists in Tanzania felt that the government must “enable all children to master English in order for them to acquire an education that allows them to compete favorably for employment” (Swilla, 2009, p. 1). In the 1990s, the government legalized private schools and schools using EMI and pressed education officials to firmly establish English as a LoI beginning in primary school.

The government’s decision to introduce English as a LoI in Tanzanian schools met with some challenges before finally succeeding. For one, teachers were not qualified to teach in English. For another, some parents and influential educators openly resisted the decision. At the beginning traditional educators were of the opinion that Swahili should be the only LoI and they openly dubbed the new language policy “English as a language of destruction in schools” (Mhegera,
Nevertheless, the policy eventually became successful, and students, teachers, and Tanzanian society at large have enjoyed fruit from the implementation of this policy (Rugemalira, 2005).

Canada: French Immersion

Although Canada is a bilingual nation with citizens speaking English and French, English has clearly become more economically powerful than French even in Québec, where French is spoken by the majority of the population (“Is There a Deep Split,” n.d.). In response to this reality, Quebecers made many attempts to elevate the French language. In 1965 members of the English speaking community in Québec introduced an experimental French immersion program in kindergarten classes with the goal of making the children bilingual (Lambert & Tucker, 1972). The children in the immersion classes received the same education they would have received in the regular English program except that the material was taught in French. The teachers were generally native French speakers who understood English, and they treated the children as though they, too, were native speakers. The experiment was a success.

The success of the experimental program led to the establishment of other immersion programs. Canada now has three types of immersion programs: early total immersion, delayed immersion, and late immersion. The early immersion programs begin in kindergarten and last up to 11 years. They are divided into three phases: a monolingual phase, a bilingual phase, and a maintenance phase. The monolingual portion usually takes place from kindergarten to Grade 2 or 3. In this phase all curriculum materials are presented in the second language (French) but children may speak among themselves or to the teacher in the students’ first language (English). In the bilingual phase, usually from Grade 2 or 3 to Grade 6,
the two languages are used equally for instruction. In the maintenance phase, usually from Grade 7 to the end of secondary school, three to five subjects are offered in French. Most educators believe this program yields better results than the other two types.

In delayed immersion, the use of French as a major medium of instruction is delayed until the middle elementary grades, usually introduced at Grade 4. Late immersion programs postpone intensive use of French until the end of primary school or the beginning of secondary school (Genesee, 1995). All three types of French immersion programs produced very good results; students became competent in both French and English, and learning French did not affect the students’ proficiency in the English language.

Some prominent researchers reported that students who completed French immersion programs appeared to enjoy some advantages over monolingual English students. Cummins (1987), for example, found that immersion students not only did as well in using English language skills as students educated entirely in English, but they also performed as well in subject matter as students who were educated in English and they acquired a great deal of the second language. Edwards and Smyth (1976) and Lambert and Tucker (1972) observed that French immersion students reported being satisfied with their programs, felt confident in speaking French, and saw less social distance between themselves and French Canadians. They also tended to fear foreign languages far less. The success of Canada’s French immersion led some scholars to call it a “two for one” benefit. Students in the programs achieved both a high level of second-language development and mastery of school subject matter equivalent to that of similar students studying in their first language, English (Calvé, 1991; Halsall 1989; Lambert & Tucker; Lapkin, Hart, & Swain, 1991).
The success of Canada’s French immersion seems to suggest that the challenges that can hinder the implementation of a new language policy in any education system are not the result of the new language, but of infrastructures, facilities, and strategies that governments and education officials institute to help teachers implement the policy fully. The Canadian immersion programs were successful because competent professional French teachers were available and schools had sufficient equipment, administration, and other resources. Students also had access to French language resources and opportunities to use the target language in everyday situations.

The literature shows that a number of countries have introduced the use of English as either the sole medium of instruction or one of the media of instruction in one or more parts of their education systems. The driving force behind this phenomenon appears to be the growing influence of English globally, particularly in the economic arena.

However, the literature also indicates that implementation of a policy that mandates EMI has met with challenges every place the policy has been imposed. The types of challenges identified in the literature are illustrated in Figure 1, which depicts the parameters necessary for achieving success when making changes in language policy irrespective of the country in which the policy is implemented. Figure 1 shows that students’ performance, which is the measure of the success of any teaching program, is conditioned upon three major elements: teaching, attitudes, and environment.

Teaching encompasses teachers’ training and experience, teaching/learning materials, teaching facilities, teaching methods, and other materials and strategies employed by the teacher. This review of attempts to implement LoI shifts in five countries suggests that the training and experience of teachers has been a major
impediment to implementation, particularly teachers’ struggles with proficiency in the new LoI. Implementation has been successful in Canada, which has access to teachers with good language skills and adequate materials.

Attitudes of both teachers and students toward the overall teaching and learning process were shown to affect student performance. Attitude includes teachers’ motivation and job morale, the degree of seriousness with which teachers approach their tasks, the amount of love teachers have for their profession, and students’ thoughts and behavior toward class activities. The literature revealed that the negative attitudes toward the introduction of EMI in Flanders and Tanzania hindered the language policies there.

The literature also demonstrated the importance of environment, both in the home and in the school, on the success of introducing a new LoI in a nation’s schools. An environment devoid of English does not lend itself to development of English proficiency regardless of what occurs in the relatively few hours in classrooms.

The challenges of implementing EMI in Rwanda are many. This study provides educators in Rwanda with some specifics on the difficulties in that country. The prospect of having a populace proficient in a language with global influence is worth the struggle to overcome the challenges.
CHAPTER 3: METHODOLOGY

This research explored the challenges faced by Rwandan secondary school science teachers in their effort to implement the EMI language policy introduced in the Rwandan education system in 2008. It is a case study of implementation in the schools in Nyarugenge District in Kigali. It answered specific research questions by seeking “a range of different kinds of evidence, which is there in the case setting and which has to be abstracted and collated to get the best possible answers to the research questions” (Gillham, 2000, p.1). One of the drawbacks of case study research is difficulty in generalizing findings from one case study to others or to the larger population. Nevertheless, case study findings can offer important hints that permit “fuzzy generalizations” (Bassey, 1999). Because little research has been conducted on the implementation of the language policy in the Rwandan education system, a study that produces tentative generalizations can be a starting point for more in-depth research on the subject, suggesting questions and direction for further exploration.

Location, Population, and Sampling Procedures

This study was conducted in the rural part of Nyarugenge District. The study population consisted of all the S6 secondary school science teachers in the rural part of Nyarugenge District in the 2012-2013 academic year; 15 teachers completed the survey and 18 of their students, who were selected randomly, participated. The S6 classes are taken in the final year of secondary education. The schools offer five science courses: mathematics, biology, chemistry, physics, and information and communication technology. The research included science teachers only; they were selected for study because teaching science subjects was problematic even before the introduction of the EMI policy.
Of the 17 potential participants, 15 completed the survey instrument; therefore, the sample size was 15. The sample was small, but the study had very limited sampling errors because its sample population was nearly the same as the whole population of the research. The representativeness advocated by Ghiglione and Matalon (1985) was guaranteed by the fact that 88% of the total population participated in the study.

The S6 students who were included in the study were selected by a simple random sampling technique. Simple random sampling is a technique of selecting $n$ units out of a population by giving all units equal chances of being selected (Ding, Hsieh, Wu, & Pedram, 1996). In order to give every student the same chance to be selected, names of all the students in each class were written on small pieces of paper, all name tags were put into a hat, and names were randomly picked from the hat. In every class, this sampling method yielded students of both sexes.

**Data Collection Procedures**

This research was a descriptive survey. In order to gather all the information, the researcher sent the participating teachers and students an introductory letter (see Appendix A) and questionnaires (see Appendices B and C) by mail. A pilot study was conducted to make sure the survey instrument would give the researcher reliable and pertinent data. In the pilot study, questionnaires were sent to science teachers in the school in which the researcher was a teacher, which was also located in Nyarugenge District. The science teachers were asked to provide answers to the questions exactly as the participants in the actual research would be asked. The researcher used the information from the pilot to revise the questionnaire. The researcher devised questions in three main categories: demographics, the English language, and perceptions of challenges faced by
science teachers. Questions about the participants’ knowledge of and feelings about the English language were asked because the researcher thought English language proficiency would be the most challenging issue in the implementation of the EMI policy in the Rwandan education system for both teachers and students. The section on participants’ perceptions of challenges was meant to elicit information about the challenges from the teachers’ perspectives and make sure the researcher’s questions did not leave out any important issue concerning these challenges.

The research instrument used in the pilot study contained a number of open-ended questions. However, participants in the pilot declined to respond to the open-ended items. Therefore, to encourage participation in the study, the majority of the questions in the final form of the questionnaire for the actual study were written in a multiple choice or Likert scale format.

**Data Analysis**

The raw data collected from the surveys were systematically recorded and descriptively analyzed. Given the fact that this research has both qualitative and quantitative characteristics, the two types of data were analyzed separately. The quantitative data were systematically recorded and presented as percentages using tables. Patterns and critical information were identified at this stage. Finally, the general nature and practices of the sample were inferred from the categories, meanings, and patterns identified in the data analysis. At this level of interpretation, the theoretical framework of related literature lent structure and support to the interpretation, and some simple statistical operations and tests were conducted to help in the data analysis where necessary.
As far as the qualitative aspect is concerned, the researcher tried to understand the investigated case essentially from the respondents’ points of view. According to McMillan and Schumacher (2006), qualitative research describes and analyzes “people’s individual and collective social actions, beliefs, thoughts and perceptions. The researcher interprets phenomena in terms of meanings that people assign to them” (p. 315). The researcher in the current study interpreted the data, which consisted of the participants’ responses on the questionnaires, in light of the objectives and research questions of the study. The grounded theory approach, frequently used in qualitative research, was applied; it involves the discovery and development of a theory through the analysis of collected data (Denzin & Lincoln, 2000; Strauss & Corbin, 1997).

**Ethical Considerations**

Hancock and Algozzine (2006) cautioned, “The researcher must adhere to legal and ethical requirements for all research involving people. Interviewees [or research subjects] should not be deceived and are protected from any form of mental, physical or emotional injury” (p. 40). To comply with this important advice, the researcher obtained approval from the proper authorities to conduct the research, assuring that adequate human subject protection was in place (see Appendix D). In the introductory letter, the researcher informed participants of the nature and objectives of the research and explained that they were guaranteed confidentiality. Participants were assured their names could not be connected with the research and whatever they reported could not be associated with them as a result of the research. Chapter 4 presents the results of the survey and a discussion of their meaning.
CHAPTER 4: RESULTS AND DISCUSSION

The sudden introduction of a new LoI throughout the entire education system of Rwanda was so drastic and so comprehensive that problems were bound to arise. The purpose of this research was to provide information that might aid educators and government officials in identifying and overcoming some of the major problems. Using the Nyarugenge District as a case study, the researcher surveyed science teachers and students there to discover the challenges they encounter in implementing the EMI policy, the impact of the challenges on their teaching, and the measures they take to deal with the challenges. The results are presented in this chapter.

Demographic Results

The demographics that were considered relevant to this study were gender, years of teaching experience, and level of education (Tables 3 and 4). Of the 15 teacher participants, 60% were male. No teacher had more than 5 years of experience and more than half had only 2 to 3 years of teaching experience. Eighty percent of the teachers had bachelor’s degrees and 20% had an A1 level of education; that is, they had the equivalent of 2 years of postsecondary education but had not yet earned a degree.

Challenges Faced by Science Teachers in the Implementation of the EMI Policy

Based on the literature, the researcher assumed that challenges Rwandan science teachers would encounter as they attempt to implement the country’s new language policy would come primarily from two sources: teachers and learners. Therefore the questionnaire was designed to elicit data regarding characteristics of both teachers and students as they impacted implementation of the policy.
Table 3

Distribution of Study Population by Teaching Experience

<table>
<thead>
<tr>
<th>Teaching Experience (in Years)</th>
<th>No. of Teachers</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 year</td>
<td>2</td>
<td>13.4</td>
</tr>
<tr>
<td>2-3 years</td>
<td>8</td>
<td>53.3</td>
</tr>
<tr>
<td>4-5 years</td>
<td>5</td>
<td>33.3</td>
</tr>
<tr>
<td>6-10 years</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>More than 10 years</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 4

Distribution of Study Population by Level of Education

<table>
<thead>
<tr>
<th>Level</th>
<th>No. of Teachers</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Science</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bachelor of Science</td>
<td>12</td>
<td>80</td>
</tr>
<tr>
<td>A1 (Sciences)</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>D7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>D6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100</td>
</tr>
</tbody>
</table>

Notes. A1 = 2 years of university education; D7 = Secondary school diploma with 1 year internship; D6 = Secondary school diploma
The low levels of teachers’ English language proficiency were obvious from their responses on the questionnaires. The first items on the survey were about the teachers’ backgrounds regarding the English language. The survey investigated where and how the teachers had studied English in order to see if they had any formal education about the English language; formal education in the subject is one of the best ways to receive accurate knowledge.

The researcher was surprised to learn that some of the teachers had no formal education in English; they had picked up what they knew of the language in informal ways. Teachers with only an informal knowledge of the language generally have a very low level of proficiency in English. In fact, no single teacher had studied English at an early age; the earliest point any respondent reported for the initiation of learning English was at the secondary school level. The majority reported that they first studied English at the university level.

The kinds of English programs science students follow at the university level do not prepare them for teaching in English. Rwandan science students at the university level receive instruction in English in one 2-hour period per week in a course called “communication skills.” The purpose of the course is to increase students’ competence in the English language in general and, in particular their ability to communicate on the job when they secure employment. However, this program is not likely to equip students with the skills that are needed to teach sciences using English right after graduation. The program fails for two reasons. First, students enter the program at an age that is late for language learning. Students at the university level in Rwanda who plan to be teachers must serve as teachers for at least 2 years prior to being admitted to public universities; this
means that the science teachers’ first encounter with any form of English instruction occurred no earlier than 2 years after completing secondary school. Scholars generally agree the younger a person is when attempting to acquire a second language, the better chance the person has of mastering the language (Best & Tyler, 2007; Munro, Flege, & MacKay, 1996). Secondly, students do not give this program adequate attention because it is not credited and does not count toward the units needed for graduation (Kigali Institute of Education, n.d.). Some students do not even attend the classes regularly, preferring to concentrate on the science subjects.

Perhaps more disturbing is that many of the participating teachers did not learn English in any type of school. They had degrees or diplomas in science, but they had never studied English in a formal way. They did their best to learn on their own by reading grammar books or attending private English courses. The private courses were generally organized by local people primarily as a means of making money. The amount and quality of the knowledge of English they gained from the books or the courses are questionable. The participants’ responses to the question about formal language training make clear the fact that the English language background of the science teachers in this study was too limited for effective use of English as a LoI in teaching sciences at the secondary school level.

Another indication of the inadequacy of the science teachers’ English language proficiency was found in the participants’ self-ratings of their level of proficiency in English. As Table 5 illustrates, the majority of respondents regarded themselves as “basic users.” The category with the second highest number of respondents was “intermediate independent user.” Only one teacher claimed to be a “proficient user.” The Common European Framework of Reference for
Languages (*Teacher’s Guide*, n.d.), the international standard for measuring language proficiency, identifies “basic user” as the lowest of all proficiency levels. No one truly at this entry level can effectively use the language as a LoI in teaching students.

Table 5

*Teachers’ Self-reported English Language Proficiency*

<table>
<thead>
<tr>
<th>Proficiency Level</th>
<th>No. of Teachers</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic user</td>
<td>10</td>
<td>66.7</td>
</tr>
<tr>
<td>Intermediate independent user</td>
<td>4</td>
<td>26.6</td>
</tr>
<tr>
<td>Proficient user</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The researcher thought some language skills may be more challenging than others, and the various skills are likely to play differing roles in the overall process of teaching a class in a second language. The survey asked teachers to rate the level of challenge they associated with four specific language skills. Results are presented in Table 6.

Table 6

*Teachers’ Perceptions of Difficulty of Selected English Skills (N = 15)*

<table>
<thead>
<tr>
<th>Skill</th>
<th>No. Rating as Challenging</th>
<th>No. Rating as Somewhat Challenging</th>
<th>No. Rating as Not Challenging</th>
<th>% Rating as Challenging</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaking</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>80</td>
</tr>
<tr>
<td>Writing</td>
<td>10</td>
<td>4</td>
<td>1</td>
<td>67</td>
</tr>
<tr>
<td>Listening</td>
<td>9</td>
<td>3</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>Reading</td>
<td>8</td>
<td>3</td>
<td>3</td>
<td>53</td>
</tr>
</tbody>
</table>
The information that emerged from responses to this item was somewhat shocking. More than half of the participants perceived all four skills to be challenging. The most challenging skill was speaking, with 80% of respondents who reported it as challenging. Yet this skill is essential for teaching a class in any subject. Teachers cannot provide comprehensible input to their students if they cannot use the target language extensively while teaching. This lack of ability to establish clear communication between teachers and students blocks the progress of learning and is a source of poor student performance, especially in cognitively demanding subjects such as science and mathematics (Bellack et al., 1966; Maminta, 1985).

Writing was also perceived to be greatly challenging in a sense that 66.7% of respondents found it challenging. The productive skills (speaking and writing) appeared to be more difficult than the receptive ones (reading and writing), which means that the teachers in the study have a long way to go to bring their levels of English up to a point that would enable them to successfully implement the EMI policy. The productive skills, especially speaking, are more important in handling a class than the receptive skills.

This finding is compatible with what several other researchers reported in their studies of the same issue. Those researchers consistently reported in 2010 and 2011 that primary and secondary school teachers in Rwanda were not ready for an EMI policy because their English language proficiency was too low (Lynd, 2010; Niyibizi, 2010; Nzitabakuze, 2011; Samuelson & Freedman, 2010).

**Students’ Low Levels of English Language Proficiency**

Science students’ low levels of proficiency in the English language constitute another challenge to the quick and smooth implementation of the EMI
policy in the Rwandan education system. The national science curriculum in Rwanda does not allocate sufficient time for English courses, and secondary school science students study English in a consistent way only during the first three years of secondary education (corresponding to American Grades 7-9); when they move to the upper secondary level they concentrate on content subjects. The researcher believes this to be a serious mistake in need of correction. This topic will be discussed in the next chapter.

When the student participants were asked to rate their proficiency levels in the English language, the majority reported that they were at the “elementary” level; yet they were at the end of their secondary school education and were getting ready to sit for the national examination for the completion of their secondary school studies. Table 7 shows how science students self-reported their English language proficiencies.

Table 7 indicates that the science students in this study were not ready to successfully follow their lessons using the English language. Nearly 95% described themselves as at either the beginner level of proficiency (16.7%) or the “elementary” level (77.8%). These figures present a great problem for the implementation of a policy that requires that the students receive all their lessons in English. These students’ low proficiency in the English language is understandable given that none reported having studied English in primary school. They met English for the first time in their lives at the secondary school level. This state of affairs implies that even if the government were able to employ competent and qualified teachers, implementation of the EMI policy would still be difficult because students’ lack of ability to learn through instruction in the English language would drag down the teachers’ efforts.
Table 7

<table>
<thead>
<tr>
<th>Proficiency Level</th>
<th>No. of Students</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginner</td>
<td>3</td>
<td>16.7</td>
</tr>
<tr>
<td>Elementary</td>
<td>14</td>
<td>77.8</td>
</tr>
<tr>
<td>Intermediate</td>
<td>1</td>
<td>5.5</td>
</tr>
<tr>
<td>Advanced</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The students’ perceptions of their low levels of proficiency were supported by their teachers’ assessments. When the teachers were asked to rate their students’ abilities in the English language, they identified several weaknesses. The teachers rated their classes as a whole; they did not rate individual students. Table 8 presents the teachers’ assessments of their students’ abilities to use English in a science class.

As these figures suggest, science students face many challenges in using English as a LoI in their content subjects. For almost all the skills, the majority of the teachers reported their students’ skills in using English in science needed much improvement or were weak. Few rated their students satisfactory in any skill except writing answers to questions about science; one rated students as good in this area, and no one gave an “excellent” rating for any skill. One reason that writing appeared to be less challenging for the students is that some secondary students in Rwanda have a habit of memorizing whatever material is given to them and on tests they are able to mechanically reproduce what they memorized. Such rote learning does not promote meaningful and active learning, critical thinking, or creativity (Cohn, 1979; Schunk, 2008).
Table 8

*Teachers’ Assessments of Students’ English Language Skills (N = 15)*

<table>
<thead>
<tr>
<th>Skill</th>
<th>No. Rating as Weak</th>
<th>No. Rating as Needs Much Improvement</th>
<th>No. Rating as Satisfactory</th>
<th>No. Rating as Very Good</th>
<th>% Rating as Needs Much Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listening and comprehending explanations about scientific concepts given in English</td>
<td>5</td>
<td>9</td>
<td>1</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>Speaking about what they have learned about science in English</td>
<td>6</td>
<td>8</td>
<td>1</td>
<td>0</td>
<td>53</td>
</tr>
<tr>
<td>Listening and comprehending instructions given in English in class</td>
<td>6</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td>47</td>
</tr>
<tr>
<td>Reading comprehension about science</td>
<td>3</td>
<td>6</td>
<td>4</td>
<td>0</td>
<td>40</td>
</tr>
<tr>
<td>Writing answers to questions about science</td>
<td>1</td>
<td>5</td>
<td>8</td>
<td>1</td>
<td>33</td>
</tr>
</tbody>
</table>
The fact that teachers rated their students as weak in these specific language skills is troubling because the teachers regarded the skills as either very important or essential to science learning. Even the skill perceived as least important—speaking about what they have learned about science in English—was rated as essential by 73% of the teachers (see Table 9). If the researcher had asked the teachers to say why they thought particular skills were important the results might have been more informative, but unfortunately such a question was not on the survey instrument.

Table 9

*Teachers’ Ratings of Importance of Selected English Language Skills (N = 15)*

<table>
<thead>
<tr>
<th>Skill</th>
<th>No. Rating as Not Needed</th>
<th>No. Rating as Not Very Important</th>
<th>No. Rating as Somewhat Important</th>
<th>No. Rating as Very Important</th>
<th>No. Rating as Essential</th>
<th>% Rating as Essential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listening and comprehending instructions I give in English in class</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>15</td>
<td>100</td>
</tr>
<tr>
<td>Listening and comprehending explanations about concepts I give in English</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>15</td>
<td>100</td>
</tr>
<tr>
<td>Writing answers to questions about science</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>15</td>
<td>100</td>
</tr>
<tr>
<td>Reading comprehension about science</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>12</td>
<td>80</td>
</tr>
<tr>
<td>Speaking about what they have learned about science in English</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>11</td>
<td>73</td>
</tr>
</tbody>
</table>
These data do not support the stance of the Rwandan Ministry of Education that the current language skills of students should not be considered an obstacle to the implementation of EMI because students can always learn (Republic of Rwanda, MINEDUC, 2009). Rather, the data agree with several researchers’ conclusion that students’ level of English ability needs to be addressed in order to make the EMI policy a success (Klaassen & De Graaf, 2001; Lynd, 2010; Niyibizi, 2010; Norudin et al. 2011; Nzitabakuze, 2011; Othman & Saat, 2009; Samuelson & Freedman, 2010).

The Most Serious Challenges for Teachers

In an attempt to identify as many serious impediments to the implementation of the EMI policy as possible, the researcher included an open-ended question that solicited the teachers’ points of view on the roadblocks to successful implementation. The two-part question was: “Generally speaking, what do you think are the most important challenges that you face in the course of implementing the EMI language policy in your class? And what do you think can be done to address them?” The teachers were also asked to rate the challenges according to their level of gravity. From the responses, the researcher identified several themes; the responses are presented in Table 10.

What stands out from these responses is that the most challenging problems against the smooth implementation of the EMI policy in Rwandan rural secondary schools are the teachers’ low level of English language proficiency, the students’ lack of preparedness for English as a LoI, teachers’ lack of job motivation, and home and school environments and a school administration not conducive to the new policy. These were named as challenges by 60-100% of the teachers surveyed. Less challenging problems, named by 40-53% of respondents, were
Table 10

*Grouping of Teacher-rated Challenges to the Implementation of EMI by Level of Gravity*

<table>
<thead>
<tr>
<th>Challenge</th>
<th>No. of Participants</th>
<th>%</th>
<th>Level of Gravity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers’ low level of English proficiency</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachers’ lack of motivation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School environment and administration</td>
<td>9-15</td>
<td>60-100</td>
<td>Most challenging</td>
</tr>
<tr>
<td>Home environment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students’ unpreparedness to use English</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachers’ inexperience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachers’ lack of qualifications</td>
<td>6-8</td>
<td>40-53</td>
<td>Less challenging</td>
</tr>
<tr>
<td>Teachers’ attitude toward English</td>
<td>5 and below</td>
<td>33 and below</td>
<td>Least challenging</td>
</tr>
<tr>
<td>Students’ attitude towards English</td>
<td>5 and below</td>
<td>33 and below</td>
<td>Least challenging</td>
</tr>
</tbody>
</table>
teachers’ inexperience and teachers’ lack of qualifications. Less frequently cited but still seen as challenges were poor attitudes of both teachers and students toward the English language. These responses suggest that the English language *per se* is not the primary problem in policy implementation; the greatest problems lie in the preparation for using English as a LoI in the Rwandan education system.

**Impact of the Challenges on Daily Teaching and Learning Activities**

The challenges science teachers face in the implementation of the EMI policy obviously affect the daily teaching and learning activities in the classroom. The teachers in this study were asked several questions regarding if and how science instruction was impacted by the introduction of the new language policy. For the sake of brevity, this discussion deals only with the impact of teachers’ low level of English proficiency on their science instruction, the challenge that proved to be the most serious of all and that concerned teachers the most.

When the teachers rated their ability to use the English language to communicate about science, their responses clearly showed that their teaching of science using the English language was negatively affected by their poor English proficiency. They reported serious difficulties using English to communicate with students in different classroom situations; the majority rated their skills “fair” or “poor.” These were the two lowest-level options on the survey.

Even more disturbing were responses regarding the skill “speaking about sciences”; this was the most challenging skill for participants. Of the 15 teachers, 12 said they could speak about sciences at a “fair” level and 3 rated themselves as “poor.” These responses are alarming because when science teachers cannot communicate with their students using the English language, the flow of
communication and interaction between students and their teachers is blocked and science instruction as a whole is negatively impacted.

The way the teachers’ responded to their inability to use English in teaching science was to revert to using their mother tongue—the first language of both the teachers and the students—in their everyday teaching activities. As Table 11 illustrates, 67% of the teachers reported always using their mother tongue when delivering instruction and 73% always used their first language when explaining science concepts. These activities are essential to teaching science, and the teachers were not conducting them in the mandated LoI. On the other hand, they used English more frequently when disciplining students and praising them for their work, activities not very important for science instruction.

Table 11

<table>
<thead>
<tr>
<th>Situation</th>
<th>Always</th>
<th>Often</th>
<th>Sometimes</th>
<th>Never</th>
<th>% Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>To explain some science concepts</td>
<td>11</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>73</td>
</tr>
<tr>
<td>To give instructions</td>
<td>10</td>
<td>4</td>
<td>1</td>
<td>-</td>
<td>67</td>
</tr>
<tr>
<td>To ask students questions about concepts in science</td>
<td>2</td>
<td>10</td>
<td>2</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>To discipline students</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>To praise students for outstanding work</td>
<td>-</td>
<td>2</td>
<td>7</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

These findings are not surprising in the Rwandan context because very few English words are needed to convey a message of discipline or praise. Disciplining
students in English can be done with brief expressions such as “Keep quiet,” “Do not make noise,” or “Silence.” Praising students for outstanding work can similarly be accomplished with short comments. Rwandan students sometimes give their teachers nicknames based on the teachers’ repetition of the same expression. Teacher’ nicknames such as “Excellent,” “Very Good,” and “Well Done” are now common in Rwanda.

The finding that so many of the research participants reported seldom if ever using English to teach science indicates that low second-language proficiency is undermining implementation of the EMI policy. Lack of English skills, coupled with the mandate to teach in English, is also lowering the overall quality of science instruction. If English is to be the LoI in all content areas, teachers must use as much of it as possible to help students develop their English language proficiency as well as their ability to grasp academic content (Bellack et al., 1966). Failure to correctly use English in cognitively demanding subjects can be the source of poor student performance in those disciplines (Maminta, 1985).

Furthermore, survey responses indicate that the low level of proficiency in the English language kept the teachers from using the best practices for teaching science. When asked if they modified their lesson content to best meet the level of English of their students, 13 of the 15 teachers reported that they did not. None of the 15 participants gave any suggestion for how they could make science learning in English more enjoyable for their students.

In normal circumstances, when teachers are comfortable with the LoI, they take command of the subject content and adjust what is supposed to be taught to the needs and abilities of their students in order to make the overall learning experience enjoyable and profitable. Several scholars have pointed out the benefits of modifying lesson content to meet the needs of all learners (Comfort, 1990;
Moon & Callahan, 2001; Reisberg, 1990; Switlick, 1997). In the case under investigation, however, teachers could not take command of the subject content; they had to deliver to students the content of the national curriculum, which was in English, word by word, line by line, without any modification. Their level of English was too low to enable them to modify the lessons written in a language in which they were not conversant. The inability of the educators to employ best practices likely made the teaching experience frustrating to the teachers and the learning experience confusing to the students.

Strategies Adopted to Address Challenges to Implementation of the EMI Policy

In addition to identifying the challenges to policy implementation, the researcher explored the strategies science teachers used to overcome the challenges. Because the greatest hindrance to the success of EMI was inadequate knowledge and skill in English, the researcher focused on strategies the teachers adopted to improve their proficiency in the English language. Participants were asked to list all activities in which they engaged specifically for the purpose of increasing their English language proficiency.

The teachers’ responses revealed that they engaged in various activities aiming at improving their proficiency in the English language. The most common activity was “independent reading of grammar books.” Of the 15 teachers surveyed, 14 indicated that they frequently sought help from grammar books. This response shows how desperate the teachers were in their quest to know how the English language works. This activity is not the most effective one for learning or mastering a language, but it is the cheapest option, the option most teachers were able to access.
The second most frequently reported activity was “attending English language schools after work”; 13 of the 15 participants said they attended such schools. This activity appeared to be the most appealing to the teachers, and it is the one most likely to help them improve their English. Although the quality of the instruction varies considerably from school to school, some private evening schools offering courses in English have very competent professional teachers. However, this option is expensive and difficult. A full-time secondary school teacher in Rwanda works 8 hours a day, Monday through Friday, and following a course of study in addition to managing such a teaching load is taxing. Besides, few secondary school teachers can easily afford private schooling on their meager salaries.

The activity one might expect to be the most frequently used was “attending all the public trainings in the English language.” The government has organized training sessions to help teachers raise their levels of proficiency in English. The sessions are free and are held during holidays when teachers are likely to have time away from other commitments. Surprisingly, however, 6 of the 15 teachers had not attended any of the public English language trainings.

None of the participants reported using “independent reading of newspapers in English” as an activity for improving their English proficiency. This finding probably reflects the scarcity of print materials in English in the rural areas. Teachers in rural parts of Rwanda, like those in many other African countries, have little exposure to English. This finding is consistent with the research of several others (Adedeji & Olaniyan, 2011; Bennell & Akyeampong, 2007; Samuelson & Freedman 2010).
Summary

Although this research was a small case study, its results provide sufficient information to answer the research questions. The answers can give Rwandan education policy makers some direction as they work to make the EMI policy successful. The findings as they relate to the research questions are summarized below.

Research Question 1: What are the main challenges rural secondary school science teachers in Rwanda face as they implement the EMI policy in the education system? This study identified the greatest challenge as low English proficiency among both teachers and students. Other serious challenges are lack of motivation among teachers and home and school environments that do not support the use of English.

Research Question 2: Are teachers’/students’ attitudes toward English language learning and their home and school environments likely to play positive or negative roles in the implementation of the EMI policy? A third of the teachers in the study considered attitudes toward English a serious challenge to policy implementation, but a negative attitude toward the language was considered the least serious of all the challenges. Therefore, although negative attitudes toward English may play a role in implementation of EMI, the role is not likely to be major.

The home and school environments, on the other hand, were seen as among the most difficult challenges. A school environment in which teachers fail to use English consistently in the classroom, as the teachers in the study described, is likely to have a negative impact on the implementation of a policy that requires that instruction be delivered in English.
Research Question 3: What impact do the challenges identified above have on science instruction in Rwandan rural secondary schools? One of the challenges is that the curriculum is now in English. The teachers in the study admitted that their lack of English language proficiency makes them unable to modify the curriculum to adapt to the learning needs of their students. Thus the language challenges are diluting the quality of science instruction.

Research Question 4: Do science teachers in rural secondary schools engage in activities aimed at addressing the challenges? The new policy gives science teachers little choice but to do something about the greatest challenge; they must raise their English language proficiency. However, the strategies they have employed to meet this challenge have not been very effective. Reading about English grammar has limited effect and attending evening classes is costly and difficult. Some have attended government-sponsored language trainings, but these sessions are not yet widely available.

If Rwanda’s EMI policy is to succeed, new ways must be found to overcome the many challenges. The researcher offers some specific suggestions in the following chapter.
CHAPTER 5: CONCLUSION, RECOMMENDATIONS, LIMITATIONS, AND SUGGESTIONS FOR FURTHER RESEARCH

This research investigated the challenges faced by rural Rwandan secondary school science teachers in the implementation of the nation’s EMI policy. Specifically, the researcher sought to identify the challenges, to investigate how they affect rural secondary school science teachers’ everyday teaching activities, and to explore strategies adopted by the teachers to address and overcome the challenges.

The literature review provided a clear overview of the sociopolitical aspects of the Rwandan EMI policy and identified some of the important stumbling blocks that have thwarted its successful implementation. The literature also suggested strategies that might be adopted to address those challenges by exploring the experiences of other countries that introduced EMI in their education systems.

The findings from the case study show that Rwandan rural secondary school science teachers face several challenges as they attempt to implement the EMI policy in their everyday teaching and learning activities. The most important challenges were found to include but not be limited to teachers’ and students’ low levels of proficiency in the English language; teachers’ lack of job motivation; and school administrations, school environments, and home environments not conducive to the use of English as the LoI. These challenges were found to negatively affect the efficiency and quality of the science instruction in general. In fact, the science teachers in the study, being unable to use English in their respective classes all the time, tended to use their first language instead, seriously affecting the overall quality of science teaching and learning in their classes in particular and in Rwanda in general.
In addition, the researcher found that the teachers were unable to adapt lesson content to best fit learners’ profiles and needs and were thereby unable to make the teaching/learning experience enjoyable. The primary reason the teachers could not modify the lesson content was that the lessons were written in a language in which they are not proficient.

The research also revealed that teachers engaged in various activities to address some of the impediments to implementation of the EMI policy, especially their low English proficiency, which proved to be the most challenging of all. The activities they used, in order of frequency, were independent reading of English grammar books; attending English language schools after work; attending government-provided public trainings in the English language; independent reading of novels, short stories, or nonfiction in English; and trying to use English in everyday activities.

**Recommendations for Practice**

In order for the government’s new language policy to be successful rural secondary school science teachers must play a major role in tackling the challenges they face in using EMI in their teaching/learning activities. However, their efforts are likely to prove very tiring, expensive, and not fully effective if they do not receive tangible and consistent support from the government of Rwanda. Expecting such help is reasonable because the government instituted the policy. Hence, recommendations are offered to both the teachers and the government. The Canadian French immersion was a complete success, for instance, because the government provided not only adequate human resources (qualified teachers) but also appealing school administration and equipment.
For Science Teachers

Although the study showed that science teachers engage in a variety of activities to improve their proficiency in English, a number of other activities are available. The researcher recommends that teachers fully exploit the following opportunities for boosting their English skills:

1. Science teachers should try to use less Kinyarwanda and more English outside the class because “practice makes perfect.” An example of English use outside the class could be attending lectures about science conducted in English. Teachers should not feel ashamed to make mistakes in English; as they continue to use it in their everyday lives they will get better. More exploration and discussion is needed to determine what opportunities are available, particularly in rural settings, to implement this recommendation.

2. Science teachers should create English clubs in their respective schools to increase opportunities for using the language.

3. Science teachers should enlist the help of their counterparts who have better English to serve as language coaches.

4. Science teachers should do everything possible to locate native or near-native speakers of English in their areas and create a friendship network that will increase their exposure to English.

For Government Officials

Instituting a LoI shift in any education system is not easy, especially when the change is made suddenly. The difficulty is compounded when the education system is already weak. The Rwandan education system, being inherently weak, has encountered many difficulties in implementing a language policy change. The government of Rwanda, through its Ministry of Education, can help teachers implement the new policy by taking the following steps:
1. Officials of the Ministry of Education should organize consistent trainings in the English language, and these training should reach each and every teacher irrespective of the teacher’s location.

2. Ministry of Education officials should create a comprehensive scheme that enables in-service teachers to avail themselves of formal studies in the English language.

3. The government should provide funds to cover tuition fees for those teachers who want to learn English through reputable evening classes.

4. As a long-range measure, policy makers in the Ministry of Education should improve English-language learning in all Rwandan schools by increasing the number of hours per week at all levels that English is taught as a subject.

5. Ministry of Education officials should increase their efforts to equip schools with English teaching/learning materials; this will help both teachers and students improve their English informally.

6. Last but not least, the government of Rwanda should explore all the ways it can raise teachers’ welfare and enjoyment of their jobs, such as by increasing their monthly salaries and providing incentives and rewards for excellent performance.

Limitations of the Study

Due to several issues beyond the researcher’s control, this study examined only one district (Nyarugenge) and only science teachers of S6 classes and their students. One reason Nyarugenge District was chosen is that the educational activities in that district are very disparate. The district has both rural and urban schools, and the urban schools seem to have fewer problems than the rural ones (see “Background to the Study” section, p. 7, for further information). The study
was limited to the rural part of Nyarugenge District; schools located in the urban part of the district were not included.

This study was subject to some limitations in how data were collected. The survey questionnaire was the sole research instrument. Thus the possibility of supplementing the information obtained from the questionnaires with data from observation, interviews, or other research methods was eliminated.

**Suggestions for Further Research**

Given the pressing and obvious need for science teachers to be taught English before embarking on the ambitious adventure of using English to teach their subject, the first suggestion for future research is in the area of English course curriculum. Francophone teachers need more intensive training in English in order to be able to teach their subjects in English.

Furthermore, this research made clear that the challenges in the implementation of the EMI policy were exacerbated by the fact that the policy was introduced quite abruptly. Hence another avenue for further research is investigation of the best way to phase out one language of instruction and introduce another without victimizing the implementers.
REFERENCES


APPENDICES
APPENDIX A: INTRODUCTORY LETTER
Dear Madam/Miss/Sir,

My name is Emmanuel Uwambayinema, a graduate student at California State University, Fresno and I am carrying out a research on the challenges faced by Rwandan secondary school sciences teachers in the effort to implement the English Medium Policy for my MA thesis in linguistics with TESOL option. I therefore need your help in this regard, by answering the questionnaire hereafter attached and assure you that your names will not appear in the final report and the results of this study will solely be used for academic purposes. Hoping that this will result in a valuable contribution to the success of the implementation of the new language policy in particular, and the current English teaching situation in Rwanda in general, I express my heartfelt thanks for your valuable time, devotion and support to this research.

Yours sincerely,

Emmanuel UWAMBAYINEMA.
APPENDIX B: TEACHER QUESTIONNAIRE
Teacher Questionnaire

I. Personal Information: Circle one that applies, for age just write the number in the provided space

- Gender: M/F
- Age: …… years
- Professional experience in teaching science:
  I have been teaching for: (Circle one that applies.)
  a) Less than 1 year; b) 2-3 years; c) 4-5 years; 6-10 years; d) More than 10 years
- Level of education:
  Instructions: Tick (√) your highest level of education.

<table>
<thead>
<tr>
<th>Level</th>
<th>Tick ( √ )</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bsc /A0</td>
<td></td>
<td></td>
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<tr>
<td>Diploma/A1</td>
<td></td>
<td></td>
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<tr>
<td>Certificate/A2</td>
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<tr>
<td>Other</td>
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</table>

II. Teachers and students versus the English language.

a) Did you learn English formally during your education? If yes, at what level did you start learning it? If no, how did you learn the English you use to teach your class?

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b) Please rate your overall English language proficiency level. (Circle all that apply to your situation)

Using the English language:

1. I can understand and express myself using very basic everyday familiar expressions like introducing myself and others, giving personal details etc…
   a) Strongly agree; b) Agree; c) Disagree; d) Strongly disagree
2. I can understand the main points made in clear English on familiar matters regularly encountered at school, produce simple connected text on topics which are familiar or of personal interest.
   a) Strongly agree; b) Agree; c) Disagree; d) Strongly disagree
3. I can understand a wide range of demanding, longer texts, and recognize implicit meaning and express myself fluently and spontaneously without much obvious searching for expressions. I can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organizational patterns, connectors and cohesive devices.
   a) Strongly agree; b) Agree; c) Disagree; d) Strongly disagree
4. I can understand with ease virtually everything heard or read and summarize information from different spoken and written sources, reconstructing arguments and accounts in a coherent presentation. I can express myself spontaneously, very fluently and precisely, differentiating various types of meaning even in the most complex situations.
   a) Strongly agree; b) Agree; c) Disagree; d) Strongly agree
c) Please rate your skills in using the English language to communicate about sciences.

(Mark cases that apply the most to your situation.)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Excellent</th>
<th>Very Good</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skills</td>
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<tr>
<td>Speaking about science</td>
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<td>Listening to information about science</td>
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<tr>
<td>Reading about science</td>
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<tr>
<td>Writing about science</td>
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d) Please provide answers to the following questions about the English language.

1. Do you like the English language? If no
   why?...........................................................................................................................................................
   .................................................................................................................................................................
   .................................................................................................................................................................
   .................................................................................................................................................................
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   .................................................................................................................................................................
   .........................If yes what do you do among the following to improve your level in it and be able to address the challenges you face using it as a medium of instruction?

(Circle all that apply)

a) Attending the English language schools after work
b) Attending all the public trainings in the English language
c) Independent reading of books in English (novels, short stories, or non-fiction).
d) Independent reading of newspapers in English.

e) Independent reading of English grammar books

f) Listening to radio, TV broadcasts in English

g) Trying to use it in my everyday life

h) Other ________________________________

2. The most challenging English language skill to me is: (Mark the cases accordingly)

<table>
<thead>
<tr>
<th>Skills</th>
<th>Level of difficulty</th>
<th>Challenging</th>
<th>Somehow challenging</th>
<th>Not challenging</th>
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<tbody>
<tr>
<td>Speaking</td>
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<td>Reading</td>
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<td>Writing</td>
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</tbody>
</table>

3. I received enough training in the English language as follows: (Mark cases accordingly.)

<table>
<thead>
<tr>
<th>Training received</th>
<th>Scale</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>To read aloud from a science textbook in English;</td>
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<tr>
<td>To understand the information about</td>
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</table>
1. Overall my level in the English language is good enough to enable me hold a science class in English only.
a) Strongly agree; b) Agree; c) Disagree; d) Strongly disagree
2. How confident are you in your ability to modify your lesson contents to best meet the level of English of your students?
a) Very confident; b) Confident; c) Somehow confident; d) Not confident at all
3. How confident are you in your ability to make learning more enjoyable for your students?
a) Very confident; b) Confident; c) Somehow confident; d) Not confident at all
4. How frequently do you use your first language in your English class?
a) To give instructions;
   a) Always; b) Often; c) Sometimes; d) Never
b) To discipline students;
   a) Always; b) Often; c) Sometimes; d) Never
c) To explain some science concepts;
   a) Always; b) Often; c) Sometimes; d) Never

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<td>science in a textbook</td>
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<td>written in English;</td>
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<td>To give instructions</td>
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<td>orally in English;</td>
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<td>To give instructions in</td>
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<td>writing in English</td>
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<tr>
<td>To explain convincingly</td>
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<td>in English science</td>
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<tr>
<td>concepts</td>
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</table>
d) To ask students questions about concepts in science;
   a) Always; b) Often; c) Sometimes; d) Never

e) To praise students for outstanding work;
   a) Always; b) Often; c) Sometimes; d) Never

5. Assess your students’ skills in English: Check the cases accordingly

<table>
<thead>
<tr>
<th></th>
<th>Weak</th>
<th>Needs much improvement</th>
<th>Satisfactory</th>
<th>Very good</th>
<th>Excellent</th>
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<tbody>
<tr>
<td>Listening and comprehending instructions I give in English in class</td>
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<tr>
<td>Listening and comprehending explanations about scientific concepts I give in English</td>
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<tr>
<td>Speaking about what they have learned about science in English</td>
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<tr>
<td>Reading comprehension about science</td>
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<tr>
<td>Writing answers to questions about science.</td>
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</table>

6. Assess how important these skills are for your students in your science class:

<table>
<thead>
<tr>
<th></th>
<th>Not needed</th>
<th>Not very important</th>
<th>Somewhat important</th>
<th>Very Important</th>
<th>Essential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listening and comprehending instructions I give in</td>
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</tbody>
</table>
10. Generally speaking, how motivated are you in carrying out your duties as a teacher?
   a) Highly motivated; b) Motivated; c) Not motivated; d) Highly unmotivated

11. Generally speaking, what do you think are the most important challenges that you face in the course of implementing the EMI language policy in your class? And what do you think can be done to address them?

THANK YOU.
APPENDIX C: STUDENT QUESTIONNAIRE
STUDENT QUESTIONNAIRE

Instructions: Circle the one that applies best to your situation. For age just write the number in the provided space.

1. Gender: M/F
2. Age: ..........Years
3. Level in English: My overall level in English is:
   a) Advanced; b) Intermediate; c) Elementary; d) Beginner
4. How motivated are you in learning and/or using English at school?
   a) Highly motivated; b) Motivated; c) Not motivated; d) Highly unmotivated
5. When did you start learning English?
   a) Nursery school; b) Primary school; c) Secondary school
6. It is good to learn English because it is becoming more dominant worldwide
   a) Strongly agree; b) Agree; c) Disagree; d) Strongly disagree
7. The school environment is favorable for the learning of the English language
   a) Strongly agree; b) Agree; c) Disagree; d) Strongly disagree

8. How interested are you in improving each of these areas of English?

<table>
<thead>
<tr>
<th>Skills</th>
<th>Not interested right now</th>
<th>Somehow interested</th>
<th>Very interested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaking</td>
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<tr>
<td>Listening</td>
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<td>Reading</td>
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<td>Writing</td>
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</table>

9. I enjoy all the lessons delivered in the English language only
   a) Strongly agree; b) Agree; c) Disagree; d) Strongly disagree
10. I understand all the lessons delivered in the English language only  
a) Strongly agree; b) Agree; c) Disagree; d) Strongly disagree  

11. It is good to have the teacher explain some lesson contents in Kinyarwanda?  
a) Strongly agree; b) Agree; c) Disagree; d) Strongly disagree  

THANK YOU!
APPENDIX D: APPROVAL FOR USE OF HUMAN SUBJECTS
DEPARTMENTAL (UNIT) REVIEW FORM
COMMITTEE ON THE PROTECTION OF HUMAN SUBJECTS
CALIFORNIA STATE UNIVERSITY, FRESNO

Please type

PRINCIPAL INVESTIGATOR  Uwambayinema, Emmanuel  Linguistics

Name  
Department  
Mail Stop  

5901451325

If student or collaborative research

Telephone Number  Dept. Telephone Number  
Name  Affiliation  

Telephone Number  Telephone Number  

TITLE OF STUDY: Challenges faced by Rwandan secondary school science teachers in the implementation of English Medium Policy.

If funding is sought, from what agency?  

How did the Principal Investigator designate the research?  Minimal risk ✓  At risk ☐  

REVIEWER 1
Name  Nsabandora Hildebrand  
At risk ☐  Minimal Risk ☑  

COMMENTS:

REVIEWER 2
Name  Ruzibanga Jacqueline  
At risk ☐  Minimal Risk ☐  

COMMENTS:

REVIEWER 3
Name  
At risk ☐  Minimal Risk ☐  

COMMENTS:

The department may wish to route this form to the 3 reviewers or send each reviewer a form. If the review is done on three separate forms, the Chair ought to give each reviewer the comments of the other reviewers as well as the Principal Investigator. If all three reviewers judge the proposal as “minimal risk,” the Department Chair notifies the Principal Investigator and keeps the form(s) for 5 years. If funding is
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- Emmanuel Uwambayinema

Type full name as it appears on submission

- March 14, 2013

Date