



Improving the Recruitment and Retention of Teachers in Rural Rwanda

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April 2016

This project was submitted in partial fulfillment of the requirements for the degree of Master of Arts in the Graduate Liberal Studies Program in the Graduate School of Duke University.

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Abstract

The objective of this paper is to improve the quality of rural education in Rwanda. It examines a single issue in this sector, that of problems with recruiting and retaining skilled teachers. Rural life is hard in a variety of ways, ranging from poor pay to sociocultural isolation, and for this reason highly qualified teachers are unlikely to want to work in rural regions. As a result, rural regions, which are generally the worst-performing regions scholastically, have the lowest quality teachers.

Of course, this problem is not unique to Rwanda. Consequently there is a wealth of literature on this topic from around the world; there are a large variety of policy models that have attempted to address this issue. This paper examines a handful of the most promising models, specifically the hardship model, mandate model, recruitment model, distance model, and teacher resiliency model, and weighs their relative strengths and weaknesses. It then looks at how they would function within the Rwandan educational system – the success or failure of a particular model is inextricably linked to its “fit” within a particular context. After comparing the strengths and weaknesses of each model along with their relevance to the Rwandan context, this paper makes a recommendation on the models that are most likely to be both feasible and successful within Rwanda. In this case, a combination of the recruitment and teacher resiliency model is likely to be the best option.

Acknowledgements

There are a great many people I'd like to thank: Dr. Catherine Honeyman, who provided me with a number of amazing resources direct from the Rwandan government; my advisor, Dr. Rosemary Fernholz, whose guidance – in the execution of this project but also in the classes I have taken with her – was instrumental to writing this paper; all of my professors at Duke, each incredible in their own way; Dean Storelli, whose mentorship has made me a much more confident editor and writer; and finally Dr. Donna Zapf and Dr. Kent Wicker, for their continued support throughout my time at Duke.

Additionally, I'd like to extend a special thanks to my friends and family for their constant support, love, and encouragement.

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Introduction

In Rwanda, as elsewhere, there is a gap in scholastic achievement between rural and urban populations. This issue is significant as level of education is a strong predictor of income, health, and general quality of life (OECD 2010). On the larger scale, inadequate access to quality education in rural regions can seriously hamper a rural area's growth, resulting in "regionalization" in a country's development. This effect, where certain areas of a country remain underdeveloped relative to the rest of the nation, stratifies society. This stratification is further encouraged through a series of self-perpetuating systems: the lack of quality education in rural areas results is one of these systems. The goal of this paper is to look at possible interventions that could break this cycle, resulting in a more equitable society.

One of the main issues affecting rural education in Rwanda is difficulties in attracting and retaining skilled teachers. A particularly qualified teacher is unlikely to want to work in a rural village for a whole host of reasons: low pay, poor access to healthcare, sociocultural isolation, lack of leisure activities, and large class sizes, among many other complaints. Consequently the most skilled teachers work in the capital, Kigali, the wealthiest area of the country. In this way, the wealthiest become even better educated, further improving their income, health, quality of life compared to their rural peers. Meanwhile the rural students receive the lowest quality teachers -- teachers that regularly abandon class to work other jobs, teachers lacking proper qualifications, or, even worse, receive no teachers at all -- thereby ensuring the poor stay marginalized while the rich continue to grow.

Thus, the policy question I will be looking at is *“How can Rwanda improve the recruitment and retention of rural school teachers?”* In doing so, I will be examining a handful of policy models used around the world to address this very same issue. You see, difficulties in attracting teachers to rural areas is not a problem unique to Rwanda – from Appalachia in the United States to rural Isan, Thailand to Rwanda’s neighboring Uganda, this issue is a global one. Solutions do exist, but they are highly dependent on country context. As such, I will be examining the scholarly literature to see how this problem has been tackled in various contexts, taking note of the relative strengths and weaknesses of each attempt. After doing so, I will place these various models within the context of Rwanda and determine which are most likely to be both feasible and successful. From there, I will make my recommendations for the Rwandan government.

As the rural recruitment and retention problem is ubiquitous, the research within this paper can hopefully be used to help address this issue elsewhere in the world. In particular it is likely that the recommendations from this paper will be especially useful to other East African nations, due to their contextual similarity to Rwanda. At the same time, this paper really focuses on the models themselves, and simply applies them to the Rwandan case. As a result, the research here should also be useful on the global level.

1. Rwandan Context

1a. Brief introduction

Rwanda is a land-locked country located in East Africa. It is a tiny country with a population of 11.2 million people, making it one of the most densely populated countries in Africa (CIA 2016). Despite this high density, the population is overwhelmingly rural, with 75% of its populace living outside city centers. Like many lower-income nations, Rwanda has a young population, with a median age of 18.8 years. In fact, more than 40% of the country is less than 14 years old. Despite its current lower-income status, Rwanda has high hopes for its future; the country has laid out an ambitious development plan, entitled Vision 2020, which aims to achieve middle-income status by 2020 (Republic of Rwanda 2012).¹ The combination of a young population, a largely rural society, and a stated national goal of reaching middle-income status by 2020 highlights the importance of improving rural education in the country (Ansolm 2012).

1b. Political context

Understanding Rwanda's political history is key to understanding its present day context, particularly when it comes to political will for change in its education sector. Rwanda has been inhabited since at least 3000 BCE, but its modern history begins with Belgian colonization in 1922 (Chrétien 2003). In order to simplify administration of the colony, the Belgian authorities utilized the pre-existing political power structure. This structure, a monarchy, had a ruling class of Tutsis governing over the much larger Hutu population. Prior to

¹ Lower- and middle-income in this paper are defined according to the World Bank's classifications. Lower income countries have a GNI per capita (World Atlas method) of <\$1,045, while middle-income countries have a GNI per capita of more than \$1,045 but less than \$12,736. Rwanda's GNI per capita in 2014 was \$700. For reference, the United States' was \$55,200 (World Bank 2016).

Belgian colonization, Hutus were able to participate in government -- though on a more limited scale than the Tutsi; after colonization Belgium further limited their participation, thereby exacerbating the societal stratification (Langford 2005). This was accomplished by eliminating local governmental posts, largely held by Hutus, and instead installing a centralized government ran by Tutsis (Fearson 2000). The Belgian government rationalized the separation of the races under the theory of eugenics. Belgian scientists argued that, due to apparent morphological differences such as height and head shape, the Tutsis were more similar to Europeans than Hutus were, and thus deserved their ruling position (Moghalu 2005). Consequently, Belgium encouraged division among the two ethnic groups. This institutionalization of racism is most clearly seen in the ethnic identification cards that the government of Belgium required local nationals to carry, further cementing the conceptualization of a Hutu versus Tutsi divide. In short, Rwanda's colonization period can be summarized as externally-supported Tutsi dominance and the creation of Hutu inferiority.

Rwanda received its independence from Belgium in 1961 as part of the larger Pan-Africanism movement. A referendum was held to decide whether the country should remain a monarchy or transition to a republic; the country voted overwhelmingly to become a republic with 79.85% voting in favor (Elections in Rwanda 2011). This popular vote gave the Hutus the power to abolish centuries of Tutsi dominance. However the Tutsis were not so ready to give up their power, and the period immediately after independence is one of extreme turmoil. In 1962 Tutsi guerrilla groups began to mobilize, and shortly after, a Tutsi-organized military group invaded from neighboring Burundi. The now-Hutu-dominated government fended off these

attacks, at the cost of thousands of lives. Additionally, approximately 150,000 Tutsi were exiled from the country during this period (CIA 2016).

The next 20 years, while far from tranquil, were marked by a period of decreased ethnic tension. This lull ended with the Ugandan Bush War. Exiled Tutsis in Uganda fought in this war and became increasingly organized under the leadership of Paul Kagame, a Tutsi exile himself. This group of Tutsis eventually became the Rwandan Patriotic Front (RPF). On October 1st 1990, the RPF invaded Rwanda from neighboring Uganda. This act began the series of events which would eventually culminate in the genocide of 1994.

After two and a half years of fighting, a cease-fire agreement was reached in July 1992 in Tanzania. Unfortunately its success was limited; the RPF invaded again in 1993. This subsequent invasion received a larger amount of international attention, and as a result both France and the UN sent peacekeeping forces. This resulted in another uneasy, and short-lasting, peace.

On April 6 1994, a plane carrying the current Burundi and Rwandan presidents was shot down as it returned from yet another round of peace negotiations. The Radio Télévision Libres Des Mille Collines (RTLM), an extremely popular radio program, attributed the crash to the RPF and began to incite retribution against the “Tutsi cockroaches” (United Nations, n.d.). Mass killings began the next day. Hutus, frustrated by decades of poor treatment and motivated by the threat of a Tutsi revolution, began murdering Tutsis across the country. This included almost all of the Tutsi leadership in-country, such as Agathe Uwilingiyimana, the then-Prime Minister.

Response to the genocide was extremely slow. UN member states were hesitant to get involved in another “African conflict” after the United States’ recent failed mission in Somalia

(Power 2013). In fact, after the assassination of the Prime Minister many nations requested their contribution to the peacekeeping mission be withdrawn, reducing the number of peacekeepers in the country from 2,165 to 270 (United Nations, n.d.). As a result, the genocide continued for three months without resistance. In just 100 days, up to 1 million people were killed and 250,000 women raped (ibid).

The genocide ended when the RPF overpowered the Hutu militia and took control of the country. The RPF then established a unity government, headed by President Pasteur Bizimungu (a Hutu) with Paul Kagame serving as Vice-President and Secretary of Defense. The government banned ethnicity, making it illegal to identify as a Hutu or Tutsi, and initiated a reconciliation and reeducation process (Brown 2015). Kagame took over the presidency in 2000 after disagreements arose between himself and Bizimungu, a position he has held since.

Since the events of 1994, Rwanda has been relatively stable. The postwar government made development its highest priority, and the country made great strides over the past twenty years. At the same time, there is a feeling that, despite the ostensible ban on ethnicity, the historical structure of Tutsi dominance and Hutu subservience has been reinstated (Kron 2010). This is further complicated by the present government's iron-grip on the media; Rwanda placed 161 out of 180 countries on the World Press Freedom Index (Reporters Without Borders 2015). These two facts taken together – a ban on formal discourse and a ban on using ethnic labels – make it very difficult to determine the level of success or failure of post-war integration. For example, with regard to the context of this paper, there is a severe lack of research on differences in educational attainment between Hutu and Tutsi in modern Rwanda.

Indeed, due to the aforementioned ban on ethnicity, such research is not even permitted by the government. This is a major limitation of this paper.

Despite these questionable blemishes, the current government does seem quite committed to development and equality. Kagame's government has created an ambitious development plan, titled Vision 2020, and is on track to meet the majority of its goals (Ansom 2012). Kagame has frequently stated his plan for his country to become the "Singapore of Africa" (Caryl 2015), which is heavily reflected in this development plan (not to mention his political rule). With regard to the content of this dissertation, the Singapore Model requires heavy investment in education – Kagame's goal is to turn Rwanda, like Singapore, into a knowledge-based economy, and this act necessitates investment in human development and education (Republic of Rwanda, 2012). The plan also explicitly states the goals of creating a "united, inclusive Rwanda identity" and "universal education for all Rwandans" (Republic of Rwanda 2012, p. ii and p. 10). In other words, there is clear political will to improve the quality of education in the nation. Considering the stated goals of the current government – universal education, a knowledge-based economy, and a united, inclusive identity – the government will have a vested interest in improving the recruitment and retention of rural school teachers.

1c. Educational Context

Rwanda's Vision 2020 development plan places a high importance on education (Ansolm 2012). A major factor in achieving Rwanda's transition into a middle-income economy is centered on creating a service-centered economy, which itself requires a better-educated populace (Republic of Rwanda, 2012). In this regard, much progress has been made. Rwanda achieved universal access to primary education in 2015, and the country has similarly achieved

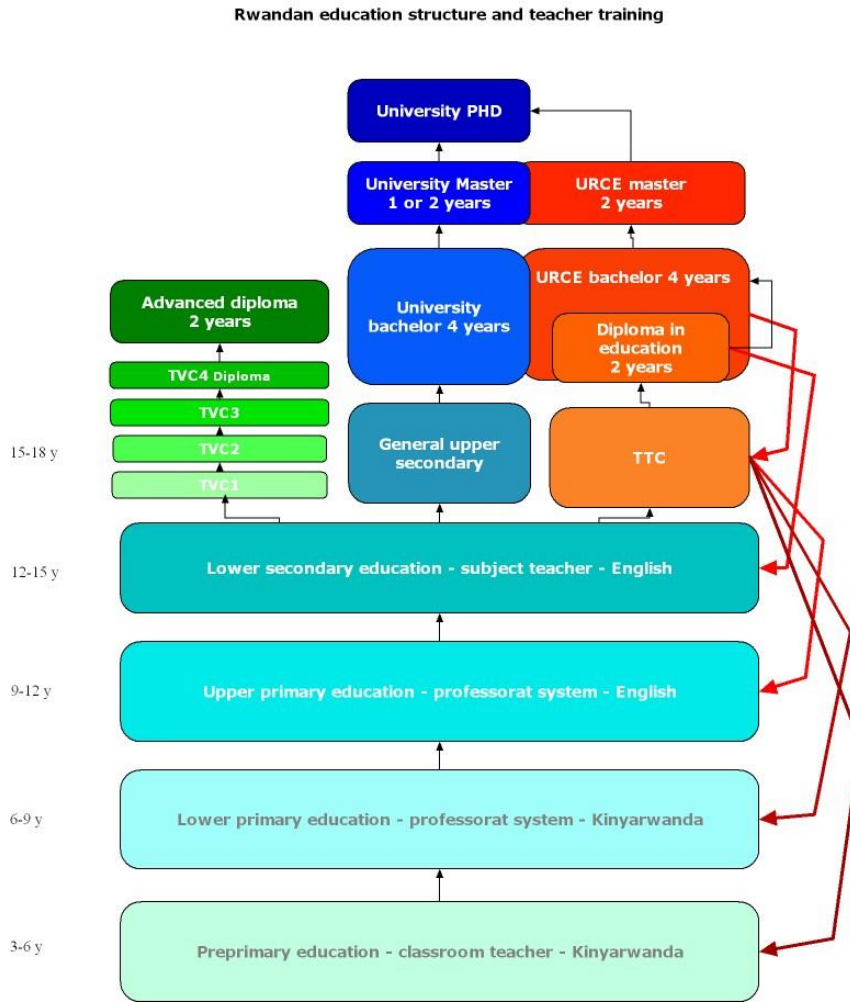
gender parity at the primary level (UNICEF 2016). At the same time, Rwanda is still far from having a well-educated populace. Only 76% of Rwandans are literate (ibid). Less than 12.5% of the population has completed secondary school; only 2.2% of the population holds a college degree (National Institute of Statistics of Rwanda 2016, n.p.). Educational quality is low, with 17% of Rwandans failing their end-of-year examinations in 2011 (World Bank 2011).

Clearly there are many areas, spread across the entire educational system, which require improvement. Of course, examining all these issues in-depth is beyond the scope of this paper. Instead, this paper will focus on a single area requiring improvement and will then further focus on a single intervention within that area. This area will be the divide between rural and urban scholastic achievement, and the intervention will involve improving the recruitment and retention of teachers in these rural regions. In the following section, I will look at rural education in Rwanda through the lens of a rural teacher. With an understanding of this perspective, the paper will then go on to examine how this context is similar to the issues rural schools face throughout the world – difficulties in staffing rural schools is not a unique issue.

i. Organizational structure of education in Rwanda

Rwanda has a 6-3-3-4 education system, wherein students study six years of primary school, three years of lower secondary, three years of upper secondary, and four years of college (Gatsinzi and Role 2014). The first six years of schooling are taught in the local language, Kinyarwanda, while the remaining years are taught in English. The structure of the education system, along with the required level of education to teach a specific grade level, can be seen in Figure 1 below:

Figure 1: Rwandan Education Structure



**Source: Rwandan Education Structure and Teaching Training. Internal memo, 2016.
 Courtesy of Catherine Honeyman, Ph.D, Visiting Scholar at Duke University**

The first six years of primary school have been fee-free since 2003 (World Bank 2011). However there are certain “hidden costs” of attendance, such as school uniforms, which make it difficult for poorer families to attend. This is compounded by the fact that poor families often use children as a source of income, particularly in rural areas.

Upon completion of primary school, students take an examination to move onto lower secondary. Lower secondary is also fee-free (if one again ignores the above hidden costs).

These nine grades constitute Rwanda's basic education. Movement beyond these levels requires consistent passing of examinations, and may or may not require fees, depending on the type of school and if scholarships or other subsidizations are received by the student. Consequently, the quality of school and teachers available to a student can play a major role in their social mobility (World Bank 2011). Students who attend poor quality schools lacking in resources or skilled teachers are doomed to fail the end-of-year examinations, thereby limiting their access to higher education and their ability to obtain higher-paying jobs.

Teacher training is divided into three stages: a certificate from Teacher Training colleges, required for teaching primary school; a two-year post-upper secondary diploma, required for teaching secondary schools; and a bachelor's degree awarded by the Kigali School of Education, required for teaching upper secondary and above (see figure 1 above) (World Bank 2011, p57).

The education system in Rwanda is a decentralized one and as a result, all 30 school districts are responsible for recruiting their own teachers (World Bank 2011, p108). As a result of this decentralization, along with vast differences in wealth, population, and resources between the various districts, the spatial deployment of teachers is extremely uneven, particularly when viewed with regard to the education and experience level of the teachers (Bennell and Ntagaramba 2008). In other words, certain districts are viewed as more desirable to work in, and better qualified teachers are inclined to try to find work there; on the flip side, certain districts have more resources, and thus have enhanced capabilities with regard to recruitment. The end result is that the districts most in need of skilled teachers also tend to be the districts lacking them.

Teacher attrition is high in Rwanda; approximately 40% of teachers (across all grade levels) have less than five years' experience (World Bank 2011, p114). This is due to a variety of reasons: poor teacher pay, low level of respect as a profession, long hours and workload, high student:teacher ratio, among others. All of these factors are worse in rural compared to urban areas (ibid). The following section will detail what the education environment looks like in these rural areas, and how that results in the uneven spatial deployment of teachers. It will also briefly examine the consequences of this on the scholastic achievement of rural students.

1b. Rural education in Rwanda

There is an uneven deployment of teachers in Rwanda between rural and urban schools; rural schools are both difficult to staff and difficult to keep staffed (Bennell and Ntagaramba 2008). This is due to the unattractive working conditions at rural schools. For one, rural teachers tend to have a higher workload with a lower average pay (Paxton and Mutesi 2012). Although government-provided salaries are equal among both groups of teachers, teachers receive extra income from the parents of students. This income is reflected in both the resources of the schools (e.g. PTA donations for resources) and direct-payments to the teachers. In fact, in wealthier areas, parental contributions more than double schools' non-salary spending on teachers (ibid 5). In contrast, parental contributions in rural schools are negligible on school budgets. This is especially a problem as teaching in Rwanda is a low-paying profession, particularly when compared to the education required to be an accredited teacher (Bennell and Ntagaramba 2008). A new secondary teacher who holds a bachelor's degree can expect to be paid \$314/month (see Annex 1) while a public sector employee working in a judiciary or ministerial position with a similar level of education and experience is paid

\$504/month (Namata 2012). On average, public sector employees are paid almost double a teacher with equivalent experience (World Bank 2011, p7). In rural areas, where there is little opportunity for supplemental or part time employment, this often leads to high teacher attrition and absenteeism (as teachers abandon their position for better pay). According to one study, 40% of teachers interviewed agreed with the statement “teacher absenteeism is a problem at my school” (Bennell and Ntagaramba p19).

An additional problem with keeping rural schools staffed is tied to workload. Rural teachers work longer hours and have a higher student:instructor ratio than their urban counterparts (World Bank 2011). The pupil:teacher ratio can be as high as 70:1 in rural districts like Kirehe, while it drops to as low as 23:1 in some schools in Kigali, the capital (Ministry of Education 2014). Due to the larger ratio of students to teachers, rural teachers are required to teach more; secondary teachers in rural districts have almost twice as many contact hours than their urban peers (World Bank 2011).

Continuing with the theme of lack of resources, rural teachers are often lacking access to educational materials. Most classrooms have little more than desks, chalk, and a chalkboard. Overcrowding ensures that students are forced to share the few resources, such as textbooks, available. There are no posters on the wall or other visual aids; the rooms are Spartan to the extreme (Powley 2013). This lack of resources is a huge factor in teacher attrition – McGowen (2007) revealed that teacher turnover is directly correlated to the quality of the school facility. In many rural districts, electricity access is unavailable; computers and ICT, despite being a required subject of study after 2008, are non-existent or nonfunctional (Republic of Rwanda 2012). Even when electricity and computers are available, the high student:computer ratio

discourages students from taking interest in ICT, as evidenced in this quote from a rural student:

“I don’t like going to the computer lab because we have to fight over a few computers, sometimes you are unable to touch a computer the whole time you are there, you just watch what other students are doing. So I prefer to go and do other things.” (Rubagiza et al. 2010, p41)



A typical rural classroom in Rwanda. Note the level of overcrowding and lack of electricity.
Source: https://scarsoninrwanda.files.wordpress.com/2014/11/img_3039.jpg

As a result of all these conditions, rural schools are hard to staff. These schools are thus forced to hire unqualified teachers who may be lacking in education, experience, or both. More

than 80% of teachers in the rural Kirehe and Nyaguru districts are considered underqualified for the level at which they teach, while this figure is less than 25% in Kigali Ville, the capital district. (Bennell and Ntagaramba 2008, p7). Teachers employed in rural districts are often low in morale, as evidenced by a study questionnaire which discovered “almost 40% of teachers agreed with the statement ‘teachers at my school are increasingly de-motivated’ (ibid vii)”. The end result is that the rural students, who are already the most marginalized (defined here as lowest levels of education and income), are provided with the least skilled and least motivated teachers. This is especially true in primary schools, where new teachers, lacking any sort of education, are relegated to teaching the low level primary classes, which have the highest enrollment of any level of education (World Bank 2011, p115). In other words, the least experienced teachers are teaching the largest number of students. This combination of poor teacher pay, overwhelming pupil:teacher ratio, and too many classroom contact hours, all but ensures burnout, resulting in high rates of attrition. There is a common saying in Rwanda that encapsulates this: “Teaching is a waiting room for better job opportunities” (Bennell and Ntagaramba 2008, p15).

All of the above lead to large differences in scholastic achievement between rural and urban students. Proof of this can be found in test scores. After primary school, all Rwandan students need to pass an end-of-year examination to move onto the next grade. The dramatic effect of poor teacher quality is reflected in the number of students enrolled in secondary school: 63 rural students are enrolled for every 100 urban students at the start of secondary school, while 37 rural students are enrolled for every 100 urban students by the end of

secondary (World Bank 2011).² Kigali province, the most urban province, has an end-of-year examination passing rate more than 20 percentage points higher than any of the rural provinces (ibid p191). Another example can be seen in literacy rates: the literacy rate of the rural population is on average seven points lower than that of the urban population (African Development Bank p7). While not the only cause, the issues of recruitment and retention of teachers, and the resulting consequences of this issue (high student:teacher ratio, insufficient resources, and so on), are surely major contributors to the rural vs urban divide.

² There are of course many other factors in this number besides teacher quality. For example, rural students are more likely than urban students to skip school in order to work; rural families are less likely to value education; education costs in the form of school uniforms are more burdensome for rural students than urban students, and so on. Still, uneven spatial deployment of teachers also plays an undeniably major role. For more information, see the 2011 World Bank Rwanda Education Country Status Report, p5-7, 74-79, and 86-89.

2. Overview of rural schools (global):

Generally speaking, rural regions have lower levels of educational achievement than urban areas (Simler and Dudwick, n.d.). For the purposes of this paper, a rural area can be defined as “a space of low density, characterized by a lack of urbanization...[lacking] ease of access to medical care, schools, and regional facilities (United Nations 2013).” As a result of this sparse settlement, high transaction cost, and distance from populated centers, rural people inherently have a certain narrowness of choice in almost all facets of life, such as access to healthcare, employment and schooling (Monk 2007). It is worthwhile to note that rural areas are also often associated with agricultural activities and poverty. However, these are not absolutely essential to rurality. For example, a rural town located near a mine may in fact be relatively wealthy, and not reliant on agriculture in any way.

A fundamental assumption of this paper is that geography should not dictate which children obtain quality education and which do not. This ideal enjoys wide support; article 26 of the United Nations Declaration of Human Rights explicitly states that “everyone has the right to education”, while article 2 explains “everyone is entitled to all the rights and freedoms in this Declaration, without distinction of any kind, such as... national or social origin, property, or birth (United Nations 1948, article 2, 26).” This sentiment continues to be echoed in the modern day:

both the Millenium Development Goals and the Sustainable Development Goals, two policy agendas put forth by the United Nations and agreed upon by 189 and 193 countries, respectively, challenge the world to achieve “universal primary education” and “inclusive, equitable quality education...for all” (again, respectively) (United Nations MDG 2015; United Nations SDG 2015). Nor is this concept limited to the global level – both the United States No Child Left Behind Act and Rwanda’s Vision 2020 Development Plan, for example, mandate equitable education for their respective populaces.

So, as a result of widespread global and local support, I believe this assumption – students deserve equal education independent of their geography – to be a fair statement. However, sadly there often is a large divide between urban and rural scholastic achievement, with rural schools generally performing much worse. The reasons for this are numerous and varied, but again this paper will focus on just one facet: difficulties in recruitment and retention of rural teachers, and the consequences it has on students’ education.

2a. Problems with recruitment and retention of rural teachers: a problem not unique to Rwanda

Difficulties in recruiting qualified teachers is the first issue rural schools have in providing a quality education to their students. Rural states or provinces pay less than their more populated counterparts, and within states/provinces, rural teachers are paid less than their urban peers (Jimerson 2003). This is further complicated by the fact that new teachers in all locations “tend to earn less than in other professions requiring similar levels of education” (Nelson and Drown 2000). In other words, rural teachers are underpaid for an already

underpaid profession, as measured by level of education, which of course results in a shortage. The fact that teachers are underpaid in rural areas leads to an unfortunate distribution problem, where the best qualified new teachers end up avoiding the areas that are in the greatest need of them (Darling-Hammond 2001). This is well-illustrated in a questionnaire provided to Ghanaian teachers, wherein it was discovered that over 80% of new teachers had a preference for teaching in urban areas (Mulkeen 2005). Differences in pay were cited as a major reason for this preference. In other countries, teachers at rural schools often abandon their posts to work other, higher-paying jobs (Bennell et al. 2002). This resulting absenteeism has a profound effect on rural children’s scholastic achievement. Figure 2 below shows rates of teacher absenteeism in a few African countries.

Figure 2: Teacher Absenteeism Rates

Sex	Primary			Secondary		
	Botswana	Malawi	Uganda	Botswana	Malawi	Uganda
Female	7.4	4.5	4.3	6.1	3.4	12.6
Male	4.2	4.6	2.4	3.7	2.4	9.1

Source: Bennell, Hyde, and Swainson (2002).

The argument for rural teachers being paid less is one based on cost-of-living. Certain areas, such as major cities, have higher-than-average food costs, housing prices, and so on, which is used to justify paying urban teachers more than their rural counterparts. However, many cost adjustment indices do not capture some of the difficulties experienced by those living in rural regions (Nelson and Drown 2000). For example, cost-of-living adjustments rarely take into account locale-specific needs. A teacher at a rural school will almost certainly require

a car, while a teacher in an urban district may be able to take advantage of public transportation. Likewise, a teacher in a rural district with a cold climate may require a car with four wheel drive or snow tires, or expensive jackets. These locale-specific items are often not considered when deciding cost-of-living pay. The geographic isolation inherent to rural areas often has unseen costs, making rural teachers' low pay particularly burdensome.

Even if a teacher is successfully recruited to a rural school, there are often problems with retention. Teacher attrition can be as high as 30-50% in certain rural schools (Hobart 2001). The main reason teachers leave rural areas is isolation: social, cultural, and professional (Collins 1999). With regard to social isolation, rural areas generally have a very limited population. Consequently there are limited opportunities for social interaction; a teacher's nearest neighbor may be many miles away, community events may be limited, there may be few opportunities for extracurricular activities, and so on. Likewise, the limited population affects the number of cultural activities: teachers in rural areas have limited access to arts, movies, museums, and other cultural events. Professional isolation is the third burden faced by rural teachers, and one of the most damaging (Jimerson 2003). Due to both a limited number of positions at school and a limited number of schools themselves, there are few opportunities to advance one's career while working in rural areas. As a result, new teachers may opt to teach at a rural school for a few years but be forced to leave in search of increased responsibilities or a promotion. These three factors combined result in a very low retention rate of teachers, which further exacerbates the first problem of difficulties in recruitment. Figure 3 below summarizes the factors that make it difficult to recruit teachers to rural areas.

Figure 3: Factors that push teachers away from rural areas

-Social and cultural isolation	-Poor pay and salary differentials	-Limited mobility (geographic, professional)
-Lack of personal privacy	-Low pay does not cover rural realities (e.g. required car)	-Lured away by higher paying private sector
-Limited opportunity for spouse employability	-Difficulties in access to medical care	-Lack of community services

2b. Consequences of poor recruitment and retention

Poor recruitment and retention has a profound effect on rural children’s education. The first consequence of the inability to recruit teachers is the hiring of under-prepared or under-qualified teachers. Administrators must “find someone, anyone, to teach the class, especially in elementary grades” (Jimerson 2003 p12). Consequently, a class may have a teacher with insufficient credentials or education, such as when a school hires a full-time substitute to teach a class. As teachers are a very important input in the education process, having a poorly trained or less capable teacher puts an artificial ceiling on student achievement (Arnold 2005). Another option administrators may choose in dealing with difficulties in recruitment is consolidating classes. While this does allow a teacher to reach more students, the drawback is of course larger class sizes. In Malawi, for example, the average class size in rural areas is 77; in urban areas it is 44 (Mulkeen 2005). And, unfortunately, the research shows that large class sizes are an impediment to student learning (Finn and Achilles 1999). There do not seem to be any studies that attempt to unearth whether the drawback of larger class sizes is outweighed by the benefits of a better-trained teacher; regardless, larger class sizes have a detrimental effect on scholastic achievement.

One example of this can be seen in South Africa, where increased class sizes forced teachers to adopt teacher-centered rather than student-centered pedagogies (Mkeredzi 2013). Student-centered pedagogies require more individualized attention and are thus more difficult to utilize in larger classrooms. Unfortunately, teacher-centered teaching styles have been shown to be less effective than student-centered ones (Cornelius-White 2007). However, the shortage of teachers in rural South Africa necessitates large class sizes, forcing the teachers' hands. As a result, the scholastic achievement of rural students suffers, even if teachers are aware of the inferiority of the teaching style.

Another effect of the shortage of qualified teachers is that rural schools are forced to cancel courses (Jimerson 2003). In this case elective courses (such as art and music) and advanced courses (high level science or math) are especially vulnerable. This has the consequence of denying students the opportunity to discover their passion or gift; gifted students in particular are affected by this course of action (Howley 2009). Such an outcome is especially unfortunate considering gifted students with ties to the community are some of those most likely to return as professionals, such as teachers (Howley 2008). In this way, a shortage of teachers is a self-perpetuating cycle: poor recruitment and retention leads to a loss of advanced classes, which may affect gifted students' chances of entering college and returning to their community as teachers.

Yet another technique hard-to-staff districts utilize is to have a teacher teach outside of their field of expertise, or else to have a teacher who lacks proper accreditation. In the East African context especially, many rural teachers are unqualified to teach the subjects they teach. For example, in Mozambique, 58% of the teachers in Manica Province (a rural province) are

untrained, compared to 8% in Maputo City (Mulkeen 2005, p5). Similar issues are seen in Lesotho (51% of rural teachers are unqualified) and Tanzania (61% of rural teachers are unqualified, versus 40% in Dar es Salaam) (ibid). It probably goes without saying, but the literature confirms that a class taught by a teacher with a degree in that subject area has higher scores on average than a class taught by an unqualified teacher (ibid; Benveniste 2000; Bennell et al. 2002 etc.).

The high attrition rate among teachers in rural schools is also a burden administratively. The constant revolving door of teachers makes it extremely difficult for administration to establish a cohesive, collaborative staff (Ingersoll 2001). Teachers who leave after just a few years never have enough time to fully adapt to the school's culture, and, consequently, it is difficult for administration to establish momentum in a department. Additionally, as new teachers are continually entering a department, effective department-wide development is difficult. This contributes to the problem of insufficient opportunities for professional development, causing teachers to leave for other schools, thereby perpetuating the cycle. Lastly, the administrative cost of recruiting, interviewing, and training new teachers every couple of years puts an extremely large financial burden on already needy schools.

3. Rural Education: Analysis of Recruitment and Retention Models

According to McEwan 1999, the issue of addressing rural teacher recruitment and retention is grounded in teachers' inclination to trade off financial and non-financial aspects of the job in an attempt to achieve high job satisfaction. The models used to resolve issues in rural education quality usually focus more on the financial aspects of the job (ibid). The following section will discuss a handful of these models, including the hardship model, mandate model, distance model, recruitment model and teacher resiliency model. Case studies will be discussed that highlight the relative strengths and weaknesses of these models. Particular attention will be paid to the cost and timespan required to implement each model. It is also important to note that measuring the success of a model can be very difficult; looking at recruitment figures, for example, may provide an immediate but not long-term indicator of success – a particular model in a particular context may increase recruitment while simultaneously decreasing retention (Cobbold 2006). In addition, a model may increase both recruitment and retention while sacrificing educational quality, providing a brilliant cure that kills the patient. Unfortunately, the level of detail needed to properly determine whether or not a model is successful (long-term recruitment and retention rates from both before and after the model, educational scores before and after implementation, relative wealth of the school, timespan to implement the model in that context...) is never available for a single case study, much less for enough case studies to develop an in-depth understanding. For this reason, these models will be looked at generally: the goal is to learn, in broad strokes, where each model fails and succeeds.

3a. The Hardship Model

According to Ankrah-Dove (1982) the hardship model (and the later-discussed mandate model) falls under what is termed the rural deficit model. This means that the perspective of rural life is taken to be that “it is deficient in all the qualities which would attract teachers”, and this belief underlies how the problem of teacher recruitment is addressed in these particular models (Ankrah-Dove 13). Reid et al. elucidate the problems of this perspective, stating “it is as if rural society is judged in terms of a deficit discourse (dominated by the desire to make them like us) rather than a diversity discourse (recognition and value of difference) (p267).” Reid et al. go on to argue that the stereotype of the rural ‘problem’ acts as a barrier which must be overcome by focusing on the benefits of the rural social space. As the hardship model (and mandate model) is inherently founded in this belief, it makes no attempt to address this conceptualization issue.

In general, the hardship model involves incentivizing rural teaching roles by implementing salary increases, bonuses, travel allowances or subsidized housing when recruiting new rural teachers (Lowe 2006). Loan forgiveness plans can also act as an incentive for new teachers (ibid). These plans may involve full or partial payment of student loans by school districts, or liaison with lending institutions to reduce interest rates.

Financial incentives such as these are a common tool in Africa, yet are often unsuccessful. In Lesotho, rural teachers receive a flat hardship fee of M275 (\$18) per month, which is equal to a 10% bonus in salary (Mulkeen 2005, p14). As mentioned earlier, this has done little to entice skilled teachers to rural areas; 51% of rural Lesotho teachers lack any qualification whatsoever. Mulkeen argues that part of this failure is due to the insufficiency of

the hardship fee. The cost of travel, including both the cost of fuel and the opportunity cost of lost time, often outweighs the value of this bonus (15). This case highlights that the incentives provided need to be substantial in order to outweigh the costs of rurality. Of course, this raises another problem in and of itself: the hardship model effectively increases the salary of teachers, which may further strain an already-strained public budget. It is difficult to balance these two opposing issues.

Some authors suggest that while the hardship model of incentivizing rural teaching positions may be a useful short-term remedy for recruitment, it lacks use in the long term for retention purposes and achieving sustained and stable education environments (Ankrah-Dove 1982). It is suggested that these incentives may need to remain in place throughout tenure in order to retain those teachers, further raising the cost of such a model. Additionally, these incentives, such as the \$900 bonus offered by the Victorian Department of Education in Australia for rural practicum placements, do not resolve locale-specific issues such as existing family and work commitments (White and Reid 2008, p5). The benefit of extra pay to one family member may not make up the consequent loss in pay due to another family member being unable to find work in a rural location. In other words, hardship models attempt to address the “cultural deficit” of rural living through financial incentives, rather than attempting to address the deficit itself.

Others suggest that the best policy option to counter lower wages in rural schools is to offer higher wages and improved benefits. One example of this is the Employer-Assisted Teacher Housing Program in Mississippi, which provides housing credits to teachers (Monk 2007). However, Monk counters this argument with the problems of such an approach. Apart

from the potentially exorbitant cost, it is difficult to ascertain what is a large enough offset to convince teachers, and this is likely to vary on an individual basis. Additionally, although this may get new teachers in the door, it does not guarantee their commitment or effectiveness. These problems, in addition to its cost, raise questions about the sustainability of such a model.

In terms of the hardship model, one author posited that non-financial strategies could be even more important in retention than financial incentives (Jerrard 2016). Teacher motivation is not only financially driven, but aspects such as “self-worth and community engagement or status” are vital to teacher retention in rural schools (ibid 91). Therefore, recruitment may be better improved by looking at sociocultural rather than financial solutions. This is significant as the hardship model generally makes no attempt to address these issues.

In contrast, the three major benefits of the hardship model are that:

1) It can be implemented immediately, with little to no change in policy framework (and thus little administrative cost besides the increase in pay itself) (Lowe 2006);

2) It attempts to address the problem of low teacher pay, one of the most common complaints of rural teachers (Monk 2007);

3) Increasing teacher pay is not dangerous politically; resistance will come from budget strain rather than political opposition (Goldhaber 2006).

In summary, the hardship model is a quick, simple solution. However, there are questions about its sustainability and whether it can actually ensure motivated teachers. Additionally, it is expensive. The last point in particular raises questions about its use in lower-income countries.

3b. Mandate Model

Ankrah-Dove (1982) defines the mandate model as “the compulsory posting of all newly-trained teachers to rural schools for a period of years, the requirement of service in rural school for eligibility for promotion,” and states that this model is often relied upon in less-developed countries (6). This model can lead to issues such as whether recruitment in this way will lead to adequate retention and whether teachers will choose to leave the profession rather than face being posted to a rural school. Current teachers may resist the proposal of such a policy, making it difficult to execute. It has also been suggested that unwilling participation in rural schools, which can be caused by implementation of the mandate model, may bring a negative attitude to the classroom, resulting in poor teaching quality and therefore poor educational quality for the student (ibid 13). Participants in a study by the Economic Development Institute of the World Bank (1993) said that compulsory rural postings had led to considerable issues with teacher absenteeism and purposeful misbehaviour in an attempt to be reassigned. This model also suggests a message which reinforces the idea of the rural deficit model by implying that rural positions are so undesirable that postings must be enforced. Because the postings are usually for young and inexperienced teachers, with few, if any, experienced staff to assist them, there is the potential for struggle in such an isolated atmosphere, resulting in an unsuccessful educational experience for students. A response from a participant in the EDI study said that coupling compulsory rural service for new teachers with the promise of a post to a more desirable area after two to three years was a successful strategy for recruitment. However, this argument supports Ankrah-Dove’s view, resulting in the least experienced teachers being placed in potentially the most challenging teaching roles,

while simultaneously ensuring a certain level of future attrition, i.e. such a model fails to address retention.

Botswana utilized a hybrid of this model and the hardship model to address teacher deployment issues (Mulkeen 2007). Once the policy change was implemented, teachers were mandated to more rural postings. However, teachers were compensated with and for transportation, disturbance allowances, hardship pay, and housing credits. This model had the benefit of ensuring a sufficient number of teachers to rural schools. At the same time, this model is also very expensive due to the number of allowances provided, and it is likely there would have been much more resistance from teachers without these allowances (ibid). It is extremely questionable whether or not a much poorer country, such as Rwanda, would be able to afford such benefits.³

Unfortunately, I am unable to find any research that discusses the effect this model had on retention rates of teachers. Researchers (Ankrah-Dove, Mulkeen, Jimerson) posit that being forced to rural posts may increase resentment and thus decrease retention, but none support their argument with statistics or case studies. I also question the arguments about how politically dangerous such a policy would be in the case of Rwanda: Rwanda already has a mandatory one-year of compulsory public service, and it is possible that since this policy framework already exists, teachers would be more amenable to a year(s) of mandatory rural posting⁴ (Sinema 2015). For this reason, political resistance to the mandate model may be less in Rwanda than in other countries.

³ The GNI per capita of Botswana is \$7,240 dollars. The GNI per capita of Rwanda is \$700. Source: World Bank 2016

⁴ Again, this does not address the problem of retention.

3c. Recruitment Model

The recruitment model offers scholarships or similar benefits to high-achieving school students from rural areas, under the condition that they return to that area to teach. For example, the U.S. state of Mississippi offers scholarships for prospective rural teachers through a high school-to-college program (Collins 1999). One study undertaken by Adams and Woods (2015) investigated this model by looking at the relationship between teacher retention and familiarity with rurality. While the initiative didn't focus on offering scholarships to students from rural areas, it did determine that a familiarity with the area and culture the teacher would be teaching in aided teacher retention, and specifically related this to whether the teacher themselves had attended a rural school (Adams and Woods 257). Therefore, it is theoretically plausible that encouraging students to return to their local rural area as teachers would have a positive effect on teacher retention, and thus the general quality of the education provided.

It is important that in recruitment efforts, teachers are adequately prepared to meet the needs of rural students (Azano and Stewart 2015). Teachers must have received training particular to the issues of students marginalised by poverty and geographic isolation. For this reason, the recruitment model is useful in that ensures the incoming teachers have an understanding of the context in which they will be placed. However, some authors question how significant a personal connection to rurality is with regard to teacher quality – having dental work done does not make you qualified to be a dentist, and likewise attending a rural school when young does not inherently make a person fit to be a rural teacher (Jimerson 2003). The apprenticeship of observation presumes that teachers who attended rural schools as students are adequately prepared; this is a fallacy. As such, any recruitment model must also

involve specialized rural training -- an emotional connection is not sufficient. Staffing rural schools with ill-prepared but familiar teachers does not serve the long-term purpose of successful education for rural students with job-satisfied teachers (Azano and Stewart 2015).

This sentiment is similarly argued in Miller 2012, who states that exposure to or immersion in rural communities is important, but must be done in an instructional rather than observational capacity. In teacher education programs, reliance on the ‘apprenticeship of observation’ is not enough; this exposure or immersion must be “intentional, well-planned, and implemented with a critical lens” (Azano and Stewart 2015, 2).

Hudson and Hudson (2008) argue that recruiting only students from rural backgrounds to fill rural placements is far too limited an approach to adequately fill vacancies and provide successful teaching experiences. Such a model may artificially limit diversity in the profession. This is pertinent as participants in the Hudson and Hudson study identified as more confident when they had rural exposure; however, they still acknowledged the same challenges as non-rural participants, such as low pay. According to Azano and Stewart, “the key finding is that teaching candidates need explicit instruction on theory and pedagogies for success in rural schools and to use personal histories or transform social capital into meaningful, relevant pedagogy” (8). This finding supports the study’s proposal that teacher education programs are necessary to prepare future rural teachers; without this specific training, rural-familiar teachers still face the same handicaps that new teachers do. The typical under-achievement and motivational issues of students proved to be significant challenges to all teachers in the study, highlighting the need for highly-skilled teachers in rural schools (9). Success in rural schools is therefore not merely about filling vacancies with people from the area.

In terms of retaining teachers, Collins 1999 argues that it should be a joint school-community effort. This is to “help new teachers overcome feelings of isolation, acquire a sense of community security, and develop professional competence” (ibid 3). One example of this holistic recruitment strategy is found at The South Carolina Center for Teacher Recruitment. Firstly, the Center has the ProTeam Program, which acts as an introduction to the prospect of a teaching career for minority seventh and eighth-grade students (Collins 4). This is followed by the Teacher Cadet program, which provides a class to twelfth-grade students as an introduction to teaching, for which they receive college credit. Finally, the Center offers a scholarship for prospective teachers, covering tuition and enrichment activities, provided the new teacher makes a commitment to teach in a rural school, one year for every year they hold the scholarship (Teaching Fellows 2016). In this way, the program is more than just another professional development opportunity – it is an organization which streamlines the process from middle-school to new teacher. As interested students will have the opportunity to engage this program from such a young age, this program will not only give ample time for specialized rural training, but also allow the student to develop a connection with the program, decreasing feelings of isolation.

In Ghana, a shortage of qualified teachers coupled with a reluctance by graduates to accept rural postings was addressed by an initiative described in a paper by Cobbold 2006. This initiative, quite similar to the above program in South Carolina, is “a scheme by which districts sponsor teacher candidates for training in the Initial Teacher Training Colleges (ITTCs) and contract them to teach in the districts for at least three years (Cobbold p454)”. Cobbold’s study

focused on Akhoyer District, which presented severe problems in both attracting and retaining teachers, and was one of the earliest to implement the sponsorship scheme.

The initiative is similar to that of the recruitment model. In order to be accepted for training in the ITTCs, a candidate must be sponsored by a district, to which they are then obligated to return to and work as a teacher once trained (Cobbold 2006). This acts as encouragement for rural candidates to return to their own rural district once qualified. However, it was also allowed for urban candidates to apply for the rural areas within their own district. This allowance may mitigate the issue of a recruitment model limiting diversity. Cobbold argues that the initiative is seen to have the benefit of providing teachers with a sense of community, unlike that presented in Ankrah-Dove's rural deficit model, and also fosters a positive learning environment by encouraging rural students to take an interest in their education (p459).

There are a number of lessons that can be taken from the Akhoyer district study. First, it highlighted some of the logistical difficulties in training teachers in rural areas. While the ITT program in Ghana directs trainees to spend their final year teaching in schools, these schools are not generally within the districts they are sponsored by, but instead close to their urban training colleges due to financial constraints (Cobbold 462). Second, while the scheme in the Akhoyer district did yield positive teaching results, the three-year contract period did not allow for any further sponsorship or opportunities to advance within the district, resulting in many teachers leaving to pursue further study. This highlights the importance of having both short- and long-term retention policies. Additionally, the Akhoyer district scheme did not implement an initial interview or ongoing monitoring program to determine the candidate's personal

ongoing commitment to teaching. This gave the potential for many candidates to undertake teacher training as a springboard for future careers. Consequently, in this example, the recruitment model addressed the problems of recruitment but had unforeseen consequences with regard to retention. This is especially a problem in this case as the Ghanaian school districts contributed to the prospective teachers financially through their scholarships/training. While the program does ensure there will be enough teachers, it does not ensure there will be enough experienced teachers, nor does it relieve the high administrative/financial burden of recruitment and training. A longer contractual period may address this, at the cost of a smaller pool of applicants.

One final note about the recruitment model is that it is inherently a localized process and for this reason functions much better in decentralized education systems (Cobbold 2006). Consequently the recruitment model may work very well in a system like Rwanda, where individual districts are responsible for their own recruitment, yet fail completely in a system like Thailand, where the centralization of the education system may completely mitigate the benefits of localized recruitment. At the same time, this also means much of the development of such a program, and therefore the administrative burden, falls onto the already burdened rural schools. This is expensive in both cost and time.

3d. Distance model

The distance model involves the utilization of information-communications technology (ICT), usually through internet, to mediate, improve, or enhance the classroom experience (Meyer 2014). The major benefit of the distance model is it allows a single teacher to be in multiple classrooms (Hammer et al. 2005). Through this distance education model, an alliance

between multiple rural school districts could allow for one teacher to teach multiple classrooms of students simultaneously via distance-learning. Hammer et al. explain how this was used to great effect in Colorado with an alliance between four rural school districts, wherein the cost of a single teacher, along with the required communication technology, was split between schools. In doing so, the distance model addresses many of the problems rural teachers face by allowing them to live in their preferred area while still teaching rural students. The major drawback of this model is that it is inherently reliant on infrastructure, and a high level of infrastructure at that. Adedeji and Olaniyan (2011) highlight that distance education addresses a great many of the problems found in rural education in Africa, yet as so many rural districts in Africa are lacking adequate electricity, much less dedicated broadband internet, distance education is at the moment unfeasible (81). The cost of installing this infrastructure is beyond the level of a rural school's budget and thus depend on a government or private industry initiative (ibid). It is possible that improvements in cell phone service and access may present an alternative to dedicated internet, often referred to in the literature as m-learning (mobile learning) (Brown 2005). Duolingo, a mobile application that allows its users to learn a variety of languages through cellphone-based games, is one such example of m-learning (Vesselinov and Grego 2012). Unfortunately, m-learning suffers some of the same problems as internet-based distance learning, namely a high initial cost due to its reliance on technology. It inherently requires a high level of cellphone access (and in the case of Duolingo, access to data services, as the game needs a consistent connection and cannot be played offline) and consequently has a high barrier to usage in the developing world. Mackintosh (2005) argues that a move to such a model of education may further exacerbate societal divides in access to education, as the

distance model ensures that wealthier schools and populations will have better access to schooling. It is possible that the invention of new technologies could greatly lower the cost of access, either through reducing the cost of infrastructure or increasing the ubiquity of cellphones or other m-learning options, but it is too difficult to predict the trajectory of technology to have any specific hopes.

The benefits of the distance model are not limited to solely increasing access to teachers or materials. Starr and White (2008) ascertained that ICTs are not only useful in the transmission of lessons for students, but also to allow for supportive and time-saving meetings. This can be utilized by principals particularly for collaborative school efforts, teacher-parent meetings and student-teacher communications. The increased efficiency provided by these benefits can reduce the administrative burden on rural schools, freeing up resources that can then be put towards recruiting and retaining teachers.

Finally, it is worth noting that some authors in the literature warn of viewing distance education as a “silver bullet.” The mere introduction of ICT technology to a classroom does not in and of itself improve the learning experience nor inherently increase efficiency (Sutherland et. al 2009). Indeed, specialized training, an encouraging administrative environment, and consistent maintenance are required for new technology to be used effectively. The literature is rife with examples of donated technology falling into disrepair, being outright ignored, or simply being used as alternatives to existing technology (rather than enhancements or efficiency-increasers) due to a lack of training or support (ibid). In fact, a meta-review of 150 distance-education programs in Sub-Saharan Africa discovered that traditional, paper-based learning tends to be more reliable and sustainable than online and web-based learning (Leary

and Berge 2006). Again, it is possible that enhancements in technology, training, and access will improve the efficacy of such a model – note that this meta-review took place in 2006, just under 10 years ago; it is possible that its findings are no longer accurate. Unfortunately, it is the most recent meta-analysis I have been able to find on the topic localized to sub-Saharan Africa.

In short, distance technology solves a great many of the problems of rural teacher recruitment and retention by completely changing the system. At the same time, this model has yet to be fully realized in wealthy countries like the United States – it is a long way from being applicable to the Rwandan context. Despite its many benefits, its extremely high cost means it is only a solution on a long-term timescale.

3e. Teacher resiliency model

The teacher resiliency model is a model designed to improve teacher retention that relies on creating a conducive administrative and classroom culture, rather than the external policy measures championed in the other four models. As explained by Malloy and Allen (2007), the concept can be simply defined as a system built around “nurturing the nurturers” (19). In their study, the authors examine a particular U.S. rural school with a reputation for high teacher retention and determine how well its policies align with the three dimensions of teacher resiliency building: caring and support, high expectations, and meaningful participation⁵.

In the study, Malloy and Allen found that the requirement of caring and support was met by focusing on three dimensions of collaboration, entitled “supportive,” “facilitative,” and “informative” (23). The supportive dimension was achieved in the following ways: teacher recognition strategies, family-like support between teachers and the principal in times of

⁵ The three dimensions were first articulated in Henderson and Milstein 2003.

personal stress, illness or need, faculty social gatherings and reduced assignments for teachers facing a particular period of stress. The facilitative dimension was apparent in teacher-led (rather than state-mandated) activities. These were feedback-based activities such as “team-teaching, peer evaluations, reflective conversations related to best practices ... [which] enable teachers to develop the capacity to become more effective” (ibid 23). The informative aspect, “to better equip colleagues to address challenges,” was significantly present because of a faculty decision to undertake a mentor training program (23). To put it more simply, the school focused on encouraging collaboration between administration-teacher and teacher-teacher, while simultaneously promoting autonomy at a school-level rather than a state- or national-level. In this way, the model creates a community of which teachers become a part, thereby encouraging retention.

With regard to the second dimension of high expectations, the teacher resiliency model requires a culture that recognizes individual efforts (23). The model accomplishes this by establishing a culture of teachers being the ones in charge of norms and monitoring, rather than a more centralized system where the school culture is dictated by the principal or administrators outside the school. As a result, teachers are rewarded for their individualized efforts and work, rather than simply being “cogs in a machine.” Again, this promotes individual investment on the level of the teacher, thereby increasing retention.

In terms of the meaningful participation aspect, the examined school was found to satisfy career growth opportunities for teachers by holding twice-yearly reviews which allow the teacher to be stimulated in remaining involved by continuing to contribute to the success of the school (24). Additionally, teachers were not defined by status, but treated as equals. The

theme here is clear: teachers need to be creators of the culture of the school, rather than subservient to the culture.

This model is clearly an involved system, requiring implementation by the principal and several key members of staff to initially introduce it to a school. There are foreseeable issues in the implementation of certain aspects of teacher resilience, such as resistance by administration on the state/province or national level. Additionally, a teacher resiliency approach requires the efforts of all teaching staff and is not achievable if teachers refuse to become involved. In countries with high levels of teacher absenteeism, like Rwanda, this may be difficult to achieve.

At the same time, this study is the only major study I have found that develops and articulates a framework for building community and individual involvement to promote retention, rather than simply pointing out the importance of such buzzwords. The value of this model is that, like the recruitment model, it is a localized and individualized process. As solutions to the recruitment and retention problem will always be tied to local context, not just on the national but also the subnational level, individualized strategies, through their adaptability, will (counter-intuitively) be the “one model fits all” approach. Additionally, as the majority of this model is decided in-house, schools can begin implementing it without national policy changes. Consequently, this model is both low in cost and relatively quick to implement.

3f. Concluding thoughts on models

In terms of the specific characteristics of successful recruitment and retention practices, not every model will be suitable for every school and thus it requires an individualized approach (Murphy and DeArmond 2003). Ankrah-Dove (1982) also indicated the strategies, in particular

those falling under the rural deficit model, should be specific to the interests and motivations of the teacher, and these will vary based on the locale of the school (17). Additionally, as local contexts change with time, models will have to be re-evaluated consistently over the years (Hammer et al. 2005). In short, successful recruitment and retention strategies will forever be a moving target, dependent on local circumstances; it is extremely unlikely for there to be a “silver bullet,” implementable at the global or national level, able to permanently solve the problem of rural recruitment and retention. Solutions will always be unique to the local context; models that are adaptable to individual contexts should be prioritized.

Table 1 - Comparison of Models

Category	Hardship model	Mandate Model	Recruitment Model	Distance Model	Teacher Resiliency Model
Benefits	-addresses low teacher pay -easy to implement	-guarantees rural schools teachers -policy framework for compulsory service already exists in Rwanda	-inherently individualized to local context -likely to improve retention -easily adaptable	-solves most problems by allowing teacher to live in desired area -addresses overcrowded classrooms	-individualized to local context -internal, rather than external -addresses retention -can be implemented immediately -easily adaptable over time
Negatives	-amount of pay needed to motivate a teacher is very individualized -expensive, pay must stay to be sustainable	-may dissuade teachers from entering the field -may decrease teacher motivation/enthusiasm -fails to address retention	-limits the total pool of teachers -does not address teacher pay -places additional burden on rural schools -may not address retention	-requires a high level of infrastructure beyond current capacity -loss of direct student-teacher interaction (maybe?)	-does not address teacher pay -does not address recruitment -requires investment from administration; may be difficult to start in an already compromised school
Cost	High	Medium	Low nationally Medium-high locally	Impossibly high ⁶	Low
Speed of implementation	Fast	Medium	Medium; dependent on school	Very slow	Fast; dependent on school
Required political will	Low	Medium-High	Low	Low	Low

⁶ Within the context of Vision 2020

5. Evaluations of Models in the Rwandan Context

5a. Hardship model

The main benefit of utilizing the hardship model is that it directly addresses the problem of low teacher pay, which has been cited as a major cause of the uneven spatial deployment of teachers in Rwanda (Bennell and Ntagaramba 2008). By addressing the problem of low pay, it is also likely that the hardship model would reduce teacher absenteeism. Additionally, the hardship model is relatively easy to implement (Mulkeen 2005). In effect, the hardship model is no more complex than dividing schools into categories and giving differential pay based on those categories (Lowe 2006). Consequently the administrative cost for implementing such a solution is low. This is a particularly large benefit in developing countries such as Rwanda, where the institutional capacity of governmental entities like the Ministry of Education are often limited (Rubagiza et. al 2011). Finally, as a result of this simplicity, the hardship model can be implemented quite quickly (Ankrah-Dove 1982). Such ease of implementation is attractive in the Rwandan case due to the country's stated goal of achieving middle-income status by 2020 (Republic of Rwanda 2012). The country needs quick solutions in order to stay on target.

The main drawback of the hardship model for Rwanda is its cost. As mentioned previously, the additional pecuniary allowances provided to teachers must stay in place permanently or else the model is not sustainable. Rwanda's lower-income status makes this a perhaps insurmountable difficulty; indeed one review of the education system concluded that "there is no realistic prospect of sizeable pay increases (in real terms) for teachers in the foreseeable future (Bennell and Ntagaramba 2008, ix)." In addition, the hardship model does

nothing to address the sociocultural deficits of rural living. A successful model needs to utilize non-material motivators, such as building ties to the community and school, in order to avoid feelings of social isolation if it is to be effective in retaining teachers (ibid). Due to all of the above, the hardship model is unlikely to be the best option for Rwanda – despite having some clear benefits, its exorbitant cost, questionable sustainability, and lack of success in addressing non-financial motivators means it is not the optimal choice.

5b. Mandate model

The major benefit of the mandate model is that it guarantees a certain level of success in recruitment. By requiring all teachers to serve at a rural school for a specific time period, rural students are guaranteed a share of available teachers (Mulkeen 2007). Additionally, the concept of compulsory service is not new to Rwanda; the country already requires all its citizens to serve in public service for one year (Sinema 2015). During this compulsory public service, Rwandan citizens have little choice in where they are posted, instead receiving positions based on their results on a civil service examination weighted along with their preference for position (rather than locations) (General Statutes For Rwanda Public Service 2002). This may mitigate some of the political resistance to such a policy, although it is still likely to be much more politically difficult to implement than the hardship model.

Unfortunately, the drawbacks to the mandate model within the Rwandan context are numerous. The literature makes specific note that the mandate model may lead to decreased teacher motivation as teachers' posts may be in conflict with their own interests (Mulkeen 2007). As poor teacher motivation is already a significant problem in rural Rwandan schools, with 40% of teachers agreeing with the statement "teachers at my school are increasingly de-

motivated” (Bennell and Ntagaramba 2008, vii), a model that decreases instructor enthusiasm is a poor direction to take. Secondly, like the hardship model, the mandate model does nothing to address the sociocultural deficits of living in a rural region. In fact, it may exacerbate the issues by forcing teachers who are particularly sensitive to these drawbacks into rural areas against their will (Cobbold 2006). This is likely to further affect teacher motivation, and may even cause teachers to leave the profession. Indeed, the model does little to address problems of retention. Finally, mandate models generally post new teachers, rather than experienced teachers, to rural areas (ibid). This leads to the least experienced teachers being responsible for teaching the students arguably most in need of skilled teachers. As such, it is unlikely to have a large effect on improving the scholastic achievement of rural students relative to other models, which is ultimately the goal of improving rural teacher recruitment and retention. These numerous drawbacks make the mandate model unlikely to be anything more than a band aid for the recruitment/retention problem. However, it may be possible to tie rural school teacher postings to the already existing compulsory public service, which may function as an effective stop-gap measure in the short-term.

5c. Recruitment model

The major benefit of the recruitment model is that, unlike the above two models, it addresses the sociocultural deficit of rural living. By choosing (or rather, creating) teachers who are already familiar with and connected to the realities of rural life, the recruitment model increases the likelihood of teacher retention (Adams and Wood 2015). Recruiting from local areas, as seen in the South Carolina case study, promotes a sense of community and encourages teachers to remain in the area (Collins 1999). By streamlining the recruitment

process from rural student to new rural teacher, the recruitment model is able to create a connection to the program and larger community. This method also allows rural schools to have a rough idea of how many new teachers will be available in the coming years; school sponsorship programs offer statistics that are not available in the other models (Teaching Fellows 2016).

The recruitment model is also useful in that it is unique to the local context. By putting the individual districts in charge of their own recruitment, policy changes can be made more quickly and effectively, reducing bureaucratic costs and improving adaptability (Cobbold 2006). This is particularly effective in a decentralized environment like the one found in Rwanda.

One drawback of the recruitment model, as evidenced by the Ghanaian case study, is that teachers may leave after they fulfill the requirements of their provided scholarship (Cobbold 2006). In this way it is similar to the mandate model – teachers are guaranteed to rural schools for a certain period of time, but they may abandon these posts at the first available opportunity. At the same time, presumably teacher motivation would be higher as the teachers opt-in to such a program (and thus the rural posting) rather than being forced into it. Still, this highlights the importance of having both short- and long-term retention policies.

Another consequence of the recruitment model is that it may increase the administrative burden on rural schools, which are already suffering from high costs relative to urban schools (Ingersoll 2001). This is the drawback of local autonomy – schools have more power to create programs that are designed around their local context, but the result is that the cost falls on them rather than a national education system. Subsidization from the federal government can help mitigate this issue, but again, Rwanda is a very poor country and it is

unlikely the Ministry of Education would be able to assist in this regard (Bennell and Ntagaramba 2008).

The recruitment model's individualized nature, ability to directly address retention, and minimal additional strain on the national education system (and thus likely to encounter less political resistance) makes it a good choice for Rwanda, at least in the short term. Still, additional measures must be taken to ensure that teachers do not leave immediately after finishing the requirements of their scholarship.

5d. Distance model

The distance model is an interesting one as it solves a great many of the recruitment and retention problems. By utilizing ICT like Skype or similar programs, a teacher can live in his or her desired urban area while still being a rural school teacher. Also, the power of communication technology allows a single teacher to teach multiple classrooms simultaneously. As a result, the absolute number of teachers required to staff schools may drop considerably. In this way, the distance model allows Rwanda to sidestep issues with recruitment by greatly increasing the reach of each individual teacher. And in a similar way, the distance model allows for reduced class sizes. As students no longer need to be physically in the room with a teacher, classrooms can be cut down into more manageable sizes. Some authors even question whether classrooms will be necessary at all, assuming a certain ubiquity of communication technology in the future (Moore 2013). Mobile phone technology, already

relatively widespread in Rwanda with a penetration rate of more than 70%⁷, may make this classroom-less world a reality more quickly than one would expect (Gasore 2014).

Additionally, the utilization of ICT will increase the efficiency of rural schools, thereby decreasing their administrative burden. One example of how this could work in rural Rwanda would be a rural school posting a job advertisement online and then interviewing potential candidates through Skype. This could greatly reduce the cost of recruitment while allowing teacher hiring requests to reach a greater number of possible applicants (Starr and White 2008).

The major drawback of the distance model, which is frankly so severe that it precludes its consideration in the short- and medium-term, is its cost. Rwanda is still working on getting electricity to its rural villages, much less steady electricity, even more less internet, and even still less the dedicated broadband required for video streaming. Indeed, only 18% of the Rwandan population has access to the national energy grid, with many homes instead relying on solar chargers and other alternatives (World Bank 2016). Consequently, the distance model should only be looked at as a long-term solution – it will not be able to play a major role in accomplishing Rwanda’s Vision 2020 objectives.

5e. Teacher resiliency model

The benefit of the teacher resiliency model is that it directly addresses retention through internal school policy. Specifically, it tackles some of the sociocultural deficits of

⁷ It is worth noting that mobile phone access is not the same as access to data. Presumably, a distance education model that allows teachers to teach remotely would require the ability to stream video. At the current point in time, only the capital city and larger towns have access to 3G; regions with a high elevation, which are often the most rural, have no access to data at all (Source: Tigo 2016). While a high level of mobile phone access is a good sign for distance education, reliable data access may still be a ways off for the more rural villages.

rurality that other models fail to address. By creating a school community that values connections among teachers, students, and administration, the teacher resiliency model helps mitigate the social isolation that is often cited as a major reason for teacher attrition (Malloy and Allen 2007). Additionally, the teacher resiliency model puts a lot of value on fostering professional development, yet another oft-cited reason for teacher attrition (Jimerson 2003). Finally, its heavy value on teacher autonomy encourages individual investment, hopefully increasing teachers' connection to the school.

The teacher resiliency model, like the recruitment model, is highly individualized, adaptive, and quick to implement. All three of these criteria are extremely useful in rural settings, where interventions must be finely tuned to local contexts in order to be successful (Hammer et. al 2005). These three factors are also particularly well-suited to the decentralized nature of the Rwandan education system. For similar reasons, the teacher resiliency model is cheap to implement – little to no national policy changes are required; all changes take place on a local level within the school culture.

The drawback of the teacher resiliency model is that it requires investment from the entire school community. In schools suffering from low morale, as is often the case in rural Rwanda, it may be difficult to implement such a school-wide culture change. Teacher absenteeism, again a problem in Rwanda, may further compound this issue (Bennell and Ntagaramba 2008). In addition, the teacher resiliency model does not address recruitment in any way. Without an additional policy to assist it, this model can only at best solve one side of the issue. Finally, there is a lack of evidence of the teacher resiliency model being put into practice effectively within the East African context. Most models, and thus most research, focus

on externally-driven national-level policy initiatives. At the same time, I think this may actually be a reason to support the teacher resiliency model: teacher recruitment and retention in rural areas has been a consistent problem in Rwanda, and East Africa more generally, for decades now; perhaps it is time to look at bottom-up in addition to top-down approaches. For this reason, I believe the teacher resiliency model is a good option, but only when combined with a different approach.

6. Final recommendations

After reviewing the Rwandan educational context, the current popular models to address recruitment and retention of rural teachers, and the possible interplays between these two factors, I recommend that the Rwandan government utilizes a combination of the recruitment and teacher resiliency models. Both of these models have the benefit of being unique to the local context, quick to implement, and easily adaptable to changing situations. They are synergistic in that the weakness of the recruitment model is its inability to secure long-term retention, while the weakness of the teacher resiliency model is that it does not address recruitment. Finally, both models are initiated on a local rather than national level, which makes them particularly well-suited to the decentralized Rwandan education system. It is also worth noting that the distance model, while unlikely to be useful in time for achieving Rwanda's Vision 2020 goals, solves a great number of recruitment/retention problems brought up in this paper. For this reason, I also suggest that the Rwandan government encourage the development of the foundations of ICT, specifically electricity and internet access, in the medium-term in order to later reap the benefits of the distance model.

Annex 1

DETAILED STARTING SALARY FOR PRIMARY AND SECONDARY TEACHERS

SN	POST	QUAL	ND	IV	INDEX	BASIC SAL	ACCOMOD	TRANSP	GROSS SAL/TAX	TOT GROSS SAL	PAYE	CSR Ptr.	RAMA Ptr.	CSR Pers.	RAMA Pers.	NET SALARY
1	Primary Teacher	A2	30	250	279	69,750	9,964	9,964	89,678	98,895	11,936	3,986	5,231	2,391	5,231	70,120
2	Secondary Teacher	A1	30	250	597	149,250	21,321	21,321	191,892	211,615	41,568	8,529	11,194	5,117	11,194	134,013
3	Secondary Teacher	A0	30	250	952	238,000	34,000	34,000	306,000	337,450	75,800	13,600	17,850	8,160	17,850	204,190
4	Head of Department	A0	30	250	1,346	336,500	48,071	48,071	432,642	477,109	113,793	19,229	25,238	11,537	25,238	282,074
5	Discipline	A0	30	250	1,408	352,000	50,286	50,286	452,572	499,086	119,772	20,114	26,400	12,069	26,400	294,331
6	DOS	A0	30	250	1,470	367,500	52,500	52,500	472,500	521,063	125,750	21,000	27,563	12,600	27,563	306,587
7	HEAD Primary	A2	30	250	670	167,500	23,929	23,929	215,358	237,492	48,607	9,571	12,563	5,743	12,563	148,445
8	Head Secondary	A0	30	250	2,101	525,250	75,036	75,036	675,322	744,730	186,597	30,014	39,394	18,009	39,394	431,322

100,000 RWF = \$132.12 USD

Source: PRIMARY AND SECONDARY SCHOOL TEACHERS CATEGORIES, GRADES AND SALARY courtesy of Dr. Catherine Honeyman, Visiting Scholar at Duke University

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