

# **Teachers Retention and Recruitment in Rural Areas in Tanzania. A narrative review Based on the Chinese Experience**

## **Abstract**

*A narrative review of the literature on the practices of teacher recruitment and retention in rural China, with an emphasis on identifying the tactics employed to do so, served as the basis for this qualitative study. It then showed Tanzania how similar strategies may be applied to guarantee the successful recruitment and retention of Math and Science teachers in rural areas. The study found that while China's position is not as dire as Tanzania's, especially for instructors of science and math, both countries struggle with teacher recruitment and retention in rural areas. This is a result of the several strategies China has implemented to ensure successful teacher recruitment and retention in both rural and urban areas. Nonetheless, the study has demonstrated that Tanzania, like other Sub-Saharan African nations, lacks a strong framework for teacher policies that connects teacher recruitment and retention. Additionally, Science and Math teachers in Tanzania are not motivated, which leads to a teacher shortage in rural and remote areas. The study, thus, recommends that Tanzania should learn from China through the following, first development of policies related to rewards and incentives and, an increase in salary and promotions for science and mathematics teachers recruited in rural areas. Secondly, creating huge investments in urbanizing rural areas with the aim of attracting and retaining a fresh employed science and mathematics teachers. Thirdly, the development of teacher exchange and rotation policy. Fourth, encouraging more gifted form six graduates in science and mathematics to work as teachers in remote regions and providing them with free access to both online and offline higher education. In this regard Tanzania will be able to comprehend the 2030 World Education for Sustainable Development, the SDGs of the UN, the African Union objectives of 2063, and Tanzania Vision 2025. Ultimately, the study comes to the conclusion that, in spite of Tanzania's potential to learn from China, it is crucial to plan and carry out frequent orientations and seminars for recently employed science and math teachers in rural and distant regions. Resources that are currently spent to train more arts teachers could instead be allocated to training more math and science teachers, who are in great demand on the job market. Creation of an online learning environment for math and science teachers that links teachers in rural and urban schools with more knowledge*

*in science and mathematics to learn from each other and be given access to interactive courses and individualized learning opportunities.*

**Keywords:** Teacher recruitment and retention, Tanzania, China, Rural secondary schools.

## **Introduction**

It has been widely acknowledged that qualified, knowledgeable, and experienced teachers greatly contribute to student learning (Goe, 2007). This is especially true for schools that require significant improvement. As part of the process of making education sustainable development-oriented, it will be necessary to hire and retain highly qualified educators in both urban and rural locations by 2030. According to Goal 4 of the 2030 Sustainable Development Agenda, all girls and boys should have access to high-quality, free, and equitable primary and secondary education in order to enable them to make meaningful, active contributions to peaceful and sustainable societies, and to promote global responsibility (United Nations Educational, Scientific, and Cultural Organization [UNESCO], 2020). In recent years, many countries have faced difficulties in retaining teachers in rural areas as a consequence of factors such as overcrowding classrooms, poor housing, isolation from professional development, inadequate teaching and learning resources, and challenging work conditions (Starr & White, 2008). It should be noted that Tanzania and China are not the only countries that are experiencing difficulties in recruiting and retaining qualified teachers in their rural communities (Yulu Du, 2019).

For example, empirical research from China shows that teachers dislike working in remote and outlying areas due to increased workloads, low pay, low social standing, a lack of emotional support, and professional isolation (Hudson and Hudson, 2008; Lock 2008). China has been taking several steps to address this issue, including passing legislation, guaranteeing instructors preferential hiring and distribution across different regions. Due to this, there is now more high-quality education available nationwide (Huang et al., 2006). Similarly, a number of countries around the world, including Egypt, Mexico, Libya, Jamaica, and Japan, to mention a few, have been developing various measures to support effective teacher recruitment and retention in rural regions (International Labour Office [ILO], 1991). Likewise, a teacher policy framework that directs the procedures of initial teacher preparation, recruitment, retention, compensation, evaluation, promotion, and professional development has been made available by international

organizations like the World Bank and the Organization for Economic Cooperation and Development (OECD, 2005). Additionally, in order to realize Education for Sustainable Development 2030, international organizations have mandated that educational planners take into account the relationship between all variables, the most crucial of which are initial teacher training, recruiting, and retention (UNESCO, 2019).

However, Tanzania's secondary school arts programs have improved more than science and math programs, which is still a problem and contributes to secondary school students' low performance in these subjects (Meena, 2009). This is especially true for subjects like history, geography and civics. Tanzania must thus take a cue from China on the effective recruitment and retention of science and math teachers in rural regions in order to fulfil the demands of the global community as outlined in the framework of Education and Sustainable Development 2030. This is a result of China's improved efforts to alleviate the teacher shortage in rural regions.

In order to determine tactics that have been employed to keep teachers in rural areas, this study reviewed the processes utilized in China's rural areas for recruiting and retaining teachers. It also attempted to determine what Tanzania can learn from China regarding the retention of science and math teachers in rural areas. The research questions in this study were: How are teachers hired and retained in Tanzania? What measures does China take to guarantee that teachers in rural areas are effectively recruited and retained? What are some Chinese strategies Tanzania may use to guarantee successful recruitment and retention of science and math teachers in remote areas?

The process of locating possible pre-service teachers within the teaching education area is known as teacher recruiting. The World Bank (2005) reports that a number of nations, notably those in Africa, show less concern for finding competent candidates for teacher training programs. For instance, in Ghana, recruiting students for teacher training programs and universities occurs after the initial funding for pre-service training; the only country with a central hiring authority for teacher training positions is Ethiopia (World Bank, 2005; Cobbold, 2015).

Retaining teachers at their stations and lowering staff turnover are the two main objectives of teacher retention. Almost everywhere in the world, one of the drawbacks encountered in the teaching profession is teacher retention. Major issues related to teacher retention have been documented by the empirical literature. These issues include teachers moving between schools,

attrition, which is expected to be caused by retirement, little pay, inadequate incentives, and purposeful acknowledgement due to the low prestige associated with teaching and the decision to seek out another job with higher status. Other problems include the social and professional isolation of rural locations, overcrowding in classrooms, and a shortage of teaching resources (Rust & Dalin, 1990; Cobbold, 2015). According to the global report of 2021 on the status of teachers, the reality of teacher attrition worldwide has indicated that a huge amount of newly employed teachers and those with the best quality academic background have been abandoning the teaching profession after being employed for the first time (Thompson, 2021). For example, just one-third of attrition is accounted for by retirement, with the US having a national attrition rate of 8% while Singapore and Finland have 3% to 4% of attrition (Darling-Hammond, 2019). Comparable percentages apply to the Dutch: roughly 40% for two years, 50% for roughly six years, and roughly 60–70% in Australia, Spain, and Norway continue their careers as teachers. After five years, roughly 60% of newly hired teachers in England stay in government schools; this percentage is higher for math and physics teachers than for those in Italy, the Netherlands, or Germany, where 50% of newly hired teachers stay in the teaching profession. Conversely, male teachers in Norway have a higher attrition rate than female (OECD, 2021). In Israel, public institutions had attrition rates ranging from 3.3 percent to 11.7 percent in 2016.

According to recent studies, not all types of teachers experience attrition in the case of Africa. Attrition rates for primary teachers range greatly, from 2% in Eritrea to 9% in Zambia. Additionally, the research shows that secondary school teachers experience a higher attrition rate than elementary school teachers do. For instance, in 2010 the attrition rate for elementary school teachers in Lesotho was 3%, whereas the rate for secondary school teachers was 10% (UNESCO; IICBA, 2016). According to reports, attrition is significantly higher in locations with challenging living conditions—such as a costly lifestyle, a tough environment, or a lack of security—than in areas with favorable living conditions (Macdonald 1999). While the globe at large has been having trouble finding and keeping teachers, especially in rural and isolated areas, different nations have been using different approaches to address these issues. One tactic is to raise teacher pay for the purpose of encouraging more teachers to work in remote areas. Some nations, like Chile, have quadrupled their salaries, and Jamaica has increased compensation by two levels. Other nations have also begun to offer salary bonuses. For example, Mozambique has started offering 100%

bonus payments; Argentina has raised base salary bonuses to 80%; Nepal has offered 100% basic salary as a bonus; the Philippines has offered up to 25% base income. Similar to this, allowances have been implemented in nations like Guyana, Libya, Uganda, and Egypt. House allowances and loans for buying houses are offered in countries such as Senegal, Sierra Leon, and Zimbabwe just to mention a few (Gomba, 2015; World Bank 2005). In the case of England, the Early Career Framework was implemented in 2020 as a strategy for teacher recruitment and retention. Its objectives are to lessen the workload of recently engaged teachers while also offering them excellent professional development and mentoring throughout their induction years. Workload was shown to be one of the reasons teachers in England left the teaching profession (Beng Huat See et al, 2020).

### **Methodology.**

A narrative literature review was used in this study. There are four primary forms of narrative literature reviews including first, general literature review that covers the most important and pertinent aspects of what is currently known about the subject. A theoretical literature review is the second, and it looks at how theory influences or frames research. The third is a general literature review with a methodological focus that explains research design and methodology. Finally, a review of historical literature focuses on evaluating research across time before tracing its evolution within a historical framework. In order to create new knowledge, this study conducted a general literature review. It did this by gathering up-to-date information from various published research surveys and sources and critically analyzing the entire sources in relation to a lesson Tanzania could pick up from China about how to successfully recruit and retain science and math teachers in remote areas (Write, R., Brand, R. Dunn W, Spindler K. 2007). Scholars agree that carrying out a literature review well is a suitable research methodology that can aid in the creation of new information (Snyder, 2019). Similarly, narrative literature review as a research methodology assists in identifying themes, related to ways China uses in ensuring effective teacher recruitment and retention in rural areas.

General narrative literature reviews have a great chance to generate future research topics to be conducted by empirical studies (Ward et al., 2009). In a similar vein, the narrative literature review research approach aids in the identification of themes pertaining to China's strategies for successful teacher recruitment and retention in rural areas. Reviews of general narrative literature have a strong potential to provide ideas for upcoming empirical study topics (Ward et al., 2009).

### **Trustworthiness and Data Collection Methods**

According to Patterson (2002) and Duffy (2007), triangulating the data gathering methods enhances the study's validity and reliability. In this study documents served as the main source of data for this investigation. Contextually richer data sets are produced when documents are used for data collection, which also helps to ground an investigation in the various contexts surrounding the topic of study (Bryman (2004). In particular, the study used a wide range of peer-reviewed educational literature, including books, published articles, and international, regional, and local national reports, to obtain information on Tanzania's potential learning opportunities from China's successful strategies for teacher recruitment and retention in peripheral areas. A number of criteria, including peer-reviewed journal papers, global, regional, and local national reports, official written documents like education policies from the Ministry of Education Science and Technology in Tanzania and China, were used to choose the documents in order to assure the reliability of the data sources (Bogdan & Biklen, 2003). The researchers incorporated all pertinent studies in the review to guarantee the study's credibility. This was done to make sure that research that might alter the review's conclusions was not overlooked. In order to ensure that neutrality and consistency are upheld, self-reflection on one's own opinions was also conducted. In a similar vein, Noble and Smith (2015) provided an open and transparent account of the research process, from the creation of methodologies to the reporting of findings.

## **Data Analysis and Ethical Consideration**

Thematic analysis was an essential tool for exploring and incorporating the findings of the general narrative literature study. According to Creswell (2012), describing and generating themes from the data entails providing comprehensive answers to the main research questions as well as a deep comprehension of the main phenomenon through thematic development and description. Thematic analysis is typically applies in qualitative research to illustrate, examine, and document the themes found in a text (Braun & Clarke, 2006). Carefully selected references from several research and document bases were needed to bolster the study's conclusions. Most of the time, plagiarism of other people's ideas was avoided and carefully examined. Ensuring that the authors and scholars of diverse journal articles and other resources were acknowledged for their valuable contributions to the field of teacher education and the knowledge society was crucial.

## **Findings and Discussion**

As was previously noted, the literature review was used to gather the findings that are reported in this section. As a result, the data presented and discussed here is derived from secondary sources that were categorized and distilled utilizing themes in order to impart an understanding of the subject. The three questions that formed the foundation of this inquiry are discussed in relation to the outcomes.

## **Teacher Recruitment and Retention in Tanzania**

Tanzania's teacher attrition rate is comparable to that of other Sub-Saharan African nations. Higher teacher attrition is observed, particularly in science courses like math, physics, chemistry, and biology. Teacher turnover is predicted to be 3 percent in rural places with poor working conditions when conditions are worse (Haki Elimu, 2014; URT, 2010). Although the government

has been assigning math and science teachers to rural areas, a higher proportion of them are leaving the sector to seek other jobs (Chediel, 2010). Nearly 40% of newly hired teachers who were assigned to teach in inhospitable places had not even reported to their work stations by 2008. Studies show that only 35 percent of students in rural areas receive science and math teachers, while over twice as many do so in urban ones (URT, 2010). For instance, the Tanzania Mainland Education Sector Performance Report (2018/2019) states that a teacher shortage is evident in several subjects, especially in Science, Mathematics, and Technical subjects (URT, 2019). Tanzania's scientific teacher shortage is mostly due to factors that are similar to those in other sub-Saharan nations.

Among the causes are unfavorable working conditions, which include any situation that could have an impact on workers' well-being or well-being at work, such as a lack of housing options (many rural areas lack decent houses to rent), a lack of recreational opportunities, or a lack of health services (many rural areas are isolated from medical facilities). For example, visiting and finishing the necessary paperwork for a doctor's appointment can take one to nine hours in an urban setting, but three days in a rural one. Because they are wasting time, most teachers who work in remote areas are affected by this problem. In addition, a shortage of libraries and laboratories, together with insufficient supplies of chemicals, lab equipment, and books, lowers morale and decreases the efficacy of instruction in rural locations (Mosha, 2016; URT, 2019). Similarly, although teaching is a common profession, there are differences in the working conditions of teachers. For example, compared to those employed in remote and rural locations, teachers in urban areas tend to love their job more because most of the schools in those areas have a favorable work environment. Due to the availability of decent working environments, teachers in urban areas successfully carry out their duties, resulting in effective learning and improved



performance from students, in contrast to rural areas where the majority of students have very poor academic performance (Shikalepo, 2020). Moreover, poor pay and benefits in comparison to other professions like medical. In comparison to certain other occupations, the teaching profession has lower wage scales, according to the Tanzanian government, which hires a greater number of instructors for secondary education. For instance, a certificate holder in the teaching profession currently starts at TGTS B1, (419,000/=), while a certificate holder in the nursing sector starts at Tsh. 432000. In the teaching profession, a diploma holder's starting pay is Tsh 680,000, while TGTS C. 1 (530,000 Tsh) is what a diploma holder starts with. Last but not least, a bachelor's degree holder in the teaching profession begins with TGTS D. 1 (716,000 Tsh), but a bachelor's degree holder in the nursing sector begins with Tsh 980,000. All of the data point to a distinction between the nursing and teaching professions as one of the causes of the scarcity of science and math teachers in secondary schools, particularly in rural areas (Sumra and Katabaro, 2014; Mosha, 2016).

However, science and math teachers in rural areas do not have the same opportunities for extra income as their counterparts in metropolitan areas, where it is easier for them to work as part-time teachers at private schools. This becomes problematic in rural areas because the majority of residents are economically disadvantaged, which makes it difficult for them to even find teachers for their kids after school. Furthermore, these teachers cannot work as part-time teachers in rural areas because there are no private schools in those areas (Shikalepo, 2020).

Poor transportation in isolated places is another problem that raises the high turnover rate of math and science professors. Since there isn't enough reliable transportation in remote and rural areas, many science and math teachers are obliged to move or quit their jobs in order to find alternative work in cities. People frequently use rivers as a means of transportation in remote, rural areas that

are off-limits to busses and other motorized vehicles. Moreover, some schools are very far from the places where instructors live, necessitating teachers to travel great distances to get to work because the majority of rural schools lack housing for professors (Shikalepo, 2020).

Another, contributing factor is an excessive workload brought on by a lack of science and math teachers in remote and rural secondary schools. More class sessions per week and larger class sizes are challenges for teachers. It is typical for one instructor to instruct classes of up to 200 students in mathematics, ranging from Form One through Form Four. Because of this, teaching biology, chemistry, or physics to the entire school becomes an extremely taxing task for one teacher, which makes most teachers question their decision to continue teaching. Mosha (2016); Sumra and Katabaro (2014). This explanation is further supported by the teaching profession's low status, where instructors are not as respected as they formerly were in relation to those in other professions (Lemomo, 2010).

Furthermore, a lack of linkage between recruitment techniques and initial teacher training programs has resulted in overtraining in Tanzania, which has prevented more graduates from finding work in the teaching industry since 2015. Additionally, despite not having received the necessary training to instruct students in basic schools, in-service art subject teachers are currently being transferred from secondary schools to primary schools. This overtraining of teachers teaching arts subjects is comparable to what occurred in China after 2005 when there was an oversupply of teachers, with roughly 936,000 graduates from various universities and teacher training programs compared to 250,000 teachers hired to teach. In rural areas, there was a teacher deficit in courses like physical education, foreign languages, music, and art, even if there was an abundance of teachers in other subjects (Zong, 2010).

Tanzania has put policies in place to ensure that scientific teachers are hired and retained throughout the nation. Other examples include the Higher Education Students Loan Board (HESLB) providing complete loans to all enrolled students to cover all study-related expenses at colleges and universities that prepare teachers in science and mathematics (TCU, 2019). Moreover, a unique curriculum for preparing science teachers for secondary schools was introduced with the introduction of the Diploma in Secondary Education. In order to be trained as diploma holders in science and mathematics subjects to teach in secondary schools, lower secondary school graduates who have passed starting an average of division III including science subjects like Physics, Chemistry, Biology, and Mathematics are admitted to Teacher Training Colleges (MoEST, 2019). About 1585 student-teachers were anticipated to graduate as science and mathematics teachers in 2018, with the remaining roughly 4720 predicted to graduate in 2019 (BEST 2018/2019).

### **Teacher Recruitment and Retention in China**

China, a country, that is expanding quickly, has been attempting to enhance and expand its knowledge economy. For this reason, studies reveal that teacher shortages are not common in China even though the country has a larger population. Li and Wei (2015). When compared to other occupations, teaching enjoys a high standing in China. These outstanding results are the result of a number of curriculum changes made at universities and teacher training institutions to produce high-caliber educators who can fulfil the nation's demand for teachers (Rao, 2020). Furthermore, a new era of performance-based salary calculation began with the introduction of teacher salary reforms in 2009. Compared to other civil servants in the nation, teachers in China are paid enormous salaries (OECD, 2016). It is estimated that 16.7 million people are employed as teachers in China, working at various levels of the educational system. More precisely, there are roughly 15 million instructors employed by schools and pre-primary institutions. It has been

challenging to guarantee an equitable supply of qualified teachers in rural areas in China, even with a greater number of instructors (Qiong et al., 2019). This is because of teacher shortages and attrition. It has been determined that a number of factors, including the low pay received by professional teachers in China, contribute to teacher retention in terms of attrition (Nagle et al. 2015).

There is proof, nevertheless, that the government has taken a variety of actions to address the problem in rural areas. Ensuring the recruitment and retention of proficient teachers has long been a priority in China. For a very long time, China has experienced a teacher shortage. There was a notable discrepancy between the supply and demand for teachers in both rural and urban areas from 1949 until the 1990s. However, the government started enacting laws boosting teacher pay, increasing higher education, and instituting national birth control, the teacher shortage was eliminated in the 1990s. Because of this, China's reputation regarding the teacher shortage has improved (Rao, 2007). While efforts to alleviate the teacher shortage have progressed, China still has challenges in attracting and keeping teachers in rural areas. This is because the majority of teachers are not prepared to work in these areas. Consequently, the government has been implementing various measures to mitigate the situation. These measures include the following.

Township authorities and local governments were required to hire contract teachers. The majority of these teachers were inexperienced and received lower pay than professional teachers; contract teachers typically received between one-fifth and one-fourth of the professional salary (Han, 2013). In China, there were over 2.8 million contract teachers as of 1985. The government began committing to improving teacher quality in the 1990s, and in 1993 it was decided that by the 2000s, 95% of primary school teachers should have graduated from a regular school, 80% of middle school teachers should have graduated from a regular college, and 70% of high school

teachers should have graduated from a four-year normal university. According to Robinson & Yi (2008), only 705,000 contract teachers were still teaching in China in 2001. This was coupled with the introduction of stringent requirements, such as requiring teacher certification only after passing exams, and the elimination of contract teachers. After the educational changes in 2006, 448,000 contract teachers had to be fired by 2010.

The implementation of urbanization in rural areas is an excellent strategy. In order to attract new hires and keep existing instructors in their positions rather than forcing them to relocate to cities, as many teachers had previously done, the Chinese government has been investing more money in urbanizing rural areas. Many Chinese villages have become little cities with all the amenities of a modern city, and by 2025, it is projected that nine hundred million people will need to be served (Liu, 2011).

Alongside that, increasing funding for rural areas has been a tactic used to keep teachers in these areas. For instance, the Educational Law of 1995 mandated that the state promote the growth of education in places inhabited by minority groups, isolated or peripheral areas, and areas afflicted by poverty. (Ying Peng, 2015).

Additionally, the Chinese government has been inspiring and pushing graduate teachers to work in countryside by giving them prestigious posts that promote their career advancement. For example, in 2005, the Compulsory Education Law was revised to compel teachers employed in urban schools to complete a requirement of working in rural schools in order to be eligible for advancement (Ying Peng, 2015). As well, a lot of training initiatives were carried out nationally, especially for rural schools. For instance, the government organized volunteer labor in the Western 12 provinces through the "Go to West –College Graduates Volunteers program," which was

introduced in 2003. It is mandatory for the government to offer subsidies, insurance, and training (Ying Peng, 2015).

The Teachers in Special Post Policy, implemented by the Chinese government in 2005, established funds to offer teacher subsidies in rural regions. According to Ying Peng's (2015) analysis of the literature, starting in 2012, and teachers in Western China earned a reasonable subsidy of 27,000 Yuan a year, while those in central China received 24,000 Yuan annually.

Similar to this, the Chinese government implemented the Free Teacher Education (FTE) policy in mainland China in 2007 in an effort to retain and inspire teachers employed in rural regions. Six regular colleges were given the authority to provide free teacher training to students who wished to teach in China's rural areas (Rao, 2020). In exchange for their tuition, housing, and other fees, students would receive free monthly stipends of roughly 600 RMB. Between 2012 and 2016, over 52,000 FTE students completed their degrees from the six regular colleges that have the authority to train these teachers. Comparably, those colleges adopted the FTE policy in 2017, and approximately 41,000 of their graduating student teachers go on to teach in rural areas (Rao, 2020). The graduate students who studied as teachers under this system were required to spend ten years working in rural areas. This initiative demonstrated more success since it gave most rural students access to extremely prestigious universities, which they would not have otherwise been able to (Xuefeng Qiao & Mainhong Lai, 2019).

In 2008, a new policy was introduced that mandated graduates demonstrate their devotion to their country by agreeing to work as teachers in China. Recruitment of fresh graduate college students to teach in rural schools was made necessary by the "Teach for China" policy.

The 2009 saw the implementation of the New Teacher Salary Policy. The government increased teacher pay by 12,000,000,000 Yuan. The new policy placed a strong emphasis on basing teacher pay on student achievement. To guarantee improved performance from every teacher was the goal. The post salary, grade salary, performance salary, and allowance compensation are the four components that make up a teacher's pay under the new system. Teachers who work in remote areas receive subsidies from the government. Along with special allowances for particular jobs in elementary and secondary schools, there are allowances for teachers working in underdeveloped and peripheral locations (OECD, 2016).

An additional tactic was the implementation of a Rural MEd program, which drew more PhD candidates to teach in impoverished rural areas. Approximately 8801 graduate students were drawn to teach in remote areas in 2014. The Ministry of Education in China launched the Rural MEd program in 2004 with the goal of finding highly skilled students for certain universities, having them complete three years of online education while working as teachers in rural areas, and requiring them to attend offline courses during their final year on campus to earn their degree (Rao, 2020).

In order to promote education in remote areas, the government of the People's Republic of China introduced the Rural Teacher Support Plan (2015-2020) (RTSP Plan) in 2015. This comprehensive and long-lasting program aims to change rural teaching practices. The initiative employs K–12 and preschool rural teachers who receive financial support from the federal government to teach in rural schools. The RTSP initiative prioritizes hiring rural teachers in underprivileged working conditions, increasing wage subsidies, and enhancing living allowances. In order to guarantee all areas develop teacher evaluation in order to achieve a steadiness between remote and urban school teachers, honor systems for rural teachers will be established, retirees and senior teachers will be

encouraged to teach in rural schools, and college students with a certificate of working in rural areas will enjoy tuition reimbursement (LI Jian, 2020).

Furthermore, the Action Plan for Teacher Education Revitalization (2018–2022) was introduced by the Chinese government through the Ministry of Education in March 2018 with the goal of addressing significant concerns expressed by the teaching community and determining future directions for raising the status of teachers and providing high-quality teacher education (Rao, 2020).

It goes without saying that every tactic and policy the People's Republic of China's government has put in place demonstrates how much it has done to elevate teachers' standing and respect in the nation relative to other professions. Both in rural and urban regions, this has led to successful teacher recruitment and retention. Owing to this remarkable accomplishment, the Chinese government has improved the nation's urban and rural educational systems in addition to addressing the imbalance resulting from the teacher shortage. It has also shown that it is cognizant of the need to elevate the status of teachers. Tanzania must thus devise a plan of action to tackle the deficiency of science and math courses, particularly in rural areas where a high teacher attrition rate affects science and math subjects.

### **Chinese Strategies Tanzania May use to Guarantee Successful Recruitment and Retention of Science and Math teachers in Remote Areas.**

Although universities and teachers' colleges with jurisdiction power to train teachers conduct basic teacher training, Tanzania, like other developing nations, faces a shortage of teachers in science and mathematics, particularly in secondary schools (URT, 2019). The problem is exacerbated in remote areas (Meena, 2009). The circumstances surrounding the scarcity of scientific and math



instructors raise concerns about the effectiveness of the national policies pertaining to teacher recruitment, distribution, and retention. According to World Bank research, Tanzania, like other Sub-Saharan African nations, has systems in place for projecting, planning, managing, and tracking teacher placement and retention that are typically unreliable and have little to do with the hiring practices of the colleges and universities that have the authority to provide teacher training (World Bank 2009). Tanzanian universities and teacher training institutes do not effectively organize their student enrollment to meet the demands of the labor market. Inadequate placement planning and predictions lead to a shortage of science and math instructors in secondary schools, as well as an imbalance in the distribution of teachers between rural and urban locations. Similar to Tanzania, there isn't a specific relevant strategy that aims to close the disparity in the number of science and math teachers between urban, countryside, and distant schools. Tanzania should not lag behind in learning from other nations in order to fulfill the global educational goal for sustainable development by 2030, as Tanzania is not an island. China is a model country because, despite having a large population worldwide, more progress has been made in addressing the teacher shortage in rural areas.

Tanzania can benefit from China's experience in recruiting, assigning, and retaining science and math teachers in remote areas. First and foremost, Tanzania needs strategies and tactics that would encourage the recruitment and retention of science and math teachers in both urban and rural environments. Regardless of the nature of their employment or the challenging environmental conditions in the area, teachers of mathematics, science, and the arts are treated similarly in urban, rural, and remote settings. Like China, the United Republic of Tanzania should create policies for the recruitment and retention of science and math teachers in remote and rural schools in order to alleviate the teacher shortage in these settings. Rewards for agreeing to work in rural areas for a

number of years may come in the shape of bonuses or promotions under these schemes. To encourage more students to pursue careers in teaching, especially in the scientific and math domains, compensation should also be increased in relation to other professions.

Second, Tanzania ought to take a cue from China and adopt the urbanization of rural areas strategy. Despite Tanzania's best efforts, its science and math teachers lack the necessary skills to work in rural areas because of substandard living conditions. To keep recently hired science and math teachers where they are employed and prevent them from being lured to the metropolis, Tanzania's government, like China's, should invest more in urbanizing rural areas.

Thirdly, China implemented a program of teacher exchange and rotation with the goal of standardizing the caliber of teaching resources in all government schools. Tanzania can implement a program similar to China's in order to lessen the scarcity of math and science teachers in rural areas. The initiative has demonstrated remarkable success in reducing the difference in teacher quality across schools with high and low performance. This initiative will support high-quality science and math education in rural areas. The government should ensure that working in rural and isolated locations for a number of years is a mandatory requirement for teachers to be promoted in order to make the program more successfully implementable.

Fourthly, Tanzania, like China, can hire recent form six science and math graduates who want to work as teachers and live in rural areas. They can then be admitted and given free training, and upon graduation, they must sign a contract to work for a set period of time—let's say ten years—before they can choose to stay in the rural area or move to another area of their interest. As an alternative, Tanzania's government may, like China's, draw in more outstanding teachers to teach in undeveloped rural areas. Under circumstances that require them to teach in remote secondary schools for two years while completing their university coursework online. In their third year, they

are required to attend offline courses on the university campus in order to graduate. They must be freely provided with a stipend and other expenditures in order to be motivated to participate in such a program.

## **Conclusion and Recommendations**

Even though Tanzania can benefit from China's teacher exchange and rotation policy, urbanization of rural areas, motivation of science and math teachers, and recruitment of form six graduates to teach science and math in remote areas while simultaneously receiving a free university education, it is still necessary to plan and carry out regular seminars and orientations for recently hired science and math teachers in these remote and rural areas. In close relation to this, the Tanzanian government ought to reallocate funds from the training of more art teachers who are unproductive in the classroom to the training of more science and mathematics teachers, whose shortage will make them highly sought after in the job market. In order to do this, the government should begin with primary education, which is the cornerstone of all children's education, and work its way up to secondary education by enhancing infrastructure, such as creating high-quality laboratories with adequate equipment and supplies, paying science and math teachers more and providing extra duty allowances, and ensuring that they have decent housing, health care, and other amenities. Tuition costs may be waived by the United Republic of Tanzania government in an effort to encourage more students to pursue careers as teachers, especially in mathematics and science. In China, this tactic has been shown to be more effective. Tanzania should also make sure that there is close coordination between those who guarantee teachers' continued employment in the teaching profession and those who handle teacher education management recruitment. Comparably, actions like establishing a teachers' profession board, hiring science and math teachers from secondary schools, and implementing the Alterance teaching profession methodology can also be

implemented in Tanzania, as these approaches have proven to be very effective in other nations like Ghana, which has a teacher professional board. In light of the fact that this study was founded on a review of the literature, the researcher suggests that future studies employ empirical techniques to ascertain what Tanzania might learn from China in terms of efficient teacher recruitment, distribution, and retention in rural areas for science and mathematics.

## REFERENCES

- BengHuat See, Morris.R, Gorard. S,Kokotsaki.D, &Nada El Soufi (2020). What works in attracting and retaining teachers in challenging schools and areas?*Oxford Review of Education* 2020, vol. 46, no. 6, 678–697 <https://doi.org/10.1080/03054985.2020>.
- Chediell, R.W. (2010). Teachers Management in acontext of HIVand AIDSTanzania Report. Unpublished Manuscript. Paris, UNESCOIIEP
- Creswell, J.W. (2012). *Education research: Planning, conducting quantitativeand qualitative research(4<sup>th</sup>ed.)*. Boston: Pearson.
- Cobbold, C. (2015). Solving the Teacher Shortage Problem in Ghana: Critical Perspectives forUnderstanding the Issues. *Journal of Education and Practice*.Vol.6, No.9, pp.71-79.
- Graziano, C. (2010). *Public Education Facesa Crisis inTeacher Retention*. <http://www.newteacher.com/pdf/SchoolsOutPublicEducationFacesaCrisi.pdf>
- Thompson, G. (2021).The Global Report on the Status of Teachers 2021. *Education International Research*.
- Guiake, M. (2021). Comparison ofTeacher Recruitment and Retention in Cameroon and Chines Secondaryschool:Chinas Lesson.*Anatolian Journal of Education*.Vol.6 No 2 pp 75-88
- Gomba, F (2015). Why Do They Stay: Factors Influencing Teacher Retention in Rural Zimbabwe. *International Journal of Instruction*. Vol.8, No.2 pp.57-68
- Haki Elimu, (2014). Teaching effectiveness inPrimaryand secondaryschool in Tanzania. Dar es Salaam:Haki Elimu.

- Hadson, P., & Hudson, S. (2008). Changing perspectives teachers' attitudes for teaching in rural schools. *Australian Journal of Teacher Education*. 33 (4), 67-77
- LIJian, (2020). Improving teacher development in Rural China: A case of "rural teacher support plan." *Beijing International Review of Education*. 2 pp. 301-306.
- Lemomo, L. J. (2010), *Factors influencing performance in Secondary Schools: A case of Morogoro Municipality*, Unpublished Master Dissertation, and Mzumbe: Mzumbe University
- Lock, G. (2008). Preparing teachers for rural appointments: Lesson from Australia. *Rural Educator*, 29 (Winter), 24-30.
- Macdonald, D. (1999), *Teacher Attrition: A review of Literature: Teaching and Teacher Education*. 15 universities of Queensland, Brisbane.
- Ministry of Education Science and Technology. (2019). *Basic Education Statistics in Tanzania (BEST) 2018-2019*. Dar es Salaam: Author.
- Mosha, M. (2016). Secondary school students' attitude towards teaching profession: A case of Tanzania. *Research Journal of Educational Studies and Review*. Vol.2 (5), pp.7
- Meena, E.W. (2009). *Curriculum innovation in teacher education exploring concepts among Tanzania teacher educators*. Abo Academy University, Faculty of Education.
- Mulkeen, A., Chapman, D. W., De Jaeghere, J.G, Leu, E., & Bryner, K. (2005). *Recruiting, Retaining, and retraining secondary school teachers and Principals in Sub-Saharan Africa*. GEC Working Paper Series #3. Washington D.C: AED Global Education Center.
- National Bureau of Statistics NBS, (2019). Tanzania in figures. Ministry of finance and planning.
- Nam, J., & Asong, D. (2015). The effect of dedicated education savings accounts on children's college graduation. *Economics of education review*, 48, 98-207
- Nagle, M., Piopiunik, & West, M. (2015). *Weak markets, strong teachers: recession at carrier state and teacher effectiveness*. (NBER Working papers 21393) National Bureau of Economic Research, Inc.

- Njau, M. A. (2017). Assessing demand and supply of secondary school teachers and academic performance in secondary school students in Tanzania. (Dissertation on Masters of Education in Administration Planning and Policy Studies Open University of Tanzania.
- Noble, H., & Smith, J. (2015). Issues of validity and reliability in qualitative research. *Evidence-Based Nursing*, 18(2), 34–35.
- OECD (2005). *Teachers Matter: Attracting, Developing and Retaining Effective Teachers*. Paris, France: Organization for Economic Co-operation and Development (OECD)
- OECD (2021). “Educational Personnel by institution”, *Education at a Glance Database*.  
[http://stats.oecd.org/index.aspx?datasetcode=EDU\\_INST](http://stats.oecd.org/index.aspx?datasetcode=EDU_INST)
- OECD, (2016). *Education in China a snapshot*. OECD publishing, 2 rue Andre-Pascal, 75775 Paris CEDX 6
- Qiong Li, Xudong Zhu & Leslie N.K. Lo, (2019). Teacher education and teaching in China. *Teacher and Teaching. Published online*. Vol. 25 pp 753-756  
<https://doi.org/10.1080/13540602.2019.1693429>.
- Onwuegbuzie, A. J., & Leech, N.L. (2007). Sampling designs in qualitative research: Making the sampling process more public. *The qualitative Report*, 2 (2), 238-254
- Rao, C. (2020). Teacher education policies in China since the mid-1990s. *Handbook of Education Policy Studies*. pp. 95-111.
- Rao, C. (2007). The trends and problems of teacher Education reforms in China. In *annual research Report of curriculum center for teachers at Tokyo Gakugei University*. (Vol. 6, pp. 39-50). Tokyo: Tokyo Gakugei University.
- Shikalepo, E.E (2020). Challenges facing teaching at rural schools: A review of related literature. *International Journal of Research and Innovation in social science (IJRISS)* Volume IV, pp. 211-218.
- Starr, K., & White, S. (2008). The small rural school principalship: Key Challenges and cross-school response. *Journal of research in rural education*, 23 (5), 1 – 12.
- Sibieta, L. (2020). *Teacher shortage in England: Analysis and pay options*. London: Education

Policy Institute.

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines.

*Journal of Business Research*, 104, 333–339.

<https://doi.org/10.1016/j.jbusres.2019.07.039>

UNESCO, (2020). *ESD for 2030: What's next for Education Sustainable Development?* Paris: UNESCO.

URT, (2018).: *Education sectoral development plan (2016/17-2020/21) Tanzania mainland*. Dar es Salaam: Ministry of Education Science and Technology

URT-MoEST, (2019). *Framework for the Implementation of Three Year Diploma in Teacher Education for Science and Business Studies*. Dar es salaam: TIE,

URT-MoEVT(2010). *Secondary Education Development Programme (SEDP) II* (July 2010-June 2015). 2004-2009) final draft. Dar es salaam. Tanzania.

URT (2019). *Education Sector Performance Report (2018/2019) Tanzania Mainland*. Author Write, R, Brand, R Dunn W, Spindler K. (2007). How to write a systematic review? *Clin Orthop Relat Res*. 455:23-29.

Ward, V., House, A., & Hamer, S. (2009). Developing a framework for transferring knowledge into action: A thematic analysis of the literature. *Journal of Health Services Research & Policy*, 14(3), 156–164.

World Bank (2005). *Recruiting, Retaining, and retraining secondary school teachers and principals in Sub-Saharan Africa*. Global Education Center

Xuefeng Qiao & Manhong Lai. (2019). Pre-service teachers' job-related perceptions of teaching in rural areas as a study of the free teacher education programme in mainland China. *Teachers and teaching*, 25: 7782-799, DOI: 10. 1080/13540602.2019. 1693358.

Yulu Du, (2019). A critical analysis of teacher attrition in rural secondary schools in China. *2019 3<sup>rd</sup> International Conference on Advancement of the theory and Practice in Education (ICATPE)* Francis Academic Press, UK. 1358-1362

Ying Peng (2015). *The recruitment and retention in rural areas of Guizhou, China*. University of

York Education

Zhong,B. (2010). Promote flexible and diversified preparation to improve the quality of teacher education. *China Higher Education*, 19, 13-16.,,

UNDER PEER REVIEW