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Moses Khombe  
*Brigham Young University - Provo*

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A Desk Study of the Education Policy Implications of Using Data from Multiple Sources:  
Example of Primary School Teacher Supply and Demand in Malawi

Moses Lemon Khombe

A dissertation submitted to the faculty of  
Brigham Young University  
in partial fulfillment of the requirements for the degree of  
Doctor of Philosophy

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Educational Inquiry, Measurement, and Evaluation

Brigham Young University

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## ABSTRACT

### A Desk Study of the Education Policy Implications of Using Data from Multiple Sources: The Example of Primary School Teacher Supply and Demand in Malawi

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Doctor of Philosophy

Malawi, as a country with very limited resources, needs to have educational policies in place to maximize effectiveness of the public education system. Policymakers depend on accurate data, but variations in data between sources leaves policymakers uncertain as they attempt to craft policies to address the growing educational crisis in Malawi. A desk study was performed to evaluate the policy implications of employing data from multiple sources using primary school teacher supply and demand in Malawi as an illustration. This study examined one national organization, Malawi's Ministry of Education, Science, and Technology (MoEST); three international aid and assistance organizations (IAAOs), including The Department for International Development (DIFD) from the UK, Japan International Cooperation Agency (JICA), and the United States Agency for International Development (USAID); and one global organization, The United Nations Educational, Scientific and Cultural Organization (UNESCO).

The study documented differences and similarities between the data sources. Among the factors considered were the nature of each institution and the effect it could have on data collection, aggregation, analysis and reporting; the definitions used by each organization, and their implications for data use; and each organization's methods of collection, aggregation, analysis and reporting. The study found significant variations in the teacher supply and demand data presented by the five organizations, with variations of up to 333% between sources. To address this problem, it is recommended that the Government of Malawi (GoM) establish a central agency to standardize education data. Three policy scenarios are detailed, presenting the probable outcome of various actions the GoM could take regarding this recommendation.

Keywords: data quality, educational policies, teacher quality, information system, data completeness, teacher supply and demand

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Finally to my three children, Richard, Zaithwa, and Tamanda, I dedicate this and all life's efforts for to their future every good thing is ultimately directed.

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## DESCRIPTION OF STRUCTURE AND CONTENT

This manuscript is presented in the form of hybrid dissertation. The hybrid format focuses on producing a journal-ready manuscript which is considered by the dissertation committee to be ready for submission. Therefore this dissertation has fewer chapters than the traditional format and the manuscript focuses on presentation of scholarly material. This hybrid dissertation includes appended material such as an extended review of literature, a methodological section with elaborated detail on the research method utilized in this dissertation, five organizational case studies for comparison, and other necessary supporting information that was not included in the manuscript's main page.

The journal chosen as the focus for this manuscript is *Educational Policy* (EP). EP is published by the Corwin Press and is a SAGE Journal. According to the journal's home page (<http://epx.sagepub.com/>), it is dedicated to enriching the education policy and leadership knowledge base and promoting exploration and analysis of policy alternatives. This journal seems to be the best fit for this study.

## Background

In Malawi, educational success is the key to a brighter future. Success in education opens doors, not only to employment opportunities for individuals, but also to the economic success of individuals, communities, and eventually, the nation as a whole. Furthermore, education contributes greatly to the advancement and enrichment of cultural, social, and economic development in Malawi. In terms of promoting the further growth of national development within Malawi, it is clear that education plays an increasingly important role.

One of the greatest challenges in education is maximizing student learning in an educational system with limited resources such as teachers, books, and classrooms. In order to maximize efficiency with the resources that are available, informed educational policies are crucial. Effective educational policies begin with accurate planning. Accurate planning is possible only with accurate data; thus project planning must begin with high-quality, relevant data. Because the available data help to guide the decision-making process, it is imperative that policy makers, planners, analysts, and other stakeholders within the education sector have access to accurate and reliable data.

In order to meet the demand for useful data, the government of Malawi and other organizations regularly monitor and evaluate the educational system in Malawi by collecting and examining education-related data and information. However, variations, deficiencies, or inadequacies in data reliability and availability, utility, or quality among all the data collecting institutions have far reaching implications for the development and improvement of the educational system in Malawi. This study identified and explored educational policy implications of using data from multiple institutional sources, examining data regarding primary school teacher supply and demand, a major issue in Malawian education, as an illustration.



Like many other sub-Saharan African nations, Malawi struggles with a shortage of qualified teachers at both the primary and secondary school levels (DeJaeghere, Chapman, & Mulkeen, 2006; Mwakapenda, 2002). The shortage is pervasive at the primary level and, at the secondary level, the shortage is most severe in science-related subjects such as biology, chemistry, mathematics, and physical science (Mpokosa & Ndaruhutse, 2008; Mwaza, 2012). Current solutions, such as using poorly qualified teachers and/or substantially increasing class sizes, have led to meager student outcomes and indicate a bleak future ahead unless major changes are made in teacher supply (Keigher & Cross, 2011; Maluwa-Banda & MacJessie-Mbewe, 2005)

Achieving an accurate portrayal of the educational system at large by properly collecting accurate data and interpreting the available data sets is an issue that is extremely important to the Government of Malawi (GoM). Without a clear picture of the education system, policymakers will make ill-informed decisions that could have a negative impact, especially on issues that are as important as the need for more qualified teachers in the public schools of Malawi. The current study was initiated with this issue at the forefront.

### **Educational Data and Reality**

The consequences of poor-quality data in the education sector of Malawi can be seen and felt often, although they often appear without a clear connection to their actual causes. Scholars and policymakers on both national and international levels generally assume that the education data available accurately mirrors what is happening in schools. However, a careful review of available data, even when they come from the same authoritative source, reveals some serious concerns regarding this assumption. The following section discusses the frequent disconnect between data and reality from a macro (global view) to micro (Malawi) perspective.

In order to gain a better understanding of the problem of data collection and global interpretation, it is helpful to review *Data and Reality* (Kent, 2012). Rather than focus merely on how people process data, Kent chose to examine how people perceive reality. In so doing, he discussed the constructs and tactics that are used to cope with complexity, ambiguity, incomplete information, mismatched viewpoints, and conflicting objectives (2012). Kent argued that people often lack a clear, universally accepted set of notions about data in general; including what should constitute data, what methods should be used to collect and maintain data, and the relationship of the data to the subject at hand. A lack of awareness of these issues can lead to an interpretation of data that could present a false picture (Moon, 2007). This situation presents a severe problem for decision makers and policy analysts. Because of the complexity, ambiguity, or incompleteness of available data sets, policies in the educational system may be based on entirely inaccurate projections of reality (Kingdon, 1997). Some databases may even be used to support contradictory viewpoints or conflicting objectives, all of which may play a role in obstructing a clear view of the educational system as it stands and where it might go.

For example, the United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2008b) reported that the world would need about 18 million teachers by 2015 if Universal Primary Education (UPE) is to be achieved. However, just three years later, UNESCO (2011) estimated that only 1.9 million teachers would be needed to fulfill the teacher demand-supply gap in order to achieve universal primary education by 2015. Based solely on these figures, one could conclude that the global need for additional teachers had rapidly decreased from 18 million to only 1.9 million in three short years which would have meant that the gap of needed teachers had closed at an astonishing rate of 5.37 million teachers per year. An informal

extrapolation of this trend could further lead one to conclude that the remaining gap of 1.9 million teachers was filled in a mere four months.

Further the Global Monitor Report (GMR), UNESCO's annual report on education worldwide (UNESCO, 2008a) offered another example of the undependability of educational data. In 2008, the GMR indicated that the teacher-student ratio in sub-Saharan Africa was 1:40. Yet in 2012, just four years later, the same organization reported that the teacher-student ratio in sub-Saharan Africa had dropped to 1:27 (UNESCO, 2012a). Although the drop was unrealistically rapid, the data from this 2012 GMR falsely suggested that sub-Saharan Africa had a similar teacher-student ratio as more developed countries such as those in Europe. For example, in 2011, the United Kingdom was reported to have a teacher-student ratio of 1:26, with a maximum by law of 1:30. (Daily Mail Reporter, 2011).

A closer inspection of the data from UNESCO revealed that these two projections contain significant discrepancies, and that the teacher supply and demand gap as well as teacher-student ratios did not close as rapidly as the data implied. If UNESCO, arguably the second most influential organization in comparative education after the World Bank (Cook, Hite, & Epstein, 2004), can generate numbers with such wide discrepancies, the implications of data accuracy of any data reported by other data collecting organizations suddenly become greater and more challenging. Further, if an organization as influential as UNESCO can generate such inconsistent numbers, one must examine the data based issues that small nations like Malawi might encounter while trying to gather reliable and quality data both on its own and from various external organizations.

The issue of data inconsistency affects even highly developed countries. In the United States, several studies have been conducted to assess the quality of data used by educational

systems. A study conducted by Guarino, Santibañez, & Daley, (2006) reported the scarcity of reliable data on teacher retention and attrition in the US. He suggested that this scarcity of data has overall implications regarding recordkeeping about teacher employment. Whereas Macdonald (1999) suggested areas of deficiency of data in the US, he first noted that there is no clear definition of a teacher. One cannot separate between part-time and unqualified teachers. Further, lack of a proper definition can cause confusion between teacher mobility and attrition. The available data do not provide adequate information to conduct an adequate analysis for issues dealing with demographic and age. Finally, Macdonald (1999) argued that there are no data to show number of teachers who left the profession and then returned later. Each of these difficulties could interfere with the accuracy of collected data on teacher attrition within the US educational system. One can reasonably conclude that challenges of data quality are not merely a problem of developing nations; they exist in developed nations as well.

### **Malawi Data**

There are three main sources of data on teacher supply and demand in Malawi. The first data source is the government of Malawi. Data are collected annually through the GoM's education management information system (EMIS). The second source is various large organizations funded by individual countries that provide international aid and assistance, e.g., the United States Agency for International Development (USAID). The third data source comprises transnational or global organizations such as UNESCO (Mwale, 2002; Ng'ambi, 2010).

**Government of Malawi data.** The GoM collects education data such as number of pupils, teachers, classrooms, school buildings through an annual written survey as part of the education management information system (EMIS). However, the government faces major

challenges in collecting relevant data, especially from private schools, whose owners have little incentive to provide such information to the Ministry of Education, Science, and Technology (MoEST) (Ministry of Education, Science and Technology, 2009; Streuli & Moleni, 2008). The limited information that is available is poorly recorded and provides insufficient data for understanding major issues such as teacher attrition. For instance, data regarding teachers who transferred to a different school and those who left the profession completely is absent (Roser & Sabrina, 2005).

**International Aid and Assistance Organization (IAAO) data.** Educational data also come from international aid and assistance organizations (IAAOs). Many IAAOs support the education sector in Malawi. Such organizations have made significant contributions to improve education systems in Malawi. For example, they fund teacher training colleges throughout the country and promote education decentralization by funding local educational authorities (UNAIDS, 2009; Van Graan & Leu, 2006; World Bank, 2010).

**Transnational or Global Organizations.** Global organizations often collect and disseminate information about teachers in Malawi. The contributions of such organizations in the education sector are particularly significant in support of literacy, community schools, health education, early childhood care, skills training, and other forms of learning (UNESCO-UIS, 2001, 2007, 2008).

### **Problem Statement**

The use of reliable and consistent educational data is a critical cornerstone with which national-level policymakers, planners, analysts, and other high-level educational stakeholders facilitate the process of educational decision making and policy formation. Variations, deficiencies, or inadequacies in data reliability, availability, utility, or quality have far-reaching

implications. The Government of Malawi is expected, and in some instances required, by various internal and external organizations to evaluate with different data sets, each potentially portraying policy problems and issues in substantially different ways. This situation often indicates uncertain and perhaps discrepant national policy solutions that are derived from these disparate data sources.

Uncertain and discrepant policies contribute to the fact that the children of Malawi are continuing to receive a far lower quality of education than is desired both by Malawi and the contemporary global environment. Without a reasonable way of dealing with different sources of data, this problem will continue to hinder economic growth, as well as the progress and further development of individuals, communities, and eventually, the entire nation of Malawi.

### **Purpose and Questions of the Study**

The primary purpose of this study was to identify and explore the implications for educational policy of using data from multiple institutional sources examining data regarding primary school teacher supply and demand, a major issue in Malawian education, as an illustration. A second purpose was to describe the similarities and differences among those data sources. The following questions have been addressed in this study.

1. What institutional priorities and characteristics (e.g., vision, mission, and goals) of each source organization account for the variations in data collection process, aggregation, analysis, and reporting?
  - a. What definitions are used by the various organizations, and what implications do these definitions have for the use of data?
  - b. What processes are used by various organizations to collect their data?
  - c. How does each of these organizations aggregate, analyze, and report their data?

2. What do these various data sources present regarding teacher supply and demand in Malawi on the following issues?
  - a. Based on the data variations among the organizations, what are the potential implications for supply and demand policies for teachers?
  - b. What are the major differences in policy implications based on those variations?

### **Methodology**

In June 2012, the researcher attended a workshop in Lilongwe, Malawi, where officials from the MoEST and other stakeholders met to process data and compile annual reports on teacher supply and demand in Malawi. After observing the data sources used in this workshop, the researcher developed a list of institutional stakeholder data sources to be used in this study.

Three sorting stages were implemented to determine which institutions to select for inclusion in the study. The first stage comprised the initial identification of all institutions that support the education sector in Malawi by generating data on teacher supply and demand. The second stage comprised the practical sorting of those institutions into three categories: localized, international aid and assistance organizations, and global organizations. The third stage entailed identifying which institutions are used most prominently by the Malawi government in designing, implementing, and evaluating educational policies. Finally, individual case studies were created on each of the five selected organizations: Ministry of Education Science and Technology (MoEST); three IAAOs including Department for International Development (DFID), a British organization; Japanese International Cooperation Agency (JICA); United States Agency for International Development (USAID), and one transnational organization the United Nations Educational, Scientific, and Cultural Organization (UNESCO).

Data for answering the research questions posed for this study consisted of a case study for each of five different organizations stated above. The researcher generated these mini-cases from relevant official documents from each organization. Each case study examined the organization in terms of its background; vision, mission, and goals; structure; aims, and data indicators; scholarly criticism of the organization; and the role that the organization has played in Malawi.

This research was conducted as a desk study, which is sometimes also called a systematic inquiry (Management Study Guide, 2012; UNESCO, 2012b). This study looks for significant and practical policy implications resulting from an analysis of the various institutional estimates for teacher supply and demand in Malawi. Two types of analyses were conducted. First, the institutional sources and their data were described. This description resulted from textual analyses of available core documents of each institution regarding its vision, mission, and goals. Variations among institutional priorities were highlighted in terms of implications for data collection and use. Textual analyses of the data collection methods were also conducted for each organization. This method of analysis was chosen to condense large amounts of data into useable information. Second, a comparative textual analysis was conducted among the source institutions. Pupil-teacher ratio was used to sample data variations regarding teacher supply and demand. The findings of these analyses are reported in the following section.

### **Findings**

The primary purpose of this study was to identify and explore the educational policy implications of using data from multiple institutional sources, using the context of primary school teacher supply and demand in Malawi as an illustration. Two research questions with sub-questions were generated to accomplish the purposes of this study. The findings are reported in



the following sections in both tabular and descriptive format, with each table aligned with a research question.

The first research question examined the institutional priorities and characteristic vision, mission, and goals of each organization in relation to the variations in the data collection process, aggregation, analysis, and reporting. Because the official documents describing institutional priorities and characteristics (the narrative) often differed from actual practice (the meta-narrative), both are presented.

As indicated in Table 1, differences in how these five organizations phrased their statements of their vision, mission, and goals were evident. However, there was substantial overlap, particularly in the related goals of reducing poverty and improving education. There is also striking overlap in priorities among the three IAAOs (DFID, JICA, and USAID) either explicitly (see USAID's mission in Table 1) or implicitly (as inferred from internal DFID and JICA documents) as all seek to further the interests of their respective countries through their aid efforts. Some, or perhaps much of its overlap might be the result of the fact that these organizations must justify their operational costs to their governments' deliberative bodies in order to receive funding, and it is far easier to get approval for large aid expenditures when one can argue that helping the developing world ultimately benefits the investing country (DFID, 2008; DFID Malawi, 2007; JICA, 2012a, 2012b).

The institutional gestalt of the organizations under study, the meta-narrative, as opposed to how they represent themselves in their official documents, is key to understanding their institutional outputs and actions. The ensuing paragraphs report the narrative and meta-narrative for these institutions, grouped according to three clusters: localized (MoEST), IAAOs (DFID, USAID, and JICA), and transnational or global (UNESCO).

MoEST, the one localized organization in this study, is entrusted with providing quality education for Malawi, but it also clearly has a vested interest in portraying its efforts as successful. If the education system in Malawi is failing to improve, then that failure is, to some extent, a failure by MoEST. The potential political repercussions of such a failure are sufficiently powerful that the meta-narrative of MoEST is far more political than its official documentation can portray.

The vision of DFID is to end poverty by providing aid in the form of grants, loans, and subsidies. To accomplish its education mission and goals, DFID provides resources directly to local institutions and organizations so that they can help themselves. Even when providing technical assistance, the personnel and research expertise are “purchased” by DFID, not through third parties. Most DFID-funded research is not focused on education, but rather on growth, agriculture, climate change, health, governance, or future challenges and opportunities. In terms of data, DFID uses ad hoc sources such as UNESCO or the Organization for Economic Cooperation and Development (OECD). DFID does collect data related to its own activity and expenditures. When it works with data from a second party, DFID must be satisfied with the quality of the data, although it has no control over its value.

Similarly, USAID seeks to provide development with a local focus. A major goal is to encourage sustainable economic and social progress while strengthening free markets and relations with the United States. Gathering data on education systems is not a USAID priority, and while it does collect education data, its data indicators tend to vary widely depending on the nature of the funded project. USAID uses its databases to determine which aid is most effective and to reveal better ways to forge positive connections with local people, agencies, and governments.

Table 1

*Organizational Vision, Mission, and Goals*

Organization	Vision	Mission	Goals
MoEST	Ensure access to and management for basic and higher education	Provide education, thereby reducing poverty in Malawi	Provide information to policymakers, donors, and citizens of Malawi
DFID	Reduce poverty	Improve education, health, economic growth, governance, the environment, and water	Promote equality in education; increase the number of trained teachers
JICA	Inclusive and dynamic development	Address global agenda; reduce poverty; improve governance; achieve human security	Improve enrollment in and quality of primary and lower secondary education
USAID	Create sustainable social and economic development	Foster sustainable socio-economic progress while furthering US interests in free markets	Improve primary school literacy; strengthen higher education; provide access in crisis regions; foster innovation
UNESCO	Promote just and prosperous societies	Promote quality education as a basic right	Contribute to success in MDG and EFA goals

Note. MDG is Millennium Development Goals and EFA is Education for All.

In contrast to DFID and USAID, JICA aims to involve national governments in their own development as much as possible. JICA does not view itself as a data-collecting organization, instead focusing on providing aid through projects, loans, and grants. Nonetheless, to fulfill its vision, mission and goals, JICA occasionally collects ad hoc data as part of a special project, or if it cannot acquire the needed data from reputable sources.

The meta-narratives of the IAAOs are significantly political. While DFID presents reasonable goals, its own documents often betray an unreasonable sense of responsibility for the entire world, which could be interpreted as lingering imperialist sentiment. JICA seems to see the world beyond its home country as dangerous and chaotic, and its programs and priorities speak to fixing the problems of the developing world before such problems grow to a point where they directly affect Japan and its economic and social well-being. USAID mixes naked economic self-interest and an almost cheerful optimism with a large and convoluted bureaucracy. Consequently, while all three IAAOs present an officially-sanctioned outward-looking sense of aid and beneficence toward the developing world, each sustains a powerful meta-narrative that sustains a more internal and nationalistic sentiment.

The lone transnational organization included in this study, UNESCO, has the overarching goal of promoting equity in human society. UNESCO collects its own data mostly annually; sometime it collaborates with other organizations as well as subcontracting some independent consultants. However, their vast supplies of good intentions are hampered by a bureaucracy even larger and more complex than that of the IAAOs. UNESCO's large bureaucracy results from the mandate to be globally inclusive, which generates initiatives nested within the meta-narrative of domination referred to as the North-South struggle, with the southern hemispheric nations

looking for substantial independence (at least fiscally, intellectually, and culturally) from the persistence of traditional northern hemispheric domination (World Bank, 2012)

Each of the five organizations has certainly done much to improve the education situation in Malawi. At the same time, the good they have accomplished is deeply complicated both by the interactions between the competing realities of the world and by their own meta-narratives, which are largely determined by the national or transnational constituencies they each represent.

### **Organizational Data Collection Processes**

Continuing to address the first research question, each of these agencies collects data in a specific but not necessarily wholly unique manner, meaning that variations in the data are inevitable. Such variations can greatly impact Malawi's policies regarding teacher supply and demand. There are some similarities between organizations, as is clear from the summary of data collection processes in Table 2. All three IAAOs are alike in that they collect their own ad hoc data in collaboration with local or international organizations. USAID, JICA, and UNESCO are also similar in their reliance on extensive surveying.

MoEST collects data annually from surveys administered to the head teachers of each school. The data are then transferred from District and Division offices to the Central Office, where it is verified for reliability and authenticity. MoEST manages verification using follow-ups, random checks, or a limited callback and feedback system. Information flows regularly in a bottom-up manner to the Central Office that reciprocates with verification and feedback in a top-down manner. The first year that MoEST gathers a specific set of data, it uses only trained professionals and reliable surveying instruments. The authenticity of the data grows as the collection continues, and after three years its reliability is solidified.

In previous years, DFID focused on enabling the research of other organizations. Recently, however, DFID has evolved to have its own research play a much larger role in implementing its activities, and, in (2008) it introduced a research strategy where £1 billion was spent on development research through 2013. This research strategy focused on economic growth, sustainable agriculture, climate change, and health, governance in challenging environments, and future challenges and opportunities. These six topics served as data indicators when determining aid allocation.

The JICA Research Institute conducts research only when the information needed is unavailable or unreliable from secondary sources, but when it does conduct research, intensive and in-depth case studies are its instruments of choice (Yasutomo, 2007). JICA focuses its data collection on four areas: peace and development, growth and poverty reduction, environment and development/climate change, and aid strategies. Mostly it conducts case studies to examine, analyze, and evaluate these topics.

USAID is a well-established agency, and its data collection process is thorough and well-conceived, particularly when compared to other IAAOs. The systems and protocols for data analysis and presentation leave little room for mistake, and its surveys provide important benchmarks for development.

The USAID data collection process begins with performance planning and the creation of performance indicator reference sheets to ensure that measures selected are valid indicators for their associated results. USAID then examines the data collection protocols, checking on whether data collection instruments have been pretested with respondents, whether they have been translated into local languages (and then retranslated into English as a cross-check),

Table 2

*Data Collection Processes*

Organization	Process	Frequency
MoEST	Regularly collects its own data	Annually
DFID	Collects its own data when needed; Collaborates with other organizations; Subcontracts	Ad hoc
JICA	Collects its own data when needed; Collaborates with other organizations; Subcontracts	Ad hoc
USAID	Collects its own data; Collaborates with other organizations (i.e. JICA, DFID, etc.); Subcontracts	Ad hoc
UNESCO	Regularly collects its own data; Collaborates with other organizations; Subcontracts extensively	Annually and Ad hoc

whether instruments are designed to interface with the intended USAID database, and whether the instructions for each instrument are clear and complete. Data collection is implemented once these safeguards are in place. USAID checks to ensure that data collectors have been trained and monitors how often the collectors are supervised. Then, data entry and storage occurs. (A template for mission-specific data entry is usually completed before the project begins). The last step is analysis, retrieval, and presentation of the data, which typically consists of the implementation of the Performance Indicator Sheet outline (U.S. Department of Education, 2006; USAID, 2013).

UNESCO collects secondary data both annually and ad hoc, and relies heavily on subcontractors. UNESCO uses three major surveys to collect data—the UIS survey, the Eurostat survey, and the World Education Indicators program—that deal with education programs, access, participation, progression, completion, internal efficiency, and human financial resources. The data are collected from administrative sources at a national level by both the UNESCO Institute of Statistics and partner organizations. Researchers and country officials use the data to assess performance of each educational system through international comparisons.

The data collection methods of these organizations can be as varied as the organizations themselves, and consequently the data they produce exhibit commensurate variations. Their processes of aggregation, analysis, and reporting are more comparable, but significant differences persist among the results they present on a specific issue. These differences may be attributed, at least in part, to the peculiarities of the collection methods that were originally used.

### **Processes of Data Aggregation, Analysis, and Reporting**

For the last point in addressing the first research question, findings indicated that there are broad similarities in the way that all five organizations analyze and report their data, as



illustrated in Table 3. Each organization employs basic descriptive statistics, and all but UNESCO employ some form of statistical inference, however limited. In terms of data aggregation, however, the organizations diverge.

MoEST aggregates data by education district, by division and nationally in order to provide parents and education professionals with more locally accessible and intuitive ways to compare the performance of schools and to enable the government to pinpoint inefficiencies within its own education system. The IAAOs aggregate data nationally to allow comparison between nations, especially those nations that are receiving aid. USAID and DFID also go beyond national aggregation and include clusters of countries such as countries in the Southern African Development (SADC) region. See Table 3. UNESCO aggregates data by nation, by region, by continent, and globally. It provides a comprehensive evaluation of education data quality by comparing a country's data production with current international standards, thus enabling countries to use the data to interpret and prioritize areas in need of strengthening as indicated by the assessment. Every organization reports its data and its results to the public and to government stakeholders through annual online or print publications. All of the organizations except DFID incorporate surveys, whether independent of, or in relationship with, other organizations, while DFID uses resource and accrual accounting to collect data. The analysis of data is fairly standard across the organizations—all organizations use key indicators to determine their progress. These indicators are either created by the UN through the Millennium Development Goals, or created by the organizations themselves (UNESCO-UIS, 2007; United Nations, 2009). UNESCO compares its data to international statistics rather than a set standard of indicators.

Table 3

*Individual Processes of Data Aggregation, Analysis, and Reporting*

Organization	Aggregation	Data Analysis Approach	Reporting
MoEST	District, division, National	Descriptive; Very limited inferential statistics	The Central Office provides data to policymakers, donors, and the public
DFID	National, regional, continental	Descriptive; Inferential statistics	Data are reported annually in a publication entitled <i>Statistics on International Development</i> , and online
JICA	National	Descriptive; Extensive inferential statistics	JICA reports its data through various publications that can be found on its website
USAID	National, regional	Descriptive; Limited inferential statistics	Data are reported in US Official Development Assistance Database, the Trade Capacity Database, and the Country Progress System
UNESCO	National, regional, continental, global	Descriptive	Data are reported in annuals (GMR), journals, and on the UIS website

## Institutional Comparison of Supply and Demand for Teachers

The second research question sought to understand the various data sources for teacher supply and demand in Malawi. This study used the context of data regarding supply and demand of primary school teachers in Malawi for studying educational policy implications of using data from multiple sources. Findings presented in Table 4 show that there is no consistency, let alone consensus, among the five organizations regarding the state of teacher supply and demand in Malawi, as expressed in terms of pupil to teacher ratios.

Table 4

### *2012-2014 Pupil-Teacher Ratios in Malawi According to Reporting Organization*

Organization	Pupil Teacher Ratio
MoEST	60:1
DFID	78:1
JICA	200:1
USAID	184:1
UNESCO	76:1
Mean	120:1

According to the MoEST (2012), the current pupil-teacher ratio (PTR) in Malawi is 60:1, which is significantly lower than in 2010, when it reported the PTR at 80:1. Similar to MoEST's 2010 figures, in October (2013) UNESCO reported Malawi's PTR at 76:1. DFID (2013) reported the current PTR at 78:1, a figure that is close to that of UNESCO. The relative closeness of the UNESCO and DFID numbers are perhaps notable in that the two organizations function at quite different levels—DFID as an IAAO and UNESCO as a transnational organization. The fact that an IAAO and a transnational organization report similar ratios adds some credibility to their figures.

At the same time, the differences in PTRs across MoEST, UNESCO, and DFID initially appear to present some major differences. That is, the MoEST ratio of 60:1 might be seen as substantially lower when contrasted to the fairly similar 76:1 and 78:1 reported by, respectively, UNESCO and DFID. The ratio of 60:1 is approximately 21% lower than the ratio reported by UNESCO, and approximately 23% lower than the ratio DFID reported—differences that could appear to be significant in magnitude. However, when comparing the range of ratios among these three organizations to that of the two remaining IAAOs, quite a different picture appears.

JICA reported Malawi's PTR as 200:1 (2012a), whereas USAID suggested 184:1 (2013). When comparing these reported ratios to that of the MoEST, USAID's ratio is more than 333% of Malawi's reported ratio of 60:1, and JICA's ratio is more than 300% greater than Malawi's. Confronted by these comparisons, the differences across the MoEST, UNESCO, and DFID seem fairly inconsequential.

As discussed later in this paper, the significance of these variations is that such variability, whether the differences represent deficiencies or inadequacies in data reliability and/or validity or not, often indicate that national policy solutions could be radically different depending on which of these disparate data sources are used to justify the policies. Further, if the chosen data source is a misrepresentation of the actual condition (and with potential discrepancies of up to 333%), the policy solution could actually create conditions that are worse than the challenges they are meant to address.

Findings of this study have indicated that these five organizations phrase their vision, mission, and goals differently. There are, however, areas where the organizations overlap; all five are concerned with the related goals of reducing poverty and improving education. It further has been established that the differences between MoEST, UNESCO, and DFID seem fairly

consequential and can pose huge challenges in policy formulation or implementation. Based on findings discussed above, the following section presents the discussion of the implications of this study's findings including issues of policy scenarios, conclusions, and recommendations.

### **Discussion**

As has been previously discussed, the distribution, size, and composition of Malawi's teaching force are all essential to its effectiveness. Policymakers, however, are unable to enact targeted policies to address these challenges without access to accurate data. To address the problem of education data, the government of Malawi faces three basic choices: (a) do nothing; (b) take some, but not all possible steps toward standardizing education data; or (c) commit fully and create a central bureau to ensure standardized data.

Accordingly, as an aid in thinking through these issues, three scenarios have been constructed, projecting the probable outcome of a policy that takes a business-as-usual approach to education data; of a policy that makes a partial commitment to data standardization; and of a policy that takes swift, direct moves toward data standardization. Data standardization in this context means standardization of the whole process starting with a good survey instrument, proper training of enumerators, accurate processes of data collection, analysis, and aggregation, and factual reporting. No part of this process can be overlooked as that would compromise the reliability of data. As these scenarios are delineated, there will be an examination of their probable effects on policies affecting teacher distribution, teacher deployment, and the composition of the teaching force. All three scenarios use a 10-year time frame to conform to Malawi's five year electoral cycle, since it is assumed that any policies would take five years to implement and would need to be in place for five years to gauge the results.

### **No Data Standardization Scenario**

Where the government of Malawi is to take no steps toward data standardization, Malawi's education system would continue as it is with unbalanced teacher deployment worsened by a too small teaching force composed of teachers who, in many cases, have a markedly unprofessional approach to their jobs. With no policies in place to standardize education data, the government would be unable to take informed steps to balance deployment. It would be likewise unable to make effective reforms to promote teaching professionalism because the government would not be able to calibrate teacher compensation and training based on data.

In this approach, the same lack of transparency and accountability that exists today would continue for another 10 years. Without a dependable way to gauge the success of individual schools, citizens would not be able to make informed decisions about education. The overall picture in this scenario is as grim as the current situation, but compounded by a continued failure to take the necessary first steps toward education reform.

### **Partial Data Standardization Scenario**

In a scenario where the government takes some, but not all, appropriate policy steps toward standardization the outcome is brighter. The biggest challenge appears to be in the data collection process. It would be helpful if the GoM could train all the head-teachers best practices in data collection. By doing so these head-teachers could become qualified enumerators.

With policies in place to ensure that education data is more reliable, policymakers would be better able to balance teacher distribution, although imbalances would still remain at the end of the 10 year time frame. With a more accurate picture of the size and composition of the teaching force, further policies could be enacted to encourage greater numbers of professional, well-educated persons to join the teaching force. Policymakers would also be able to construct

benchmarks to help them take steps toward better resource allocation. Improved resource allocation would have a number of positive effects, including more balanced funding nationwide, the opportunity to re-staff troubled schools, the ability to begin addressing salary problems, and a more balanced distribution of educational materials among schools. While this approach does not address these problems to their fullest potential within the allotted time, every area exhibits a marked improvement over the “no data standardization” scenario.

### **Full Data Standardization Scenario**

In a scenario where the government takes direct, appropriate action to establish standardized education data, we see the greatest improvement in the three priorities. With optimal data available, policies could be enacted to see that the available teachers are distributed evenly and effectively across Malawi. Problems of distribution would be easier to deal with, because, with an accurate picture of the lack of teachers, policymakers in the government and NGOs could take tangible steps to increase the size of the teaching force through targeted recruitment campaigns and by restructuring salary and benefit packages. The composition of the teaching force would be drastically improved as well, both because of the aforementioned targeted recruitment measures and because policymakers could reshape the workforce through data-informed initiatives to improve professionalism. Through increased transparency and accountability, the educational system would begin functioning more efficiently and effectively. Policies could also be put into place to provide benchmarks to allocate resources, effectively ending the urban/rural disparity in distribution of educational resources. The public would be better served by increased transparency and accountability, allowing them to make better informed decisions about education. This scenario would enhance the standardization of statistical methodologies for concepts and definitions used in the collection, generation, analysis

and dissemination of educational data in Malawi. In all, this approach and its policy of government supervised, standardized, reliable data is the one that is best able to confront the challenges facing Malawi's educational system over the next ten years.

**Suggestion for Implementation.** In order to fully implement this scenario, there must be a forum sponsored by the Malawi government for stakeholders who are involved in collecting education data in Malawi. The purpose of this would be to enhance the standardization of statistical methodologies for concepts and definitions used in the collection, generation, analysis, and dissemination of education data. Further, this would enhance the availability of timely and accurate data to facilitate evidence-based policymaking in Malawi. It would provide an opportunity to improve harmony and collaboration between the stakeholders through joint planning and monitoring, thereby reducing duplicate efforts. This would be a starting point for jointly working toward greater harmonization of methodologies and timely dissemination of data. Since the forum would offer access to timely and accurate data, stakeholders who do not collect data annually would gain access to updated information and data. Such information is important for these organizations as they pursue their goal.

**Challenges to Implementation.** Although full standardization is the scenario which produces the best overall outcome, it is not without challenges. Implementing data standardization would require an undetermined, but no doubt significant, monetary commitment by the GoM as it undertakes the task of creating standards and conducting the necessary training for all involved parties. Because the required sum is nebulous, it will no doubt be difficult to convince those in power to make what has the potential to become an expensive and time-consuming effort. It is also possible that there is a lack of political will to begin a massive project that will only pay dividends a decade into the future while Malawi is facing so many other



challenges. Finally, there is a possibility that data standardization could reveal that the current government manipulated education data to make their policies appear more effective; in that case, the process of implementing full standardization could cause a scandal that erodes the public's confidence in the government and undermines continued efforts at education reform.

This study has established that the five selected organizations phrase their vision, mission, and goals differently which results in clear differences in their data collection, aggregation, analyses, and reporting processes. The study has also found substantial variations in the teacher supply and demand data presented by these five organizations (with variations of up to 333% between sources).

There are several possible explanations as to why these organizations' numbers vary so widely. The organizations might use different definitions of what constitutes a teacher, or they might count the aforementioned situation where three teachers divide subjects among 200 students as a 67:1 ratio (which seems disingenuous, as it does not reflect the actual classroom environment). Organization could use these numbers for internal and external survival. The three organizations that present double digit PTRs might ignore or minimize rural areas in their data collection which would skew their results toward smaller numbers. There could also be an issue related to data collection frequency; only MoEST and UNSECO collect data annually and they present the most favorable numbers. It would be reductionist to lay all the blame at the feet of any one explanation, but it is clear that something is amiss, whether due to complexity, ambiguity, incomplete information, differing viewpoints, or conflicting objectives of the data sources, the result is that the education policies now in place in Malawi are not based on reliable data.

According to UNESCO, both the number and distribution of teachers are important policy parameters to help determine quality of education. It is very important that figures are consistent, and that they portray the real situation on the ground. Variations and inadequacies in data reliability, availability, utility or quality will result in the children of Malawi continuing to receive a far lower quality of education than is needed in the contemporary global environment. Thus, the Government of Malawi will continue to have difficulty effectively utilizing the data for its purposes until it has achieved a comprehensive understanding of each organization and its data strategies.

### **Conclusion**

The study has established that official documents describing institutional priorities and characteristics often differed from actual practice (narrative and meta-narrative). Further, the study has established that variations, deficiencies, or inadequacies in data reliability, availability, utility, or quality are unavoidable and these challenges have far reaching implications. Policymakers, however, are unable to enact targeted policies to address education challenges in Malawi without access to accurate, or at least predictable, data, which is mostly generated by these different organizations.

Despite the different figures these organizations present for pupil-teacher ratio, the bottom line is that there remains a demand for primary school teachers in Malawi. Sources suggest that the shortage is compounded by an incoherent teacher deployment system, with little correlation between the number of allocated teachers and the number of students. Teacher allocation across locations, school divisions, and districts is uneven, with deployment skewed in favor of urban areas.

Although much has been learned in this study, future research needs to address critical relevant questions. If the GoM agrees to adopt full data standardization, it will need to conduct a study employing cost-benefit analysis to help estimate the strengths and the weaknesses of the alternatives. This proposed future study should have two purposes: (a) to determine if a suggested policy option is justifiable and (b) to provide a basis for comparing options suggested previously.

What will the future of education in Malawi look like? Will the GoM adopt data standardization and begin crafting policies that address the true state of its education system, or will it continue on its present course toward an almost certainly disastrous future? If swift action is not taken, Malawi could lose an entire generation of potential leaders to an inadequate educational system. With the future of the country at stake, it is hoped that the government will take the more difficult road toward reform and a brighter future, rather than electing to take a business-as-usual approach to educational data and thereby remain on the easy path toward destruction.

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## APPENDIX A: REVIEW OF LITERATURE

This section will provide a review of literature to many important constructs in this study. The literature review is organized to present a view of the subject from macro level to the micro level. First, the issue of teacher supply and demand in Europe, America, Asia and Pacific regions, and Africa will be discussed. The discussion will then focus on teacher supply and demand in sub-Saharan Africa and then finally Malawi. Understanding teacher supply and demand requires an understanding of other related factors such as future problems, geographical challenges, attrition and retirement, and teacher quality. Such issues plus other related topics will also be addressed.

There are many issues and factors that contribute to the overabundance or scarcity of teachers in any given geographical area. The following discussion describes some of the issues that contribute to imbalances in the supply of teachers including poverty, gender inequalities, differences in the way teachers are compensated, and a plethora of other causes. In analyzing previous literature, the problems associated with teacher supply and demand were found to be almost as numerous and varied as communities are around the globe—probably as a result of numerous cultural differences between those communities. However, major themes emerged from the literature that will allow the reader to grasp a general overview of the issues surrounding teacher supply and demand.

Fyfe (2007) suggests that teachers are education’s most important resource as well as the most expensive. It is no surprise that often the first cut to be made when school funding is low in developing countries is budget for teachers. The UNESCO Dakar Framework for Action—a formal collective commitment to obligating governments to provide education for the children of their country states “teachers are essential players in promoting quality education, whether in

schools or in more flexible community-based programs; they are advocates for, and catalysts of, change” (2000, p. 27). No educational reform is likely to succeed without the active participation and ownership of teachers.

### **Teacher Supply and Demand Analysis: Macro to Micro Level**

The unavoidable negative consequences of imbalances in teacher supply and demand are no respecter of culture, class, or nation. Indeed, education scholars worldwide have reported imbalances in their respective nations and regions due to retirement, poor salaries, and educational policies, amongst a host of other factors. Gorard, See, Smith, & White, (2007) stated that problems with teacher shortages exist in all countries, to the point that student progress and attainment is hindered. This section discusses teacher supply and demand issue in Europe, America and Asia, followed by more focused discussions on teacher supply and demand in sub-Saharan Africa and particularly Malawi.

**Europe.** In Europe, some schools have shortened the school week to four days or sent children home because of unavoidable teacher shortages (Gorard et al., 2007). A related study reported that more than 91% of Russian head teachers reported some type of problem with teacher recruitment and retention (White & Smith, 2005). In a more recent study an important finding of the report *Key Data on Education in Europe 2012* shows that many European countries are confronted with a growing problem of teacher shortage. The report indicates that several member states of the European Union, including Germany, the United Kingdom, Italy, the Netherlands, Austria, and Belgium, may face serious teacher shortages in the near future. Further, the report points out that 40% of German 15 year-olds have no specialized science teacher and approximately 30% of Dutch students of the same age have no specialized teacher in science or mathematics (European Commission, 2012). The main reason for this shortage seems

to be the age structure of the teaching profession, with more than 30% of teachers in Germany, the UK, Italy, the Netherlands, and Belgium currently approaching retirement age and nearly half the primary teachers in Germany, Italy, and Sweden being older than 50 indicating they may be retiring soon.

**United States of America (US).** In the US, the situation is similar according to Chandler (2007). While the US had three million public school teachers at the time of Chandler's study, hundreds of thousands were projected to be leaving the profession before 2015, as most of them are retiring baby boomers. The assertion was corroborated by Dessoiff (2010) who suggested that in the US more than half of the country's teachers are baby boomers and could be retiring in less than a decade. In 2010, three years following Chandler's report in 2007, the U.S. Department of Education projected 3.6 million full time equivalent (FTE) elementary and secondary school teachers were engaged in classroom instruction in fall 2010 – an increase of eight percent since 2000. The 2010 projected number of FTE teachers includes 3.2 million public school teachers and 0.5 million private school teachers (Keigher & Cross, 2010). One can argue that from 2007, according to Chandlers' projection to 2010, the US had hired more than 200,000 new teachers for public schools. Although increasing the actual number of teachers in the US system by more than 200,000 over a period of three years is impressive, it still will not be enough to meet the projected need by 2015, which means that even the US may be struggling to meet teacher supply and demand.

**Asia and Pacific Regions.** The teacher supply and demand challenge has not spared the Asia and Pacific regions. According to the UNESCO Education for All Global Monitoring Report (2010b) the main challenges concerning teachers in Asia and the Pacific are a lack of qualified teachers, replacing current teachers, attracting and retaining well-qualified candidates

and improving teacher morale. UNESCO (2010b) further projected that in Asia and the Pacific, 2.1 million primary school teachers are need to be recruited and trained by 2015 to replace those retiring or leaving their posts.

By 2015, approximately 18 million new teachers globally will need to be recruited and trained for primary education alone in order to correct rectify imbalances between schools in rural and urban areas, mainly in developing countries (Mpokosa & Ndaruhutse, 2008). Teacher shortages do not just affect the education sector. Every industry or field is dependent upon qualified, effective teachers to instruct new generations (Howson & Sprigade, 2010). Teacher supply and demand is an important topic of consideration for policy makers, government officials, and especially parents and local community leaders as they work together to ensure thriving communities. Teacher supply and demand is a very complex issue because it is difficult to generalize the problem of teacher shortages and propose a one-size-fits-all solution.

It is worth noting that problems with teacher supply and demand are not always quantitative in nature. Gorard et al. (2007) reported that in some areas the issue is not the overall number of qualified teachers because plenty of qualified teachers are available, but rather teachers who can teach in-demand subjects, such as math and science. Gorard et al. explained that “these subject shortages are being helped by the fact that fewer students are going into fields that have teacher shortages” (p. 425). Mulkeen (2006) echoed this sentiment stating that for many countries the output of trained teachers was poorly matched with the requirements of the system.

To compensate for shortages in pivotal subject areas, some educational leaders in Western countries have resorted to recruiting teachers from other nations. For example, in 2004, 21,000 South African teachers left South Africa for classrooms overseas such as Canada and United

Kingdom. Teachers recruited by developed countries are typically recruited from developing countries, putting developing countries at an even greater disadvantage. Teachers also left developing countries to take positions in countries with varying school calendars. Recruitment of teachers from other nations has the power to disrupt education and negatively affect the quality of education (Miller, Ochs, & Mulvaney, 2008).

**Africa.** The Department for International Development (DFID) suggests that even though teacher supply and demand is a challenge in most, if not all, regions of the world, the issue of teacher shortage is most severe in Africa. Because of the persistent inequities, political problems, and severe resource scarcities that have historically burdened the continent, Africa is particularly sensitive to challenges created by an imbalance of teacher supply and demand (DFID Malawi, 2007).

African education systems have tremendous challenges that appear to be resistant to easy solutions. For example, virtually all countries in Africa have a persistently inadequate supply of teachers compared to other continents such as Asia, where the supply of teachers is getting consistently better (Dessoiff, 2010). This one apparently intractable challenge alone means that Africa will continue to provide a far lower quality of education than is needed in the contemporary global environment – or even in the particularistic geographical space of individual African nation states. It is worth noting that even though the continent of Africa is subject to this challenge, the problem is more severe in sub-Saharan Africa as compared to other regions of the continent such as North Africa (e.g., Egypt, Algeria and Morocco). Teacher economics are very important to the African region because of the educational inequities and problems that have historically burdened the continent. Ki-Zerbo suggested that

It is forgotten, all too often, that Africa was the first continent to know literacy and to institute a school system. Thousands of years before the Greek letters alpha and beta, roots of the word alphabet, were invented, and before the use of the Latin word schola, from which the word school derives, the scribes of ancient Egypt wrote, read, administered, philosophized using papyrus. (1990, p. 15)

Brock-Utne (2000) concurred with Ki-Zerbo by suggesting that although Africa was the first continent to acknowledge the importance of literacy and start a school system, it has an ongoing problem of inadequate number of qualified teachers. Another report shows that Africa currently has the lowest adult literacy rate as compared to other continents and that it faces issues of gender inequality, fiscal concerns, misplaced priorities, and ineffective policies (UNESCO, 2004).

The following section will focus on teacher supply and demand in sub-Saharan Africa as a whole and then discuss in detail teacher supply and demand in Malawi. Sub-Saharan Africa is a geographical term used to describe African countries that are fully or partially located south of the Sahara Desert. The region covers an area of 24.3 million square kilometers. According to the Population Reference Bureau (2011), in 2011 sub-Saharan Africa had a population of 853,566,225. The region contrasts with North Africa, which is part of the Arab world. The Sahel is the transitional zone between the Sahara proper and Sub-Saharan Africa. Somalia, Djibouti, Comoros and Mauritania are geographically part of Sub-Saharan Africa, but also part of the Arab world.

### **Teacher Supply and Demand in sub-Saharan Africa**

UNESCO data suggest that sub-Saharan Africa currently has an adult literacy rate of 62% which is the lowest in the world. The low adult literacy rate is typically seen as being caused by

two major factors. The first one is that of economic challenges leading to high poverty rates, while the second is the challenge of inequitable geographical distribution of teachers. Countries in sub-Saharan Africa also face particularly acute difficulties on issues of gender inequality, fiscal instability, priority misalignment, and policy ineffectiveness based on UNESCO reports (2004).

Moving in a direction opposite to that anticipated, most countries in sub-Saharan Africa went from an optimistic sense based on *African Independence* in the 1960s to the *African Crisis* in the 1970s to the *African Tragedy* beginning in the 1990s (Anzar, Harpring, Cohen, & Leu, 2004) continuing that downward trajectory into the present day. Unlike people in most regions of the world, Africans are generally worse off financially, live less healthy and less secure lives, and receive poorer levels of education than 20 years ago (United Nations DPADM, 2004). One oft-cited reason for this slow slide from independence to tragedy is that critical resources (economic, human, and physical) are not distributed equally in sub-Saharan Africa because of poor governance and lack of essential infrastructure such as road networks. Many countries like Malawi, Uganda, Zimbabwe, Zambia and other land-locked countries are even more isolated from the world than other African countries. As part of this general trend, Malawi is one of the poorest countries in the world and has experienced a consistent drop in gross domestic product (GDP) per capita and life expectancy rates over the past 20 years (Ministry of Finance, 2006). According to the most recent data available, the public expenditure on education as a percentage of gross national product (GNP) in sub-Saharan African increased from 3.7 in 1999 to 4.7 in 2010 (UNESCO, 2012a), an increase of a full percentage point, or just over a 25% increase in percentage of GNP devoted to education. At the same time, the high income countries in the world combined experienced an increase of 4.9 to 5.3, representing less than 50% of the

percentage of GNP increase devoted to education than experienced in sub-Saharan Africa (UNESCO, 2012a).

Another challenge in sub-Saharan Africa is the geographic distribution of education personnel, referring to their spatial allocation in rural and urban zones, as well as more or less preferable locations within those zones. Geographic distribution of teachers is considered to be imbalanced when a normative rationale, such as population/personnel ratios or more sophisticated needs-related indicators (Verspoor, 2005) is not followed. Geographic distribution matters in education since it determines which educational services will be available to which populations, focusing on the quantity and quality of those services. Imbalances raise problems of equity (services not available according to needs), efficiency (surpluses/shortages), effectiveness (outcomes), as well as the general satisfaction of users. Education for All (EFA) cannot be achieved if vulnerable populations do not have reasonably equitable access to qualified teachers (Nsapato, 2005).

Sub-Saharan Africa has the greatest teacher shortages of all the habited continents. Unlike sub-Saharan Africa, however, other continents have capacity and infrastructure in place that better help to correct teacher supply and demand imbalances. In addition to infrastructure development, many countries outside sub-Saharan Africa have stronger government control over teacher deployment (Mpokosa & Ndaruhutse, 2008). As of 2008, sub-Saharan Africa listed one of the highest student to teacher ratios at 40:1 (UNESCO, 2008b). Further, UNESCO (2008b) also reported that of the 45 countries with student to teacher ratios of 40:1, the majority of those countries were located in sub-Saharan Africa. Large class sizes discourage creative teaching and encourage rote, repetitive methods of instruction. Mizrachi et al. (2010) discussed the role active-learning pedagogies can play in increasing the effectiveness of teachers. Active-learning



pedagogies encourage students to be creative, think for themselves, and discover new knowledge. Active-learning pedagogies encourage students to stay in school because they are able to apply what they are learning in the classroom to their everyday lives. They also encourage parents to keep their children in school—some parents find education worthless because it lacks applicability. This is especially true when a child can help contribute to the family income, or school fees are a burden for the family to pay (Chimombo, 2009) .

Sub-Saharan Africa is unique in that a host of countries with varying government systems and educational policies border one another. Some countries have an abundance of teachers, while other countries have severe shortages. For instance, in the nation of Zanzibar, the output of teachers (teachers graduating from colleges) in 2007 represented 33% of the teaching force—many of these new teachers were unable to find jobs. In Lesotho, in juxtaposition to Zanzibar, the output of teachers could not keep pace with the number of teachers retiring or resigning (Mulkeen & Crowe-Taft, 2010). Teacher benefits and salaries could also be more lucrative in one country than in a neighboring nation. Mulkeen et al., (2010) state that because of differences in the way teachers are compensated in neighboring countries expatriate teachers are quite common in sub-Saharan Africa.

In 2008, UNESCO found that sub-Saharan African countries had increased their teacher force by 25%. Yet this increase has not been adequate to keep up with enrollments, particularly because of the introduction of Education For All, which stipulates that primary age children should receive an education for free, regardless of geographic location (UNESCO, 2008b). Schools and governments have become increasingly dependent upon teachers as the demands of increasing enrollments have grown (Mpokosa & Ndaruhutse, 2008). Duthilleul (2005) cited a study completed by Mingat in 2004 where he estimated that in order to meet EFA goals, the

number of teachers in West Africa (part of sub-Saharan Africa) would have to increase from 221,000 to about 654,000 by 2015. These figures represent an increase of 196%.

### **Profile of Malawi**

Malawi is one of the countries in sub-Saharan Africa affected by teacher shortage. The following section will focus on teacher supply and demand in Malawi. In order to understand the educational challenges Malawi faces, having knowledge of the country including the general history and background of the country as well as the country's current condition and challenges is essential. In southeast Africa, this small nation prides itself in being known as the *warm heart of Africa*. With a population of 16.3 million, this peaceful, Christian (82.7%) and democratic state is not known to most Americans and other Westerners. Those Westerners that do visit are struck by the warm hospitality, the friendly people, and the simple village life. The beautiful Lake Malawi, mountain ranges, and stunning game parks make it a place to which visitors love to return. Malawi is one of the poorest countries in the world. The life expectancy is only 52 years with a per capita GDP of approximately \$900 (Central Intelligence Agency, 2012).

Malawi was ruled as a colony by the British from 1891 until declaring independence on July 6, 1964 (Tangri, 1968). As a colony, Malawi failed to live up to British expectations. Therefore, the British tried to wean them from British aid by creating a labor force through forced taxes and driving natives to British posts, European run farms and mines or farms in other countries such as Zambia and Zimbabwe. This system of forced labor had a vast impact on Malawi's social system (Tangri, 1968). Missionary activities also aided in the spread of Western ideas and the diminishing of native ideals. Some missionaries looked at the culture of Malawi and surrounding countries as degraded and sought to fill their pupils with Western thought

(Forster, 1994). However, other missionaries inspired indigenous people to challenge white rule such as the Catholic Missionaries (Tangri, 1968).

Discrimination and demands for improved education led to the formation of movements toward greater independence for native Malawians. These dissident Malawian groups sought to establish their own schools and churches, independent of missionary control. In 1944, the Nyasaland (the name Malawi was known by under British rule) African Congress was formed to voice local concerns to the British government. This congress continued to protest discrimination over the next few years and urged the government to provide better educational facilities for its citizens. Initially the congress was weak, but it grew to empower a younger generation to seek a new political and social order (Tangri, 1968).

The Federation of Rhodesia and Nyasaland in 1953 amalgamated three southern African countries, Nyasaland (Malawi), Southern Rhodesia (Zimbabwe) and Northern Rhodesia (Zambia) which further bolstered the cause toward independence. Tangri (1968, p. 276) wrote “Africans now came to believe that the colonial government did not really represent or heed their views, and that only through Malawians themselves gaining control over their own affairs would their needs and demands be effectively realized and satisfied” (p. 276). In 1964, the Malawi Congress Party was soundly elected into office with 99% of the vote which led to Malawi becoming an independent African state (Lodge, Kadima, & Pottie, 2002).

After 70 years of colonial rule, Malawi faced many challenges as its leaders sought to establish a government for the people. While some areas have improved, other conditions remain dire. Malawi is one of the world’s least developed countries, with an economy heavily based on agriculture. An agriculture-based economy presents challenges in creating new jobs and a self-sustaining government. Malawi, therefore, is heavily dependent upon outside aid. The

HIV/AIDS epidemic has hit southern Africa hard, draining the labor force and government resources (Coombe, 2002). Education can be an important tool in reducing poverty and helping citizens become self-sufficient (Al-Samarrai & Zaman, 2007). The following section discusses the issue of teacher supply and demand in Malawi. The discussion includes the current challenge, some of the interventions, and strategies/policies that the government of Malawi has put in place in order to increase the supply of teachers in all public schools.

### **Teacher Supply and Demand in Malawi**

Like many sub-Saharan African nations, Malawi struggles with a shortage of teachers for both primary and secondary school levels. Current statistics indicate that this shortage is especially severe in mathematics, statistics, and other quantitative or technological disciplines (DeJaeghere et al., 2006). Further, the deputy principal of Domasi College of Education explained that the shortage is also severe in other science subjects such as biology, chemistry, and physical science (Mwaza, 2012). Current solutions, which include using poorly trained teachers and increasing class sizes substantially, have led to poor student outcomes.

In 1994, Education For All was enacted in Malawi, obligating the Malawian government to provide free primary education for all of Malawi's children. Malawi was one of the first countries to abolish fees for primary school in Africa (Al-Samarrai & Zaman, 2007; Ministry of Education and The Malawi National Commission for UNESCO, 2004). Between the 1993–94 and 1994–95 school years, enrollment in primary schools jumped 68% (Ministry of Education, Sports and Culture, 1998; Mizrachi et al., 2010). Because primary schools often have the largest enrollments, they likewise demand the greatest number of teachers (Mulkeen & Crowe-Taft, 2010). This drastic jump in enrollment posed a huge challenge to Malawian education officials as they worked to create programs to fill the sudden need for primary teachers.

Current national statistics indicate that the key factor in the expansion of primary school enrollment since the mid-90s was the abolition of school fees in primary school. There was an increase in enrollment from 2001 to 2003, but in 2004 there was a decrease. Reasons for the decrease are not known, but some have suggested the general elections that took place at that time affected enrollment rate. Teachers in many primary schools were involved in the election process as officials such as monitors and voter registration clerks. As a result, many classrooms had no teachers during elections (Smethem, 2007). The increase in primary enrollment has increased the enrollment rate in secondary schools; this has resulted in teacher supply and demand problem for both primary and secondary schools.

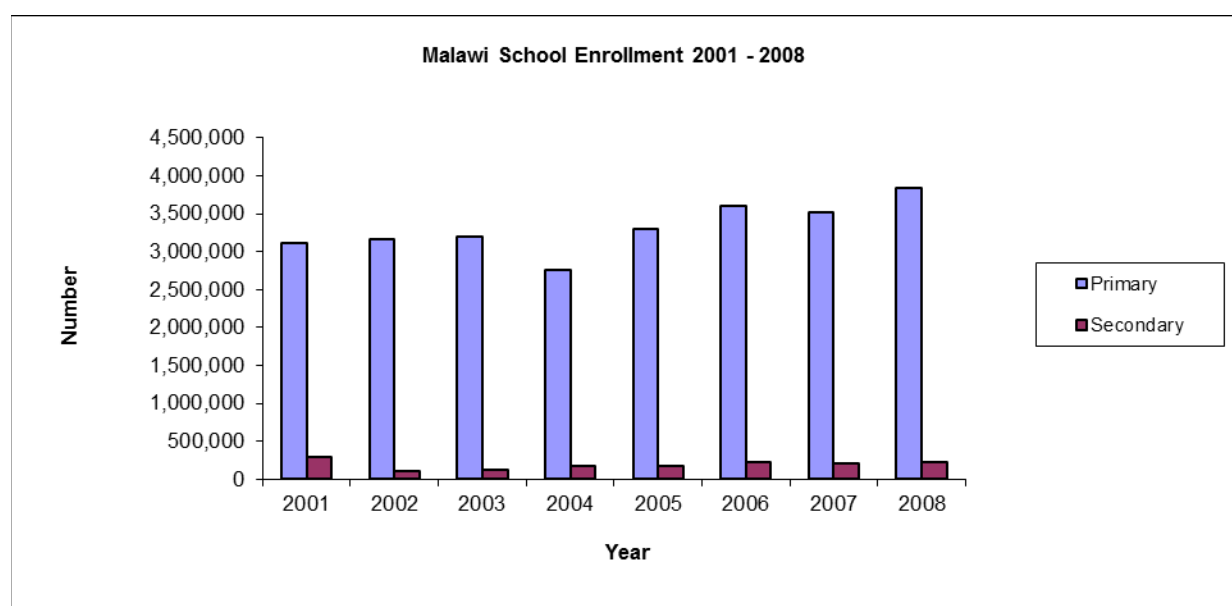


Figure 1. Malawi School Enrollment 2001–2008. Source MoEST (2008)

This population increase in Malawi's primary schools is concurrent with a decrease in the number of teachers. The inadequate supply of teachers is due to numerous issues, many of which will be outlined and discussed in this study. Policy makers and other decision makers in Malawi need a way to understand the subtleties and implications of data from different sources reporting supply and demand trends in order to facilitate a better aligned system for producing an adequate

number of high-quality teachers for the government schools in Malawi (JICA, 2010). The following section discusses some of the policies that the government of Malawi had put in place to reduce the high student teacher ratios in primary schools throughout the country.

### **Malawi Integrated Teacher Training Education Program**

To reduce the high student teacher ratio, Malawi's Ministry of Education Science and Technology (MoEST) introduced MITTEP (Malawi Integrated Teacher Training Education Program). MITTEP took individuals with no teaching experience and trained them in four months. However, MITTEP failed to provide the number of teachers needed to meet demand because of corruption and because such a short training period often did not produce teachers of high enough quality (Mizrachi et al., 2010). In response to the problems created by the MITTEP program, the Malawian government instituted a new primary teacher program that requires teachers to have a full year of residence at a teacher's college and then a full year school-based assignment. Each student teacher is assigned a mentor (another teacher, who is usually more seasoned than the new teacher) who assists the student teacher with lesson planning and provides daily guidance. Students also have advisers called primary school advisers (PEA) and tutors they can turn to for assistance (Mizrachi et al., 2010).

The Multi-Site Teacher Education Research (MUSTER) project (which studied teacher education over four years in a number of African countries including Malawi) found that in order to meet demand, pre-service teacher training would have to be tripled or quadrupled (Mpokosa & Ndaruhutse, 2008). Malawi's standards for teachers have remained relatively high with education officials refusing to hire unqualified teachers. However, primary teachers are often pulled up to secondary schools where they are not qualified to teach (Mulkeen, 2010). This system has other implications besides just shortages at the primary level. Primary teachers in Malawi are trained

to teach numerous subjects but secondary teachers, on the other hand, are trained as specialists in particular topics (Mulkeen, 2010).

One of the reasons Malawi has teacher shortages is the fact that they refuse to hire unqualified teachers. This is a good long term strategy. Over time, qualified teachers will contribute more to the education of Malawi's children than unqualified teachers would. However, the Dakar Framework for Action implementing Education for All did not allow enough time for MoEST to train qualified teachers. Mulkeen explains the drastic shortages created by this education policy.

In Malawi, the government policy was not to recruit unqualified teachers. The supply of qualified teachers was not sufficient even to replace the losses from attrition, and the overall number of primary teachers fell from 47,000 in 2000 to 43,000 in 2006, while the numbers of pupils in school continued to increase. As a result, by 2006, most primary teachers were qualified, but the pupil-teacher ratio had risen to 76 pupils per teacher (2009, p. 24).

As mentioned, the HIV/AIDS epidemic has had a drastic impact on the teacher shortages in Malawi and other many African countries. For example in Lesotho (a small country in southern Africa), about one third of teacher departures are due to terminal illness—most of which are assumed to be HIV/AIDS (UNESCO, 2000). As of 2007, around 12% of Malawi's population was living with HIV/AIDS, and around 70% of Malawi's hospital beds were filled with people suffering from HIV/AIDS-related diseases (Central Intelligence Agency, 2010). As large as the HIV/AIDS epidemic is in Malawi, it is no surprise that it affects the education sector. Around 6,000 teachers from both primary and secondary schools in Malawi died of HIV/AIDS between 2000 and 2001 (Anzar et al., 2004). HIV/AIDS can afflict any teacher, regardless of

qualifications, putting the school where they teach at a potential major loss (Dickovick, 2008). However the challenge of teacher supply seems to be countrywide, the problem is more severe in rural areas. The following section will discuss the issue of teacher supply geographically, with more focus on rural areas.

**Geographic location challenge.** The majority of teacher shortages exist in rural areas, where turnover rates are higher than in urban areas although both rates are in double digits (Anzar et al., 2004). Rural schools are a much harder place to teach because of cultural norms and expectations in the rural communities. For example, female teachers typically fill lower-prestige positions in the education sector than men and often take rural teaching jobs. But female teachers also migrate more as they marry and move to urban areas where their husbands have jobs, or take an urban post because they may not feel safe living as a single female in a rural community (Anzar et al., 2004).

In addition to these challenging cultural norms, there are often not many benefits to working at a rural school because of limited opportunities for advancement, lower pay, and living conditions associated with residing in a rural community. Most rural areas do not have access to electricity or safe and clean water. Adequate sanitation is often not available, and there is no security for teachers' property. Because of these issues, many teachers live far from the schools where they teach and they opt for places where they can find some basic needs rather than staying in a village without those resources (Rust & Dalin, 1990).

**Gender challenge.** Another problem contributing to issues surrounding teacher supply and demand in Malawi is the educational inequalities that still exist. Most of the teachers in rural schools are female, therefore, lack of education for females now will effect on teacher supply and demand in later years (Maluwa-Banda, 2004). It is ironic that in Malawi and worldwide, the



majority of the teaching force is female, but at the same time females are often marginalized while in school. It is important therefore that enrollment for girls should increase whereas dropout rates for girls should decrease.

Just before 1993, many girls in Malawi were not encouraged to study science, but were encouraged to take either home craft (home economics) or needlework instead. Small barriers, such as the lack of adequate bathroom facilities for girls or the banning of girls wearing pants, also discouraged girls from attending school. Often girls are prohibited from attending schools because of parental expectations, beliefs, and attitudes about education, household chores, caring for parents or other family members, and traveling dangers. Pregnancy and early marriage also prohibit girls from finishing secondary schools, as well as a lack of female role models to help guide them through their schooling (Maluwa-Banda, 2004).

The education of girls is pivotal because, as it is widely acknowledged among scholars, the education of a female has far-reaching effects for present and future generations through their direct impact on their children. Many individuals are educated by an educated girl, even if she does not become a teacher (Maluwa-Banda, 2004). In 2000, only 40% of students enrolled in secondary schools were females. The number drops even lower the higher the step on the education ladder—35% of those enrolled at teacher training colleges were women, while only 25.8% of enrollments at universities were women (Maluwa-Banda, 2004).

In recent decades, attitudes toward the education of girls have changed and continue to work on progress. Life skills such as assertiveness, building healthy relationships, and self-esteem are being taught, helping to overcome gender barriers (Maluwa-Banda, 2004). Bennell (2004a) described how the Malawi government, failing to meet their gender enrollment parity target by 2005, provided renewed focus to the education of the *girl-child*. “Some of the

initiatives undertaken to promote girls' education include: establishing girls-only schools and classes, stipends for girls, and vouchers that allow poor families to decide where their daughter(s) will attend school” (Bennell, 2004a, p. 10). The efforts made to provide equal educational opportunities for children of both genders will favorably impact the number and quality of teachers available in Malawi for future generations and mostly it will also increase the supply of teachers in rural areas.

**Funding challenge.** Malawi suffers from many of the same problems that other developing countries face when it comes to education funding. The education sector in Malawi and other developing countries lack the resources that developed countries have. In developing countries, education spending usually comes behind other priorities such as military spending and debt servicing (Chimombo, 2009). In 1998, 9 out of 29 developing countries had a survival rate<sup>1</sup> of 90% or more to grade five (Chimombo, 2009). Causes for such low survival rates include the need for children to work on family farms or the view of education in rural areas as outdated or lacking relevance. The cost of schooling also has a great impact on the decision whether or not a child will attend school. Anzar et al. (2004) explained that parents still foot the majority of the bill for schooling in the form of school supplies, uniforms, textbooks, and required contributions to school development funds—adding up to almost 80% of the cost of pupil expenditures.

As developing countries transition from an agriculture-based economy and off-farm employment opportunities increase, the need for education and qualified teachers also increases. Chimombo (2009) asserted that currently, education in developing countries is generally imported, too academic, passive, and rote. But, as previously mentioned, it can sometimes be

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<sup>1</sup> In the context of this study the terms survival rate and retention rate refer to the same thing. Survival rate will be used for the purposes of this study to avoid confusion in using two terms for the same thing.

difficult especially in rural areas of developing countries to get teachers to come teach, let alone teach a curriculum that is readily applicable, engaging, and relevant to local communities' cultures. A need for better education in developing countries is implied in the following from UNESCO's report, "A more knowledge-intensive world economy is gaining ground, necessitating a more skilled labor force. Quality primary education and the development of secondary education systems that promote problem-solving and critical-thinking skills are foundations for development" (2006, p. 8).

### **Factors Contributing to Teacher Shortages**

So far, teacher imbalances have been explored on a macro (worldwide) to micro (Malawi) scale. Within this dialogue, many of the factors contributing to teacher shortages were brought forward, including education policy, gender disparities, and disease. However, there exists a host of other factors contributing to teacher shortages. The following section will discuss in further detail those issues which contribute to teacher shortages in an effort to better explain the complex problem of teacher supply and demand. Without an understanding of such factors, grasping the issue of teacher shortage is difficult. Challenges such as Education for All, problems of policy, HIV/AIDS challenge, primary school enrollment, and primary school shortage are included in this section.

**Education for All.** In 1990, the World Bank implemented the phrase *Education for All* in response to crises in education mainly in Africa. During the 1980s, enrollment rates were lower than the rate of population growth (Brock-Utne, 2000). EFA was enacted to commit governments to provide basic education for all of its citizens—with a particular emphasis on the education of girls—by 2015 (UNESCO, 2000). EFA has particular implications for schools in

developing countries that have historically been riddled with prejudices, shortages, and challenges resulting from poverty.

According to a study done by UNESCO (2000), progress in achieving Education for All has been uneven and too slow. Their study showed

- Of the more than 800 million children worldwide under 6, fewer than one third benefit from any form of early childhood education.
- Approximately 113 million children have no access to schooling; of these, 60% are girls.
- At least 880 million adults are illiterate, most of them are women.

The goal of Education for All is to alleviate and eventually eliminate poverty. However, these aforementioned facts represent major barriers to eliminating poverty and attaining sustainable development (UNESCO, 2000). Education for All is highly dependent upon sufficient numbers of qualified teachers.

Barriers such as differences in geographic locations, lack of resources (especially funding), child labor, and cultural traditions can prevent the goal of EFA by 2015 from being realized. Major differences exist between rural and urban schools—81.2% of teachers in rural areas live in housing in need of major repairs and 30.6% of rural schools have no access to clean, safe water (Chimombo, 2009). Fyfe reported, “World Bank researchers estimate that for low-income countries, US \$32–37 billion per year is needed for primary education if EFA is to be obtained by 2015” (2007, p. 15). Cultural expectations that children ought to contribute to family finances can prevent many children from going to school, because school schedules are rigid and not accommodating to children who must shoulder burdens of domestic and financial responsibilities within their respective families (Chimombo, 2009).

**Problems of policy.** Many developing countries over the past decade have embarked on large education reforms aimed at rapidly expanding the education supply in order to achieve equity in the provision of education and significantly improving the quality of education (Miller et al., 2008). Besides the qualification and training of teachers per given area, the number and distribution of teachers are important policy parameters helping to determine the quality of education students receive (Lewin, 2002). At the school level, the most visible element of teacher deployment is class size, or pupil to teacher ratio, or in simple terms, the number of pupils a teacher has to teach. Even though many countries have tried their best to reform their education system, the process has had many challenges. As we have seen, many countries still have imbalances, and this problem is not a respecter of society or country. It is very important to continue to discuss these policies.

The EFA Global Monitoring Report Team reported

While the impact of class size on educational outcomes remains a matter of debate and depends on the pedagogy used, the very large class sizes observed in primary schools in many developing countries are clearly not conducive to adequate learning. Children in areas not yet covered by primary-school systems probably need smaller class sizes than the average because they are often first-generation learners from underprivileged social groups and are more likely to belong to a minority whose language is not used as a medium of instruction. Furthermore, curricula are usually divided into grades, requiring one teacher per grade for effective teaching or requiring special training in the case of multi-grade teaching. While data on class sizes and the number of teachers per grade in each school are not widely available, teacher deployment policies can be approached through the pupil teacher ratio. (2004, p. 114)

On the other hand, particularly in developing countries, teachers' earnings are often insufficient to provide a reasonable standard of living (Christensen & Redd, 2004). As discussed previously, in some countries teachers do not consider teaching as a career, but they teach while waiting for an organization to hire them on a permanent basis. In Malawi this is the case due to the lack of fixed pay schedules, the weak link between pay and performance, inactive teacher unions, poor hiring and retention strategies, and the ease of changing careers or moving to schools with better working conditions (Ministry of Education, Sports and Culture, 2001).

**HIV and AIDS challenge.** The HIV/AIDS pandemic is a global health issue that threatens to erode advances in education and development. It is no longer a secret that education has been affected due to this pandemic across the globe. HIV/AIDS has contributed to the shortage of teachers as it continues killing many teachers in developing countries (Kadzamira & Rose, 2001).

According to statistics, three major diseases kill about six million people globally each year, and these diseases are HIV/AIDS, tuberculosis, and malaria. The problem is more severe in sub-Saharan Africa. These diseases have an obviously devastating impact on school systems. Africa alone has lost many teachers and students due to HIV/AIDS. Projections from UNESCO (2004) indicate that the number of AIDS orphans under age 18 was expected to exceed 25 million by 2010. However these projections were not so accurate because UNAIDS reported that there were about 17,300,000 children under the age of 18 orphaned by AIDS in 2011 (UNAIDS, 2012). This could partly be because of the availability of anti-retroviral drugs (ARVs). Teacher absenteeism and deaths caused by HIV/AIDS, meanwhile, directly affect the provision and quality of education. Health and nutrition interventions in school affect attendance and learning and are essential for moving toward universal primary education UPE (UNESCO, 2008a).

Some progress is being made in sub-Saharan Africa, where countries are making a significant effort to combat the spread of HIV/AIDS. Bennell suggested that

Per capita incomes in the HPCs in Southern Africa have remained among the highest in the continent. Good economic management has enabled these countries to achieve very high rates of economic growth and diversified their economies away from their previous very strong reliance on minerals. This relative affluence coupled with good medical provision and communications and transport infrastructures, has enabled the governments in these countries to distribute anti-retroviral drugs (ARV) to everyone who has needed them. (2004a, p. 5)

Many countries in Southern Africa are doing well because in many cases ARVs are available to people for free. It might be worth noting that ARVs only help to prolong life, but they are not a cure for AIDS. Many teachers who are taking ARV remain in teaching longer than if this type of treatment were not available for them.

Bennell (2004a) further suggested that cumulative AIDS-related mortality among teachers had grown appreciably during the late 1990s, and the number of AIDS orphans was also accelerating rapidly. Traditionally people in Southern Africa believed that teachers were a particularly high-risk group due to low salary scare most of them especially women get involved in extra marital affairs in order to get financial support from other men. This was the case during the early stages of the epidemic in some heavily indebted poor countries (HIPC) but, by the end of the 1990s, there was considerable evidence to show that teachers had changed their behavior in order to become less prone to infection (Bennell, 2004a; World Bank, 2012).

It is expected that by the year 2025, the HIV/AIDS epidemic will have affected almost two generations of teachers. In the HIPC, more teachers have been dying than have been

trained, so these school systems have become increasingly reliant on untrained and thus largely ineffective teachers (Bennell, 2004a). Governments are experiencing huge challenges to solve the problem because HIV/AIDS is constantly aggravating the teacher shortage. Further complicating matters, teachers are heavily concentrated in the 20–39 age range, where HIV prevalence has remained highest.

**HIV/AIDS in Malawi.** In Malawi, like many other countries in sub-Saharan Africa, the problem of HIV/AIDS among teachers is cumbersome. Out of 15.5 million people, about one million are living with HIV in Malawi. The adult prevalence rate in Malawi is 14%, very high compared to other developing nations. Malawi has not had the resources to distribute ARVs widely despite free access to the drug. Because the pandemic is a major cause of teacher absenteeism and attrition in Malawi, it is a very important contributor to consider when studying teacher supply and demand (UNAIDS, 2009).

HIV/AIDS affects geographical locations in Malawi differently, and it is important for MoEST to know the most affected areas. HIV prevalence is around 17% in urban areas, compared to almost 11% in rural areas (UNAIDS, 2009). However, some studies suggest that the prevalence rate in Malawi is declining in many urban areas and rising in many rural ones (Bragg, 2007). Some reports have shown that in Lesotho and Malawi, about a third of all teacher departures are due to terminal illness, most of it presumably HIV-related (UNESCO, 2008a). The problem of absenteeism due to HIV/AIDS-related illnesses is high not only among the teachers, but also the students. In 2009, an estimated 120,000 children in Malawi were living with HIV, and more than 500,000 children had been orphaned due to AIDS (UNAIDS, 2009) .

As discussed, HIV prevalence among teachers and other labor groups in Malawi is high. The numbers are highest among prostitutes, at 70.7%, while female police officers are at 32.1%



and male teachers in primary schools who are infected are at 24.2% (UNAIDS, 2009). From these figures we can clearly see that the percentage of teachers who are infected by this virus is problematic.

In Malawi, teachers who are ill are reluctant to go on long-term sick leave mainly because of concerns about loss of income and pension entitlements. Many sick teachers continue to work, therefore, until such a time when they are simply too unwell to do so (Kadzamira & Chibwana, 2000). The Malawian government is reluctant to change regulations for sick leave for fear of being accused of discriminating against people living with AIDS. This puts schools in great danger, because a school sometimes may be registered as having enough teachers, but in reality few teachers are active, with some not showing up for work due to illness (DFID Malawi, 2007).

One of the biggest challenges the government faces comes when they deploy infected teachers in areas where vacancies were created by HIV/AIDS. Such teachers do not stay very long because of their own illness, and the government does not have authority to ask the status of new hires. This continues to aggravate issues of teacher supply and demand (World Bank, 2010).

Sadly, the provision of ARVs in Malawi has not significantly mitigated the impact of the pandemic on teachers. There have been numerous problems, including poor compliance, limited access to medical facilities, and, surprisingly, considerable reluctance among most teachers to go for voluntary counseling and testing (VCT). It is hard to understand why many teachers are not willing to go for VCT because there is not the discrimination now that existed in the mid-80s when the problem was new in the country. The government should come up with some measures to encourage teachers to go for VCT (UNAIDS, 2009).

**Primary school enrollment.** Ministry of Education statistics demonstrate that in Malawi, since the introduction of free primary education (FPE) in 1994, enrollment has increased from 1.9 million to 3.9 million students (Kadzamira, 2003). Secondary enrollments are also estimated to have increased from approximately 444,062 in 2000 to 540,735 in 2009. Statistics at the MoEST indicate that secondary net enrollment rates (enrollment of the official age group for a given level of education, expressed as a percentage of the population in that age group) have dropped slightly over the course of that same decade, from 29% to 25%. On the same note UNESCO (2010b) suggested that enrollment capacity, even if increasing, has not kept up with population growth. Just as in primary schools, poor teacher quality and numbers, along with other educational problems, have led to increased secondary student dropout rates and consequently plummeting enrollments (Kayuni, 2010).

According to Malawi's National Statistics Office (NSO), there was a total of 769 secondary schools in 2009, comprising a combination of conventional (nationally funded), community day (mostly locally funded), and private secondary schools (Machinjiri, 2009). These secondary schools span 33 school districts, are both urban and rural schools, and include the equivalent of grades 9 through 12 in the United States. However, most of these secondary schools do not have qualified teachers.

The rapid growth of primary and secondary school enrollment in Malawi has also increased the demand for well-trained teachers for both levels. Even though the Malawi Institute of Education in Domasi and other smaller teacher training colleges are producing teachers every year, the country has not been able to meet the demand for new, qualified teachers (Jackson & Bruegmann, 2009). In many locally run community day secondary schools, teachers were trained

only to teach primary school or did not themselves pass the subjects that they currently teach (Kayuni, 2010).

**Primary school shortages.** While Africa's education system faces a number of challenges, one of the biggest challenges is the shortage of schools. Even where facilities do exist, classroom space is limited, often with 70 to 80 children in one classroom. In addition, many schools are in poor condition with the simple and aging classrooms unable to provide enough shelter from the weather, and lacking seats and desks (JICA, 2010).

Since the introduction of FPE, numerous policies, budgetary and multilevel commitments have contributed to significant progress in education. However there are still immense challenges in attempting to provide universal free basic schooling. One of the biggest challenges is the shortage of infrastructures such as classroom blocks and there is also insufficient number of primary schools to meet the demand (United Nations DPADM, 2004).

There are over 5,500 primary schools in Malawi, and this number is increasing rapidly in order to keep pace with the rising national enrollment rates. There is an average of 620 pupils per school, but this figure hides much variety between schools. Many schools in urban or peri-urban environments have in excess of 1,000 pupils. This is in contrast to many rural schools which are much smaller and operate with little resources or infrastructure. Most of these schools have few classroom blocks therefore most students learn under the tree (DFID Malawi, 2007).

### **Future Problems**

Imbalances in teacher economics is expected to become more dire in coming decades, especially if no proper measures are put in place. Mpokosa et al. stated

Management of education has many dimensions, but the biggest investment of funds and human resources has always been and should always be in teachers. With 18 million new

teachers needed by 2015, it is vital that governments and donors prioritize teacher management. (2008, p. 11)

This section discusses some of the future problems. Some of them are current problems that will become more severe in the near future if no proper control measures are implemented. Issues such as rural challenges, low attrition, retirement, and teacher quality will be discussed.

**Rural challenges.** One of the perennial challenges of teacher economics is teacher imbalance in rural versus urban areas. Previous research shows this problem can be found in developing as well as developed countries. In both Spain and Sweden, schools located in towns with a population of less than 15,000 were more likely to experience teacher shortages (White & Smith, 2005). In Malawi, once a female teacher is hired in an urban area, it is virtually impossible to replace that teacher, as most of female teachers stay in urban areas due to family issues (Mpokosa & Ndaruhutse, 2008). However, rural areas deserve equal, if not increased, attention as developed areas. Duthilleul (2005) estimated that for the next 20 years, the majority of those living in developing countries will live in rural areas.

A lack of proper education in rural areas of both developed and developing countries continues the cycle that perhaps prohibits a certain area from economically progressing. This is especially true in developing countries where resources are limited even in the most prosperous of areas. Mpokosa et al. stated

High turnover rates leave some posts in remote areas vacant having a detrimental impact on the classroom. In these circumstances, either pupils from several classes are combined into one very large class, creating additional stress for the one teacher trying to teach a class of perhaps up to 100 pupils, or it means that one teacher moves from class to class doing blocks of teaching and then leaving the pupils without a teacher for several hours

each day. (2008, p. 35)

Other schools employ multi-grade teaching without properly preparing teachers for such a task. This practice clearly has an impact on the quality of education pupils are receiving. This situation may discourage parents from sending their children to school and lessen the positive impact education can have in lifting families and individuals out of poverty. Mpokosa et al. (2008) also found that students are required to repeat grades because of inadequate teaching. This is done at a significant cost to education systems and governments, as repeaters take up space needed for new students and use money that could be used to improve the quality of teaching. For example, in Malawi, 60% of educational resources were wasted at the primary level—the Malawian government was financing 20 school years to produce one graduate from primary school (Bello, Chipeta, & Aberle-Grasse, 2006). If students were graduating on time, the Malawi government would only be financing an eight year education.

The situation is also dire in other African nations. In 2003, 43% of education resources were wasted in Lesotho due to repetition and dropout. In Swaziland, more than 40% of resources were wasted due to repetition and dropout. In Burundi, a small Eastern African country with a population of approximately 10 million, more than half of education resources were spent on repetition and dropout (Central Intelligence Agency, 2011).

Such waste in educational funding does not encourage governments or parents to invest in the education of their children. In rural areas where teachers are absent or must teach large classes because of shortages, parents who often need their children to work to help support their families are more reluctant to send their children to school. Mozambique, Congo, and Ethiopia average around 80 students per class. With this many students, teachers must also act as crowd control and often have to resort to rote, efficient methods of teaching that are not always

effective. Classrooms like this encourage student dropout and repetition—in this way schools are creating the very inequalities they are trying so hard to overcome (Barber & Mourshed, 2007).

If a student can gain access to primary education and graduate, opportunities for further education might be limited. Secondary schools are even wider dispersed in many rural areas than primary schools (Duthilleul, 2005). A student's chance of succeeding is even more limited by the fact that the least qualified teachers are usually posted to rural schools because that is where they can find jobs. In Namibia, for example, only 40% of rural teachers are qualified, while 92% of teachers in the capital city are qualified (Barber & Mourshed, 2007).

Rust et al. (1990) stated that measures must be taken in order to ensure the right teachers with the correct training are employed at rural schools. Teaching at a rural school is not viewed favorably by many teachers. This is evidenced in Brazil, Venezuela, and Mexico, where long waiting lists exist for teachers wanting jobs in urban areas. In rural areas, there are no such lists; there are always available positions. However, teachers are either unwilling or unable to travel to or live in remote areas. Rust et al. further explained the complexities and challenges involved in rural teaching posts

A major issue confronting many countries is that of staffing rural schools, particularly in disadvantaged regions. Such schools often suffer from isolation, are often less well equipped than urban schools and suffer more from the problem of adapting educational content and methodology to the cultural and social environment. Teachers find themselves and their families disadvantaged in terms of access to educational opportunities, libraries, transport, and other such facilities. Consequently, qualified and experienced teachers are reluctant to move to stay in such schools. (1990, p. 136)

Rust et al. (1990) further proposed methods for correcting teacher shortages in rural

areas. These include recruiting individuals from rural areas and offering to train them as teachers. These individuals already have the necessary knowledge to navigate the language and culture of the rural area, something that might prohibit another teacher from being successful there. Incentives are also helpful. For example, rural schools in Alaska and Pennsylvania have policies which reward teachers with cash incentives and lifetime health care coverage if they teach for a certain period of time (Dessoiff, 2010).

**High attrition.** Some teacher shortages are due to high attrition rates. Smethem (2007) cited a study conducted by Darling-Hammond that found teacher retention rates to be critically low—in the US at least 30% of new teachers leave the profession all together within five years (Pytel, 2007; Smethem, 2007). Additionally, Belfield et al. (2006) depicted the current teacher market in the US and discussed some of the problems that keep the teacher market inflexible and resistant to reforms. The earlier exposition about sub-Saharan Africa has distinct differences between an idealized, flexible labor market and the market teachers' face in the US. The labor market structure has resulted in a highly experienced, highly credentialed, almost entirely female workforce with high rates of turnover and attrition. Some studies in the United States show that teachers returning after a career break do not contribute significantly to the overall supply. Many returning teachers never teach full-time again (Bragg, 2007; Reynolds, Ross, & Rakow, 2002). Most of these studies have identified alarming attrition rates among beginning teachers in United States.

There are some similar concerns in Europe. For example, Barmby's (2006) study of 246 teachers in the United Kingdom found that although more intrinsic and altruistic reasons were given by teachers for going into teaching, the issues of workload and pupil behavior were found

to be most important in dissuading teachers from entering the profession or possibly causing them to leave teaching.

The study conducted by Barnby (2006) also concluded that in order to have an impact on teacher numbers, officials need to tackle the issues regarding workload and pupil behavior from the perspectives of teachers. Teachers gave several reasons for leaving teaching in this study, but the top ones were workload, government initiatives, stress, school administrations, working hours, student behavior, lack of promotion prospects, too few school resources, too many responsibilities, low pay, job satisfaction, morale, and motivation among teachers (2006).

The results of a study of data from England and Wales about teacher movement, attrition, and retirement revealed the troublesome sign that a relatively high proportion of teachers who left the profession or moved to part-time service were under the age of 40. The study shows that in 1999–2000, 57.5% were less than 40 years of age. A higher proportion of women under 40 (61.5%) left the maintained sector compared to men (54%). This coincides with the child-rearing age. The question is how many of these women (many of whom left presumably for childcare reasons) would return (Reynolds et al., 2002).

On the other hand, young women who leave do not necessarily do so for childcare reasons, and they are not necessarily leaving schools that are considered to present more difficulties. In fact, many teachers who leave the profession are unlikely to return. Studies in the United States, for example, show that teachers returning after a career break do not contribute significantly to the overall supply. Many returning teachers never teach full-time again (Castle & Arends, 2003). Whereas in Peru only one in every five teachers wants to remain as a classroom teacher, the majority want to stay involved in education but move to either management



positions or other aspects of education, such as curriculum development or inspection, where presumably the levels of pay are higher (Fanfani, 2004).

The impact of teacher turnover is more severe in Africa than in Asia where there is a stronger central control over teacher deployment. In some countries teachers have to pay bribes to be transferred, putting this option out of the reach of many teachers (Appleton, Sives, & Morgan, 2006). In Africa the issue of teachers paying bribes is not common, even though few countries even practice that.

In Sudan, a county-level Sudanese education official commented on the poaching of teachers by nongovernment organizations (NGOs). According to Sommers, “teaching in southern Sudan has become a waiting place; it’s not a profession” (2005, p. 70). He further suggested that some teachers just teach when they have nothing else to do, but when an opportunity comes, they leave. The most qualified teachers change their profession very often and they often go work with NGOs. As soon as they get an opportunity, they shift (Sommers, 2005).

In sub-Saharan Africa, due to HIV infection rates, most qualified teachers and education officials are being lost. Coombe suggested that

Teachers are particularly vulnerable to infection because of their comparatively high incomes, often remote postings, and social mobility. Other teachers are being lost as they leave education for better jobs elsewhere. The capacity of colleges and faculties of education to keep up with educator attrition will be undermined by their own staff losses. There will be fewer tertiary students as secondary school output and quality goes down, and as higher education itself declines due to staff attrition. (2000, p. 2)

**Teacher attrition in Malawi.** In Malawi, like many other sub-Saharan Africa countries, the problem of high attrition is very severe. Other concerns such as teachers' salaries and deployment feature crucially in discussions about conditions of teacher service. In a survey of teachers in Malawi, Zambia, and Papua New Guinea by Voluntary Service Overseas (VSO) (Tudor-Craig, 2002), three primary concerns besides low pay emerged. Allowances and incentives were considered insecure, inequitable, and often not included in pension plans; payment of salaries and allowances were late; and accommodations, where available, were in poor condition.

The survey also noted the scarcity of promotion opportunities, the personal costs of furthering professional development through study, and a lack of transparency and equity in promotion processes. These are some of the factors that contribute to high teacher attrition in Malawi. There is no doubt that collectively, such conditions help explain why some teachers leave the profession and many feel their professional status is undermined.

The study concluded that in countries such as Malawi, Zambia, and Papua New Guinea, where teachers are poorly managed and poorly paid, if there are alternative jobs available, they will be tempted to change jobs to find either more lucrative work or work where they are more highly regarded and given greater opportunities even if the level of pay is no higher (Tudor-Craig, 2002).

In Malawi alone, teacher attrition rates are reportedly very high among both primary and secondary teachers (Moleni & Ndalama, 2004). At current levels, it is estimated that more than 4,000 replacement teachers will need to be recruited each year for the primary sector alone to replace those lost through attrition (retirement, death, resignations, or transfers to nonteaching posts).

Further turnover in Malawi showed attrition of teachers was 15% and 19% at primary and secondary schools in 2004. Teacher transfers accounted for well over half of all departures from both primary and secondary schools. Nearly 10% of the teachers transferred to new schools within the year. Attrition rates were five percent for primary schoolteachers and nine percent for secondary schoolteachers. The study by Moleni and Ndalama (2004) found that the main causes of turnover at the school level were transfer and death.

Based on these sources, there is a clear indication that teachers in Malawi and other African countries have low levels of job satisfaction and are poorly motivated (Ministry of Education and The Malawi National Commission for UNESCO, 2004). Many tens of millions of children in Africa are, therefore, not being taught properly and are not receiving even a minimally acceptable education. Many teachers are not willing to stay in the teaching career for a long time due to the same problems, hence low attrition.

To summarize the issue of teacher attrition, the International Task Force on Teachers for EFA, suggests that the causes of teacher attrition are varied and for each individual teacher the decision to leave the profession may be influenced by a variety of factors. Mostly the causes of attrition have been summarized and grouped into four main categories as indicated in Table 1.

**Retirement of teachers.** According to Education International, between 24 and 40% of teachers are age 50 or higher and plan to retire within the next 10 years (Miller et al., 2008). In a survey conducted in Geneva and Switzerland, the results showed that about 50% of the teachers there take early retirement, mostly one year before reaching retirement age (Müller, Raffelhüschen, & Weddige, 2009).

The study further suggested that more than one third of teachers in Switzerland make such a choice less than three years before reaching the retirement age. It also indicated that 59 years is the average age for teachers who normally take the advantage of early retirement.

Table 1  
*Factors of Teacher Attrition in sub-Saharan Africa*

Category	Possible Factors
Demographics	Retirement age and policies Age profile of teaching force Marriage
Personal factors	Family responsibilities Illness Labor market conditions
Pull factors - alternative employment	Relative pay of teachers Relative pay progression of teachers
Push factors - dissatisfaction with Teaching	Conditions of schools Living conditions at post Management within school Management within education sector Poor school climate Low job satisfaction

Source: International Task Force on Teachers for EFA (2010)

In primary schools, where the majority of teachers are women, many leave the profession at a younger age. Data shows that 57 years is the average age most of these women teachers leave their professions (Müller, Raffelhüschen, & Weddige, 2009). Muller (2009, pp. 586-587) concluded that

According to the results of our study, two pushing factors have a key influence on early retirement decision: *changes in work conditions* (e.g. the manner of implementing institutional changes (50%), the effort put into disciplining rather than into teaching students [44%]), and *workload*, such as the evolution of work contents (55%) and an increasing workload (50%). Two pulling factors also made a considerable contribution to

the choice of those opting for early retirement: *the Plend characteristics*—especially with regard to the advantageous conditions involved (e.g. the attractiveness of the retirement package [63%])—and the desire to spend more time on *leisure* activities (to profit from their remaining energy (84%) and to devote time to their hobbies [69%]). (pp.586-587)

A few studies in sub-Saharan Africa have shown that some teachers go on early retirement because of psychiatric reasons. For example, a study that was conducted by the Department of Psychiatry, Faculty of Health Sciences at University of Stellenbosch in Cape Town, South Africa investigated about 81 school teachers around Cape Town area. The teachers had been declared permanently medically disabled as a consequence of psychiatric disorders (Emsley, Emsley, & Seedat, 2009).

The study concluded that work-related stress is a major factor in South African teachers with occupational disability on psychiatric grounds. As a result of this, many teachers go on early retirements because they cannot perform their duties effectively. Most teachers who participated in this study were relatively young; their average age was 44 years. Thirty percent had prominent underlying obsessive-compulsive personality traits, and 46% displayed classroom phobia. Again, this seems to be another major issue governments need to consider when dealing with issues of teacher supply and demand (Emsley et al., 2009).

In Malawi, government employees retire from the public service upon reaching the mandatory retirement age of 55 years with a minimum service of 10 years, by voluntary retirement after 20 years pensionable service, or with the consent of the Minister of the Public Service with a minimum of 10 years of service and having reached 45 years of age (United Nations DPADM, 2004). Under this law, teachers in public schools retire at the same ages, because they are considered civil servants. Most teachers join private schools after retiring from

public schools. However, because of teacher shortages, some retired teachers are recalled to serve on a month-to-month basis (Bennell, 2004b).

**Teacher quality.** The EFA initiative has done much to meet the quantitative targets of educational access at the expense of teacher and teaching quality (Chimombo, 2009). Teachers are a key enabling factor in improving the quality of education. The evidence of this and many other reports is that teachers are critical to any reforms designed to improve quality. There have been several studies around the globe about teacher quality and why it is important to recruit good people to serve as teachers.

Barber and Mourshed highlighted the importance of selecting the right people to become teachers

The top performing school systems consistently attract more able people into the teaching profession, leading to better student outcomes. They do this by making entry to teacher training highly selective, developing effective processes for selecting the right applicants to become teachers, and paying good (but not great) starting compensation. (2007, p. 12))

Concurring with Barber and Mourshed, Mpokosa and Ndaruhutse suggest that

Taken together, all the evidence suggests that even in good systems, students that do not progress quickly during their first years at school, because they are not exposed to teachers of sufficient caliber, stand very little chance of recovering the lost years. (2007, p. 44)

The process of preparing good teachers is critical to education quality. Preparing teachers for the challenges of a changing world means equipping them with subject-specific expertise, effective teaching practices, an understanding of technology, and the ability to work

collaboratively with other teachers, members of the community, and parents (UNESCO, 2004).

According to UNESCO

Available data suggest that large proportions of primary-school teachers lack adequate academic qualifications, training and content knowledge, especially in developing countries. This suggests that much pre-service training may be ineffective. Pre-service training usually combines theoretical and content knowledge with teaching practice in schools but there are wide variations in the relative weight given to these two elements and in their modes of delivery. In some countries, where there is a pressure to recruit new teachers quickly, and the length of college-based training is shortening and the sequencing of practical and academic training changing. (2004, p. 108)

Globally, as in all jobs requiring a qualification that provides access to multiple career paths, the salaries and conditions of service offered to teachers can have a significant impact on the composition of the profession and the quality of teaching (Hussar, 1999). If we want to fill our all classrooms with quality teachers, we must also offer competitive conditions of services as well as good and attractive salaries. Dessoiff (2010) argued that teacher performance is affected by the quality of a teacher's peers.

Another study conducted by Jackson and Bruegmann (2009) found that less-experienced teachers are generally more responsive to changes in peer quality than more-experienced teachers, suggesting that novice teachers should be exposed to effective, experienced teachers. Their evidence of what they call the spillover effect demonstrates the importance of veteran teachers modeling excellence for novice teachers. This can help the novice teacher gain experience and become better quality.



Again globally, with many factors influencing education quality at the school level, teachers are now recognized as the critical factor (Darling-Hammond & Bransford, 2005). Teacher quality, teacher learning, and teacher improvement, therefore, are becoming the intense focus of researchers, policy makers, program designers, implementers, and evaluators (Verspoor, 2005). More literature indicates that a positive and clear policy environment and adequate support for growth are essential for creating and sustaining teacher quality (Fanfani, 2004). Darling-Hammond (2000) suggested that ongoing, relevant professional development activities are also necessary for continuing teacher learning and effectiveness.

Van Graan and Leu suggest that

International and US-based scholars and specialists on teacher learning have long supported the view that successful school reform is best achieved by helping teachers and schools become inquiring collaborative organizations rather than by prescribing practice from above. Collaboration and inquiry make teachers and schools engaged subjects, rather than the objects of policy reform. Studies support the view that continuous teacher development is a key to raising learner achievement. In the process of improving quality, the entire school community needs to be engaged as a network of support. (2006, p. 9)

In many developing countries, levels of subject knowledge are a problem. A recent study in seven southern African countries found that some primary school mathematics teachers possess only basic numeracy, actually scoring lower on tests than students (Sommers, 2005). Provision of training and other forms of support based on relevant quality indicators can help build the confidence of undertrained teachers and enable them to become more competent.

In Malawi, many efforts have been made in order to improve the quality and quantity of teachers. One such effort was the Malawi Integrated In-service Teacher Education Project

(MIITEP) (Mwakapenda, 2002). This was a mixed college- and school-based program designed in response to the demand for teachers brought about by universal free primary education. The majority of trainees were untrained teachers, and they underwent a two-year skills-based program, most of which was school-based supervised distance learning (Mpokosa & Ndaruhutse, 2008).

Although the program had many problems, including its suspension due to funding difficulties, there are a number of examples of good practice that indicate school-based training is possible, even in resource-poor environments (Kunje & Chimombo, 1999). These include the use of locally written, well-illustrated student-teacher handbooks, which outlined the structure of the course and stimulated discussion; zonal seminars for trainees, where practical and relevant skills were exchanged; and the enabling of successful mentoring between experienced teachers and trainees (Stuart & Kunje, 2000).

MIITEP was a mixed-mode teacher education program, meaning that part of the course was spent in schools and part was spent in residence at teacher training colleges (TTCs). By adopting this mode of teacher education, the government of Malawi was able to train teachers relatively economically from as wide a geographic spread as required (Oplatka, 2007). Other studies have shown that, with sustained classroom support, distance education can be effective under these circumstances (Perraton, 1993).

However, the challenges in Malawi's education system, as outlined above, are so immense that even excellent projects such as MIITEP, GABLE, IEQ/Malawi, and QUEST have had only a minor impact on quality. The reason these did not improve educational quality is the lack of amenities (textbooks, supplies, sufficient classrooms, etc.). The MESA program both focused on teacher quality and solved the problem of insufficient amenities, however there needs

to be some continuity of such programs if we are to improve the standards of education in Malawi (Ministry of Education, Sports and Culture, 2001).

### **Data and Reality**

One of the greatest challenges facing education policy makers in developing countries is access to data which is relevant, timely, and accurate on which to base their policy deliberations. Consequences of poor quality of data are often experienced in everyday life, but often without making the necessary connections to their causes. Scholars and policy makers on the national and international levels assume that the numbers used in analyzing teacher supply and demand project what is really happening on the ground. But a careful review of available data, often even from the same authoritative sources, demonstrates that there are reasons for serious concerns regarding this assumption. This section discusses the issue of data and reality. The section suggests that many of these problems have their roots in the manner in which figures are presented and interpreted.

**Institutional and world view of data.** In order to have a clear picture or a better understanding of this problem globally, it is instructive to start by reviewing the work of William Kent in his book entitled *Data and Reality* (Kent, 2012). Although Kent is clearly targeting a technical audience, and its scope extends beyond computer technology, and the recommendations he gave applies in many disciplines. Kent is not focusing as much on how we process data but as on how we perceive reality. Further, he discusses the constructs and tactics we use to cope with complexity, ambiguity, incomplete information, mismatched viewpoints, and conflicting objectives (2012, p. xv). Kent also argues that we lack a clear and commonly agreed upon set of notions about data, including such issues as what data are, how they should be

gathered and maintained, and their relationships to the subject at hand, in this case teacher supply and demand.

Policy makers on the national and international levels assume that the numbers used in their data sets project what is really happening on the ground. A careful review of available data, often even from the same authoritative sources, demonstrates that there are reasons for serious concerns regarding this assumption. One can conclude that some of the policies have been put in place based on wrong projection due to complexity, ambiguity, incomplete information, mismatched viewpoints, and conflicting objectives of the data sources.

A good example of this problem is data from UNESCO on the projection of required number of primary school teachers by 2015 in order for the world to achieve Universal Primary Education (UPE). UNESCO presented the global teacher supply and demand situation.

The world needs about 18 million teachers if we are to achieve Universal Primary Education (UPE) by 2015. These numbers increase dramatically if trained teachers are considered or if teachers at other levels are included, e.g. early childhood, secondary, vocational/technical, and non-formal education. (2008b, p. 2)

Yet, just three years later UNESCO (2011, p. 25) estimated that in order to achieve universal primary education by 2015, an additional 1.9 million teachers would be needed to fill the teacher demand-supply gap. Based solely on these figures, one may conclude the global need for more teachers has been rapidly decreased from 18 million to only 1.9 million in three short years – closing the need gap at an astonishing rate of 5.37 million teachers per year. Casually extrapolating from this trend would lead one to conclude that the remaining gap of 1.9 million teachers could be filled in a mere four months.

Another example is found in the teacher-student ratio located in the same GMR (UNESCO, 2008a) where it indicates that the teacher-student ratio in sub-Saharan Africa is 40:1. This ratio is not in line with the global standards because the number of students is too high. Yet in 2012, just four years later, the same organization suggests that the numbers of students taught per teacher have reduced so rapidly (and unrealistically so) that now the student teacher ratio in sub-Saharan Africa is 27:1 (UNESCO, 2012a). This would be considered great news, since from these GMR-reported 2012 data one would be led to conclude that sub-Saharan Africa is doing much better with their student teacher ratios even than many other developed countries in continents like Europe.

On February 8, 2011 the daily mail newspaper in the United Kingdom reported that currently the state primary schools had an average of 1:26 and that the maximum by law is 1:30 students. The paper further suggests that the government is calling to reduce this to 1:20 by the year 2020 (Daily Mail Reporter, 2011). If the United Kingdom, a developed country, is calling to reduce the class size to 20 students by 2020 one would wonder how could sub-Saharan Africa managed to reduce pupil teacher ratio from 1:40 in 2008 to 1:27 within a period of two years.

Upon further inspection of the data, however, it is clear that these two projections contain significant discrepancies, and that the teacher supply and demand gap as well as student teacher ratio have not closed as rapidly as implied. If UNESCO, which is arguably the second most influential organization in comparative education after World Bank (Cook et al., 2004), can generate numbers with such widely discrepant implications, one would reasonably wonder what other challenges with data accuracy and implications exist within and between other organizations.

Further, if such an influential organization as UNESCO can generate numbers producing such discrepancies, what more challenging data-based issues might a small nation like Malawi encounter when trying to gather reliable and valid data from various organizations? These figures can be interpreted in many ways; hence it can be reasonably concluded that the reliability and consistency of any one of these figures is potentially very low.

The issue of data inconsistency affects even developed countries. In United States several studies have been conducted to assess the quality of data used by the educational system. A study conducted by Guarino et al. (2006) reported the scarcity of reliable data on teacher retention and attrition in the US. He suggested that this scarcity of data has overall implications regarding recordkeeping about teacher employment. Whereas Macdonald (1999) suggested areas of deficiency of data in the US, he first noted that there is no clear definition of a teacher. One cannot separate between part-time and unqualified teachers. Further, lack of a proper definition can cause confusion between teacher mobility and attrition. The available data do not provide adequate information to conduct an adequate analysis for issues dealing with demographic and age. Finally, Macdonald (1999) argued that there are no data to show number of teachers who left the profession and then returned later.

In addition to these individual studies, the U.S. Department of Education has published several informative documents in recent years dealing with the topic of education data quality and how can be improved. Although such documents offer solid guidance on how education agencies can improve data quality with a focus on policies, procedures and responsibilities, still there are some gaps which need to be considered (Keigher & Cross, 2010). For instance, U.S. Department of Education has indicated six data quality challenges across the educational system in the US.

1. System non-interopability. Data collected in one system are not electronically transmittable to other systems. Re-inputting the same data in multiple systems consumes resources and increases the potential for data entry errors.
  2. Non-standardized data definitions. Various data providers use different definitions for the same elements. Passed on to the district or state level, non-comparable data are aggregated inappropriately to produce inaccurate results.
  3. Unavailability of data. Data required do not exist or are not readily accessible. In some cases, data providers may take an approach of just fill something in to satisfy distant data collectors, thus creating errors.
  4. Inconsistent item response. Not all data providers report the same data elements. Idiosyncratic reporting of different types of information from different sources creates gaps and errors in macro-level data aggregation.
  5. Inconsistency over time. The same data element is calculated, defined, and/or reported differently from year to year. Longitudinal inconsistency creates the potential for inaccurate analysis of trends over time.
  6. Data entry errors. Inaccurate data are entered into a data collection instrument. Errors in reporting information can occur at any point in the process – from the student’s assessment answer sheet to the state’s report to the federal government.
- (2006, p. 2)

These are some of the key data quality problems associated with NCLB and other reporting systems in the US. There is no doubt that one can reasonably conclude that even in the US there are some challenges with the quality of data they use to analyze the teacher supply and demand.

**Southern Africa data.** Data collection, quality and consistency difficulties are even greater in sub-Saharan Africa, where the capacity to collect and verify data is more limited. A study conducted by UNESCO revealed that in many Southern African Development Community (SADC) countries, there is a lack of or at most weak Education Management Information System (EMIS) policy developments. Collection mandates are unclear and there is limited statistical capacity building as measured by adequate numbers of staff or degree of knowledge. Limited collaboration between EMIS and other education sectors results in non-regularized data collections, lack of harmonization in data formats complicates data extractions (UNESCO, 2010a).

Another study reports that due to low degree of coordination between regional, central Ministries of Education and the post-secondary education sector, the latter varies in its ability to provide resources sufficient to support statistical functions (White & Smith, 2005). Further education statistics are not widely circulated, in particular those relating to Education for All and Millennium Development Goals. Such statistics are stationed at the Ministry headquarters rather than circulate in all education districts and divisions (Mulkeen & Crowe-Taft, 2010). More studies have shown that a lot of data sources that are available for sub-Saharan Africa are inadequate to varying degrees as they lack consistency over time and between sources; and are not complete (Hussar, 1999). In addition, most of the data are unreliable due to lack of culture of data collection and data provision. Malawi, as one of the countries in sub-Saharan Africa, is affected by all these challenges.

**Malawi data.** There are three main data sources about teachers in Malawi. The first data source comes from the government of Malawi collected annually. The second source is from



various large governmental international aid and assistance organizations. The third source is from various non-government organizations.

**Government of Malawi data.** The Malawi government collects the statistical returns from schools through an annual written survey as part of the education management information system (EMIS). However, the government faces major challenges in collecting relevant data, especially from private schools, whose owners have little incentive to provide such information to the Ministry of Education, Science, and Technology (MoEST) (Ministry of Education, Science and Technology, 2009; Streuli & Moleni, 2008). The limited information that is available is poorly recorded and provides insufficient data for understanding major issues such as teacher attrition. For instance, data regarding teachers who transferred to a different school and those who left the profession completely is absent. However it is worth noting that private schools in Malawi makeup a sizable portion of the total number of teachers in Malawi. This information is therefore very important and it affects the quality of the returned data. School census instruments do not always collect data on teacher attrition. Even when instruments are returned, schools are often poorly equipped to determine the reason for teacher departure, the destination of the departing teacher, or to distinguish between inter-school movement and movement out of the profession (Maluwa-Banda & MacJessie-Mbewe, 2005). Further, this avenue of data collection provides no opportunity to monitor the return of teachers to the profession and often does not contain sufficient detail to monitor attrition of particular subject teachers, or teachers with particular levels of qualification (Mulkeen & Crowe-Taft, 2010).

Even where data on teacher attrition is collected, either through school census or human resource records, it is unclear how much this information is used to inform planning for teacher supply and development of teacher policy. The paucity of published data on teacher attrition

suggests that in many cases, the data are not analyzed and reported in a routine manner (Rust & Dalin, 1990). Despite the importance of monitoring teacher attrition, one can arguably conclude that existing data is limited in scope and reliability. As Macdonald concluded, greater tracking of teacher attrition is required, as "parameters of what is understood by attrition are infrequently articulated and statistics are considered as approximate" (1999, p. 840).

**IAAO data.** The second sources are International Aid and Assistance Organizations (IAAOs). There are many IAAOs working in Malawi supporting the education sector. In the education sector, IAAOs have supported activities to improve quality and access to basic education for millions of Malawian children over the course of many years. Such organizations have made significant contributions to improve education systems in Malawi. For example, they fund teacher training colleges throughout the country and promote education decentralization by funding local educational authorities. (DFID Malawi, 2007). In addition, IAAOs support much of the analytical work that is used in national education sector planning documents and reforms. It makes sense that such organizations collect independent data about teachers in Malawi in order to help them when making decisions on the specific programs they should support. Such organizations are important sources of teacher supply and demand data in Malawi (Central Intelligence Agency, 2012; U.S. Department of State, 2012).

**NGO data.** The third source of data about teachers in Malawi is International and National Non-Governmental Organizations (NGOs). There are many NGOs that operate internationally and at the national level that support the education sector in Malawi. Such organizations collect and disseminate information about teachers in Malawi. In Malawi, the contributions of NGOs in the education sector are particularly significant to support literacy, community schools, health education, early childhood care, skills training, and other forms of

learning. In many cases NGOs have taken over major responsibilities for non-formal education programs handed over to them by the government and development partners. In Malawi, NGOs have shown their comparative advantage in strengthening community participation and organization by developing alternative education programs that are flexible and adapted to the needs of youth and adults, particularly women. It is important for such organization to collect independent data about teachers in Malawi for them to undertake their duties properly, and fulfill their particular fiduciary responsibilities to their donors (United Nations DPADM, 2004).

### **Summary**

In Appendix A, issues of teacher imbalances have been explored from a macro (worldwide) to micro (Malawi) scale. Within this dialogue, many of the factors contributing to teacher shortages have been brought forward, including education policy, gender disparities, disease, Education for All, HIV/AIDS and its associated challenges, net and gross primary school enrollment problems, and primary school provision shortages. These issues were discussed to better explain the complex problem of teacher supply and demand in Malawi. These factors influence, and perhaps some will emerge directly, in the discussion of data quality and accuracy. Even though all of these factors may not emerge directly in the final discussion following the study, they all pose huge challenges to the government of Malawi in its efforts to obtain and use quality data in making educational policy decisions.

## **APPENDIX B: THEORETICAL FRAMEWORK AND METHODOLOGY**

This study will apply Kingdon's Multiple Streams Model. Kingdon's model for domestic policy agenda setting stipulates that preexisting solutions formulated in policy communities constitute one of three major processes that should converge to set a certain policy on the agenda. He indicates that his theory deals with ideas whose time has come provided certain processes converge. Kingdon recommends three process streams that converge in policy formulation. Firstly, Kingdon recommends that the first step in policy formulation is problem recognition, or the problem stream. This is where the "problem captures the attention of decision maker" (1997, p. 109). The identification of problem statement above has fulfilled this part. Kingdon states that conditions become problems when action has to be taken.

Kingdon argues that the second step in policy formulation after problem recognition is formation and refinement of policy proposals, or the policy stream. According to Kingdon, policy stream is where "formation and refinement of new ideas and policy proposals take place" (1997, p. 16). It is in this step, that this study will recommend ways in which the government of Malawi can process data from these various sources into a coherent picture of the state of teacher supply and demand in Malawi, thus streamlining the policy. The final step is what Kingdon calls politics, or the political stream. Kingdon suggests that the political stream "encompasses changes in the national mood, election results, partisan or ideological distribution in Congress and in administrations" (1997, p. 145). This step will be fulfilled by the government of Malawi through the MoEST.

This study will apply the second step of Kingdon's "Multiple Streams Model" for policy formulation (Kingdon, 1997). This study will recommend ways in which national level policy

makers can process data from the various sources into a coherent picture of the state of teacher supply and demand in Malawi, thus streamlining the policy.

From the perspective of Kingdon's Model, this study as described above, argues that effective policy to address the emerging shortage of teachers in the Malawian public school system depends on policy makers (step 1) recognizing that the problem needs attention at a policy level, (step 2) recognizing that there are alternative solutions to the problem, and (step 3) that it is in the best interest for themselves and their country to act. Considering these facts, it is clear that step two of Kingdon's Multiple Streams Model for policy formulation is recommended as the best framework for this study.

## **Methodology**

This dissertation undertook an exploration of the education policy implications of using data from multiple sources to examine the issues of teacher supply and demand in Malawi. The study identified, analyzed, synthesized and critically examined the data from multiple sources, analyzing the policy implications of the assumptions surrounding the collection and presentation of the different sets of data, and the institutional contexts from which they come.

After observing the processes and data sources used at the Lilongwe Workshop (July 2012), three institutional stakeholders from the initial three groups were identified for this study based on the institutional data that was most frequently and intensively used in the workshop. This choice was further confirmed following the workshop in interviews with the Principal Secretary for Primary and Secondary Education in Malawi and an official from the Education Management Information Systems Office. It is worth noting that in selecting institutional data sources for this study, the attempt was not to create a comprehensive set of sources. Rather, the selection of data sources was intended to create a reasonably representative cluster of institutions

from the range of potential data sources and approaches. As described in the review of literature, there are basically three types of institutional sources to be studied: (a) Malawi governmental institutions, (b) international aid and assistance organizations (IAAOs), and finally (c) transnational or global organizations.

**Malawi-specific governmental institutions.** Malawi has extensive administrative data archives that currently reside among a number of public and private organizations. To fully analyze, synthesize, and report on Malawi specific sources of educator supply and demand, data were gathered from the Ministry of Education Headquarters.

Collecting and analyzing data from MoEST provided a reasonably comprehensive and analytical review of the various official government sources of teacher supply and demand data in Malawi. The identification of the core documents at MoEST headquarters was done in collaboration with officials from the Ministry of Education Department of Management Information System Unit with a view to make sure that no numbers were misrepresented by the researcher during data analysis.

**International aid and assistance organizations.** There are many International Aid and Assistance Organizations (IAAOs) working in Malawi that are supporting the educational sector. Some of these are USAID, DFID, JICA, CIDA, UNESCO, UNICEF, SACMEQ, World Bank, the International Task force on Teacher for EFA, Norwegian Church Aid and the American Library. All these generate data in the area of teacher supply and demand. Online data for the selected organizations in this category was compiled for use in this study. After observing the processes and data sources at the Lilongwe workshop, the following IAAO data was included in this study based on the institutional data that was most frequently and intensively used in the workshop:

1. The UK's Department for International Development (DFID) representing European IAAOs,
2. Japanese International Cooperation Agency (JICA) representing Asian IAAOs, and
3. The United States Agency for International Development (USAID) representing North America.

**Transnational/ Global Organizations.** Several global organizations collect and disseminate information regarding teacher supply and demand issues in Malawi. For this category, United Nations Education, Scientific, and Cultural Organization (UNESCO) was selected to represent all other organizations.

For this study, the assumptions guiding the methods of data collection, analysis, and presentation utilized, and the institutional priorities and vision guiding the teacher supply and demand data come from various institutional sources. Four inclusion/sorting stages were implemented to determine which institutions to select for inclusion in the study. The first stage comprised the initial identification of all institutions that support the education sector in Malawi by generating data on teacher supply and demand. The second stage comprised the practical sorting of those institutions into three categories: Malawi government, IAAOs, and NGOs. The third stage entailed identifying which institutions are used most prominently by the Malawi government in actually designing, implementing, and evaluating educational policies. Fourth stage was ensuring that the final institutions chosen included at least one institution from each of the three institutional categories as well as representing each of the geographical categories with at least one institutional source of data. Finally, individual case studies of five different organizations that currently collect and analyze data on the educational system of Malawi were conducted.

## Analysis

This research was conducted as a desk study, which is sometimes also called a systematic inquiry. Desk study research focuses on gathering and analyzing information/data already available in either print or electronic form (Management Study Guide, 2012). This study looks for significant and practical policy implications resulting from an analysis of the various institutional estimates for teacher supply and demand in Malawi. As a result, the analysis of the institutional data for the study does not include inferential statistical analyses. Rather, the following types of analyses are done to complete this desk study.

First, a simple descriptive analysis of the institutional sources and their data is conducted. At this stage the study identifies, analyzes, and synthesizes the institutional priorities of each source institution (De La Torre, 2012). This includes a review and textual analysis of available core documents of each institution regarding their vision, mission, and goals (UNESCO, 2012b). Variations between the institutional priorities are highlighted in terms of implications for data collection and use. In addition, analyses of the data collection methods, as well as definitions of key constructs such as teacher, subject, teacher quality, qualified teacher, etc., are conducted for each of the source institutions. This method of analysis was chosen because simple descriptive statistics helps to simplify large amounts of data into sensible and useable information. Findings are reported in basic tables, to provide best access for the Malawi government and other policy makers (De La Torre, 2012).

Secondly, a comparative descriptive analysis is conducted between the source institutions. A comparison of the teacher supply and demand data is used based on descriptive representations only. The comparisons are made between the institutions regarding basic aspects of teacher supply and demand using pupil teacher ratio. If they predict different demands for



teachers, the analysis explores whether those differences lead to important variations in policy and eventual teacher supply. Further the aim is to find the practical significance and not statistical significance of the data. As a desk study, this research is not aimed at exploring statistically significant differences between the institutional numbers, but to find and explore the practical potential “downstream” differences (De La Torre, 2012).

Thirdly, a synthesis analysis of teacher supply and demand policy scenarios is constructed and presented between subjects indicated in the institutional data comparisons. Analysis and synthesis, as scientific methods, always go hand in hand: they complement one another. Every synthesis is built upon the results of a preceding analysis, and every analysis requires a subsequent synthesis in order to verify and correct its results (Ritchey, 2011) .

This desk study research focuses on gathering and analyzing information/data already available in either print or electronic form from several institutional sources. It investigates significant and practical policy implications resulting from an analysis of the various institutional estimates for teacher supply and demand. As a result, the analysis of the institutional data for the study does not include inferential statistical analyses but rather descriptive analyses are the main focus of the study. The results are presented in an article written for submission to the Corwin Press, SAGE Journal titled *Educational Policy*.

## APPENDIX C: FIVE ORGANIZATIONAL CASE STUDIES

Although Malawi has its own system to collect and manage educational information, there are a number of organizations that are also involved in supporting the educational system in Malawi through additional data collection. This is of concern as externally sourced data often does not match with other externally or internally sourced data. Furthermore, as each organization has their own agenda, goals, and methodology, outsider bias could possibly affect the final results of their data collection. Contingent on the dependency of MoEST on the data that one of these organizations collects versus the data that another organization might collect versus the data that their own Education Management Information System (EMIS) might collect is the effect that each of these organizations may have on the educational system of Malawi. Whichever data set MoEST chooses to use has a direct impact on the decisions that it makes for schools throughout the country, and the policy implications of MoEST using externally versus internally sourced data are important to explore.

Following are case studies of five different organizations that currently collect or analyze data on the educational system of Malawi. This data consists of current information and statistics on a number of factors on the educational system in Malawi such as pupil-teacher ratio, number of teachers, school enrollment, the dropout rate, etc. This data is often used by educational officials, school principals, budget planners, decision makers, and donors to minimize inefficiency and to identify where problems may lie.

Each case study examines the organization's background, its vision, mission and goals, its structure, its data indicators and aims, scholarly criticism of the organization, and the role that the organization has played in Africa/Malawi. The organizations observed were Ministry of Education, Science, and Technology (MoEST); United Nations Educational, Scientific, and

Cultural Organization (UNESCO); United States Agency for International Development (USAID); Japan International Cooperation Agency (JICA); and the Department for International Development (DFID).

Originally it was suggested that the following seven organizations were to be included in this study: MIE, MoEST, DFID, JICA, USAID, UNESCO and ACEM. The list was developed after attending a workshop in Lilongwe in July 2012. While MIE and ACEM are prominent organizations in teacher supply and demand discussions, and promotion of education system in Malawi, it was eventually discovered during the creation of these case studies that they do not produce the type of data that was originally anticipated. Consequently, they were dropped from the study. Consequently, only five organizations were included in this study.

The table below reconciles the case study sections with the data that is required to answer the research questions and research design and methods. The dissertation has four main questions and it covers three research methods:

1. A comparative analysis between the institutions, the process and this will respond to question 1 of the research.
2. A simple descriptive analysis of the institutions and their data, this will respond to questions 2b and 2c of the research.
3. A synthesis analysis of teacher supply and demand *policy scenarios* will be constructed, this will respond to question 4 of the research.

Table 2

*Reconciliation Table*

Case Study Section:	Research Question(s) Covered:	Method Used as identified in Prospectus (pp. 70-71):
Background, Structure, Vision and Mission	1	“A comparative descriptive analysis will be conducted between the source institutions”
Definition of key constructs	2.a	
Data Collection, Aggregate, analysis and reporting	2.b; 2.c	“A simple descriptive analysis of the institutional sources and their data will be conducted”
PTR/ Teacher Data	3	
Criticisms	4	“A synthesis analysis of teacher supply and demand “policy scenarios” will be constructed and presented between subjects indicated in the institutional data comparisons”

### **Ministry of Education Science and Technology (MoEST)**

The Ministry of Education, Science, and Technology (MoEST) in Malawi aims to “provide quality and relevant education to the Malawian nation...enabl[ing] people to acquire relevant knowledge, skills, expertise, and competencies to perform effectively as citizens, workforce and as leaders of Malawi, thereby reducing poverty amongst the people of Malawi” (malawi.gov.mw). It is one of three agencies that provide educational services within Malawi, the other two being the Ministry of Gender, which oversees preschool education, and the Ministry of Labour, which provides technical and vocational training (Ng'ambi, 2010). The MoEST in Malawi uses data from a variety of sources to inform its decision-making process. The Ministry of Education, Science, and Technology in Malawi is required to maintain records on educational matters as part of its responsibilities. It accomplishes this through its Education Management Information Systems (EMIS). Maintenance of the EMIS is officially assigned to the Department of Education Planning (DEP) of the MoEST. The main duty of the DEP is to collect and organize data on primary, secondary, and tertiary education to encourage informed planning, decision making, and budgeting (Ng'ambi, 2010).

The concept of an EMIS in Malawi is relatively new, with the first attempt at gathering educational data being made in 1986 when Dr. Cortney organized a small Statistical Unit to collect information on the educational system of Malawi at the Ministry of Education headquarters (Mwale, 2002). Noel McGinn, Tom Cassidy, and Haiyan Hua, all of whom were Harvard professors, continued the work of Dr. Cortney throughout the late 1980s and early 1990s in order to establish EMIS on a large scale (Mwale, 2002). Their work is viewed as the basis of current EMIS although their works are given anecdotal reference only in many papers.

EMIS is a crucial part of MoEST as it is impossible to properly plan efficient delivery of educational services without quality information (Ng'ambi, 2010). With this purpose in mind, EMIS could be defined as a

...system for the collection, integration, processing, maintenance and dissemination of data and information to support decision making, policy-analysis and formulation, planning, monitoring and management at all levels of an education system. It is a system of people, technology, models, methods, processes, procedures, rules and regulations that function together to provide education leaders, decision makers and managers at all levels with a comprehensive, integrated set of relevant, reliable, unambiguous, and timely data and information to support them in completion of their responsibilities. (Cassidy, 2005, p. 65)

In other words, an EMIS is a way of obtaining, organizing, and analyzing reliable educational data and statistics on a regular basis. Ideally, it is a scientific process that is short, efficient, and productive, so that the data may be trustworthy and of best use to policy and budget makers, educational officers, school officials, teachers, and the families and people they are supposed to serve (Heyneman, 1999).

The following section is organized to synthesize and present institutional priorities of MoEST, the first one to be presented is vision and mission followed by structure of the organization. Secondly data indicators and their aim are presented followed by some criticisms that have received from different scholars and commentators.

**Vision, Mission, and Goals of MoEST.** EMIS's long-term vision is to ensure access to and management for basic and higher education throughout Malawi, while its mission is to provide education, thereby reducing poverty in Malawi in both the short and long term. In

pursuit of this vision and mission, EMIS's immediate goal is to provide timely and reliable information on Malawi's educational system to policymakers and donors so that they can make informed policy decisions (Mwale, 2002). Ideally, this information will also be available to citizens, although this aspect of EMIS's goal has posed a significant problem within Malawi (Ng'ambi, 2010). EMIS exists to facilitate informed decision making/planning, in-depth policy analysis, effective budget/resource allocation, improved educational monitoring, and increased communication and cooperation. In fact, an ideal EMIS should be structured so as to be "able to provide information just on the touch of a button...for whatever activity the decision makers want to perform; be it educational reform, change of policy direction, or launch of innovative educational programs" (Mwale, 2002, p. 7). Mwale (2002) goes on to explain that since reform is a process of removal and replacement, EMIS should theoretically be able to "provide data on the current situation and enable the decision makers to project or simulate the desired end product after the reform process is completed" (p. 9). In its idealized form, EMIS is more than a powerful concept; it is an invaluable tool for the future development of the Malawian educational system.

**Structure of MoEST.** The current structure of EMIS in Malawi is "a logical consequence of a series of interrelated activities from the classroom or lecture room through the district and Division offices to the Central office" (Mwale, 2002, p. 3). Mwale (2002) explains the EMIS system of Malawi in the following manner:

In a sense, there must be a mini EMIS at every institution in that the majority of the EMIS data comes from the classroom or lecture. These data are sent to the Central office through the District and the Division offices. This suggests that these offices too have an EMIS of some sort. After the data reaches the Central office, there is need to verify the

authenticity and reliability of the data through some form of follow-ups, random checks, or limited call backs and feedback systems. (p. 4)

As described above, there is a constant flow of information in a bottom-up manner from the school institutions to the District offices, which relays the information to the Division offices, which passes the information on to its final destination, the Central Office. In response, the Central Office reciprocates with a verification and feedback process in a top-down manner. The first year that EMIS is conducted, data should be collected by qualified and trained professionals using dependable and trustworthy surveying instruments. As data is continually gathered over the following years, the authenticity and reliability of the database can begin to be verified; it is only after about three years that EMIS will have data that is sufficiently reliable to be used for policy analysis and decision making (Mwale, 2002). Ideally, this structure and process within EMIS should continually provide accurate and timely information regarding the state of the educational system of Malawi.

**MoEST data indicators and their aims.** Rather obviously, the information and themes that EMIS is interested in and investigates are all related to education. The EMIS in MoEST focuses on primary, secondary, and tertiary education solely within Malawi. It examines topics such as education performance indicators, performance targets, benchmarks, and education inputs (MoEST, 2012). More specifically, EMIS looks at items like the number of children in the country, current number and quality of teachers, the availability of relevant infrastructure, adequate and relevant textbooks at the appropriate level of the learners, curriculum sensitive to the needs of the nation, school enrollment, teacher/pupil ratios, textbook/learner ratios, classroom/learner ratios, unit costs, retention, completion, pass and transition rates, absenteeism rates, repetition and dropout rates, as well as the rate of adult illiteracy (Mwale, 2002) .



**Criticism of MoEST.** Although EMIS is an extremely important part of MoEST, it has not been without its problems and has received its fair share of criticism. Like many of its programs, MoEST has established good policies but has struggled in the implementation of those policies due to factors such as “lack of trained personnel, insufficient finances, and weaknesses in accountability systems” (Ng'ambi, 2010, p. 39). This failure to execute by MoEST has also partly been attributed to policy overload and implementation fatigue because of the constant creation of new policies which leaves “little time for their implementation, monitoring, and evaluation” (Ng'ambi, 2010, p. 40). Some of the challenges specific to Malawi include “poorly trained data collectors, unprofessional data analysis and interpretation, problems at the data source, and irregular or untimely collection of data.” Over the course of time, these problems lead to the frustration of educational policies and goals as well as the compromising of educational services” (Ng'ambi, 2010, p. 42).

All of these problems came to a head in 1999, when MoEST decided to take measures to improve the situation. In order to improve data reliability, MoEST decided to initiate a corrective process through further training their data collectors, the developers of data collection instruments, data clerks, and heads of institutions. In addition, between the years of 1999-2002, Harvard University sent four sets of experts to Malawi to conduct training seminars for the EMIS staff in developing the questionnaires, collecting EMIS data, and analyzing the data (Mwale, 2002). The intervention came at a needed time and was most helpful in the process of further developing MoEST’s EMIS (Mwale, 2002). EMIS became markedly improved around the years of 2006-2007 in terms of the quality of its information, although it still faces many challenges, primarily in data collection and data publication. In large part, these challenges have their root in the following issues, all of which are explained further in the following paragraphs:

incomplete/inadequate data sets, disorganization of data across various sources, deliberate distortion of data, insufficient human resources, lack of technical expertise and financial resources, red tape, and a lack of laws.

The data collected by EMIS is often discredited due to data sets being incomplete, incomprehensive, and/or inadequate. This is due to a number of reasons. Firstly, data sets are often compromised at their very source—at the level of the school and university institutions, due to their incompleteness (Ng'ambi, 2010). In fact, there are reports that have claimed that many of the contradictions that occur in the data and statistics gathered by EMIS are due to the questionable quality of information provided by schools and other providers of educational services that are the source of that information (Ng'ambi, 2010). Data sets are also incomplete because the majority of data is collected from public government schools, often leaving private schools completely out of the picture. In some cases the data is also compromised due to unreliable data collection instruments/questionnaires and lack of access to certain resources such as the internet (Ng'ambi, 2010).

The disorganization of data across several sources also often affects the accuracy and validity of certain statistics in regards to planning and decision making. As N'gambi notes, information is often dispersed among several sources, especially in the education sector as there are various players including MoEST, Ministry of Gender, and the Ministry of Labour. To add to the confusion, donors and NGO's play a role as well in the data collection process. Additionally, information can oftentimes only be accessed from external (rather than internal) sources (Ng'ambi, 2010). All of this makes the process of acquiring the necessary data difficult and time consuming. Even when data can be collected, it is often contradictory. For example, the statistics used in the education sector are often inconsistent across departments. This is a huge problem.

As Haiyan and Herstein (2003) put it, “Data integration is a must occur before an educational policy analyst or planner can conduct a high-level and high-quality policy analysis or planning exercise” (p. 15). When data integration does not occur and inconsistencies exist across databases, complications are incurred, especially as EMIS and National Statistical Office (NSO) (another statistical data collecting agency within Malawi) data are combined to obtain certain statistics or information. Contradictions or incorrect data across departments can lead to “perverse indicators, or statistical oddities, that cannot be used to evaluate the performance of the system or for planning” (Ng'ambi, 2010, p. 80).

Even with all the natural factors already built in the system that affect the validity of the data, EMIS data can further face deliberate distortion by heads of institutions. It has been noted that “heads of institutions who are major sources of data for EMIS are said to inflate figures, particularly enrolment figures with a hope to earn more allowances if these are paid according to the size of the enrolment or with a hope to receive more education materials for their institutions” (Ng'ambi, 2010, p. 65). This kind of deliberate distortion entirely ruins the data for future use as it presents a false picture of the system.

Inadequate human resources play a huge role in the problems facing EMIS, as they lead to the delayed release of education data, thereby affecting the crucial stages of planning and budgeting (Ng'ambi, 2010). Although MoEST has one of the largest workforces in the nation (close to 60%), it struggles with both properly managing its workforce as well as with providing suitable motivation to its workers (Van Graan & Leu, 2006). Some of the factors that contribute to the low motivation include “inadequate remuneration, lack of proper incentives, inadequate material resources, and political interference” (Ng'ambi, 2010, p. 51). The workforce has also been facing problems due to deaths and absenteeism due to the influence of HIV/AIDS. Despite

the large size of MoEST, the fact remains that there is still often an insufficient number of people to do the necessary work. This is especially apparent in EMIS. Furthermore, the people who are available to work are often not sufficiently trained. Hua and Herstein (2003) observed that in order for EMIS to be a trustworthy system, “data collectors must be well-trained and prepared to follow scientifically rigid steps” (p. 25). However, this is often not the case in Malawi. Mwale (2002) observed that often “data collection is left in the hands of people not purposefully and adequately trained for the job,” which leads to them being “more likely to come up with data that can be described as unreliable hence less useful for the purpose they are meant to serve” (p. 6). For example, in March of 2006, EMIS “submitted statistics on net enrolment ratios that were above 100%, which is not mathematically possible” (Ng'ambi, 2010, p. 35). Furthermore, this issue was only raised after donors who were part of the Common approach to Budget Support (CABS) brought it up (Ng'ambi, 2010). Such mistakes and discrepancies make it difficult to use these education statistics in the future (Ng'ambi, 2010). The lack of qualified workers within EMIS is leading to a “data collection that is not systematic, not regular and timely, and not professionally analyzed...render[ing] the data to be worthless and hence of no use at all” (Mwale, 2002, p. 9) .

Even after data are collected, EMIS faces quite a bit of difficulty in publishing it, in part due to a lack of people with the needed technical skills and insufficient funding. MoEST does have a webpage on the general government of Malawi website ([www.malawi.gov.org/education](http://www.malawi.gov.org/education)) where it occasionally posts information on educational matters. However, often times “due to a lack of technical expertise, the website does not always contain the required data or information” (Ng'ambi, 2010, p. 25). Furthermore, it takes them much longer to post substantive information such as the education statistics produced by the EMIS (Ng'ambi, 2010). In addition to the lack of

capable personnel, the lack of publication is also partly due to the fact that EMIS lacks the funding to publish, and mostly depends on the help of donors to accomplish this work. Ng'ambi (2010) states the real challenge is that there is no budget for publications, or dissemination of information. In fact, good statistics and publications usually do not happen unless development partners are involved, such as was the case “in the publication of the EMIS Education Statistics Report 2008, supported by USAID and UNICEF” (USAID, 2010, p. 19).

Another issue that affects data publication and distribution of said data to the public has to do with bureaucratic matters. In regards to the Malawian government's website page on education ([www.malawi.gov.org/education](http://www.malawi.gov.org/education)), N'gambi (2010) explained that “matters of red tape and political interference...come to play and so the website is censored and only the ‘right’ information (according to the government) is provided” (p. 43). It can also be very difficult to obtain information that is available due to red tape and bureaucracy that often impede the accessibility of said data (Ng'ambi, 2010). To be fair, not all of this is intentional withholding of information by civil servants; many times, they simply “do not have adequate understanding of the rights framework in which the issues discussed...are contextualized” (Ng'ambi, 2010, p. 59) . In other words, at times these civil servants don't realize that the citizens and public have a right to access such information. In fact, public officers are often unaware that one of their responsibilities is to publish this sort of data, and actually avoid doing so out of fear that “they might be passing out sensitive information” (Ng'ambi, 2010, p. 61) .

A final factor that could aid in the hindrance of publishing EMIS data for the public lies in the lack of legislature to mandate its publication. Currently, there are currently “serious challenges in terms of the quality of information and the ability of citizens and civil society to access it” (Ng'ambi, 2010, p. 63). In order to attempt to fix this problem, a Bill on Access to

Public Information was introduced in 2003. However, it has yet to pass, and there is currently no indication that it would be passed anytime in the near future” (Ng'ambi, 2010). This lack of passed legislature means that the quest for correct, timely, and relevant information for all will continue to be an issue as access to public information is (still) limited (Ng'ambi, 2010) .

Despite all of the above issues that plague EMIS in Malawi, Mwale (2002) believes that EMIS has proven itself to be useful as a tool in educational planning, policy formulation, and decision making and that effort should be made to further establish an effective and reliable EMIS. To accomplish this, he believes that it would be useful if “NSO, the hub of data management, would play the coordinating role in all issues relating to information/data management” (Mwale, 2002, p. 9). Ng’ambi (2010) believes that EMIS could be greatly improved if it took the following recommendations into consideration:

MoEST needs to improve the personnel and financial resources of the EMIS department so that it updates data promptly and regularly. CSOs (civil society organizations) should advocate for the quick enactment of an Access to Public Information Act. They should also closely monitor the publication of information and advocate that relevant education information is released periodically, rather than sporadically or episodically. . . . The government should ensure the rapid passage of the Access to Public Information Act . . . CSOs should also conduct, or advocate for, an appraisal of all data collected on education, identify the minimum information required and make recommendations on how best to obtain it. (Ng'ambi, 2010, p. 77)

While EMIS does have potential to greatly assist MoEST in facilitating its policy planning and management decisions, it is clear that there are some very significant problems within the current

system that compromise data collection and data publication. Until these problems are remedied, the validity of and public access to said educational data remains questionable.

**Role of MoEST in Malawi.** EMIS in MoEST will play an integral role in the further development of the educational system within Malawi as it directly provides information to MoEST on the current state of the system. While it is an organization that has the best of intentions, it has struggled to fulfill them due to a number of factors. The sooner that these problems are remedied the better, as the longer that they continue the more likely it is that data and information users (e.g. policy makers, analysts) will lose faith in EMIS's ability of credibility (Haiyan & Herstein, 2003). This often leads to them withdrawing their "support for maintaining, strengthening, and upgrading the EMIS system" (Haiyan & Herstein, 2003, p. 13). Hua and Herstein (2003) explain that as a consequence "data and information production capacity becomes even worsened or diminished, further jeopardizing the ability to produce timely and reliable data. This vicious cycle that permeates some educational systems must be eradicated." Getting rid of EMIS is not an option, as "the development of an EMIS is essential in the modern management of education systems" (Haiyan & Herstein, 2003, p. 21). While MoEST needs EMIS in order to further its educational system, it will need to make significant changes in order to increase its validity and effectiveness.

**MoEST pupil-teacher ratio reports.** The available data from MoEST suggest a slight decrease in the demand for teachers as evidenced by the decrease in student-teacher ratios. According to MoEST the current student-teacher ratio is at 60:1 which is less than 2010 when the PTR was 80:1. Despite provisions the Government has made for one teacher for every 60 children, in most cases you will find three teachers sharing 200 students in one class and dividing the subjects between them. According to the World Bank (2010), there is a severe shortage of

qualified primary school teachers in Malawi, with an average pupil–teacher ratio of about 93:1. This does not help the concentration of the children or that of the teacher. This shows that the demand for teachers is still high. There is a need for the GoM to increase the supply of teachers so that the demand for teachers can decrease.

The rapid growth of primary and secondary school enrolment in Malawi due to introduction of FPE has also increased the demand for well-trained teachers for both levels. In Malawi, the introduction of FPE was viewed as a step toward achieving universal primary education and as part of scaling up poverty reduction efforts (Kadzamira, 2003).

Paradoxically, the clear success of increased enrolment in the lower classes of primary schools in the absence of an increased supply of teachers has resulted in great imbalances between teacher supply and demand, leading to even poorer delivery of education than the days of lower enrolments. Even though the Malawi Institute of Education (MIE) in Domasi and other smaller teacher training colleges are producing teachers every year, the country has not been able to meet the demand for new, qualified teachers.

The inadequate supply of teachers in Malawi is due to numerous issues, many of which will be outlined and discussed in this study. One significant reason for the continued inadequate supply of teachers in Malawi is that the number of teachers who have died of AIDS related illnesses is tragically high in Malawi. At the national level, Malawi has been losing 700 to 800 primary school teachers every year while at district level eight teachers die on average every month (Streuli & Moleni, 2008). Without a well-planned intervention, this trend will undermine the governments' efforts to achieve its targets for education and development. Another issue impacting teacher supply is that in Malawi the more highly qualified a school teacher becomes the likelihood of movement out of the classroom into administrative positions or other better



paying careers outside the teaching profession increases significantly (Moleni & Ndalama, 2004).

**MoEST definition of education key construct.** This researcher did not find any official definitions of the constructs from the documents obtained from the Ministry of Education Science and Technology. However I did interview ministry officials and some teachers so the definitions provided here are summaries of the interviews with these individuals. The term *learner* is commonly used for primary school pupils while the term student is mainly used referring to secondary and college ones. *Student* is referred to as someone undergoing change in behavior as a result of instruction, practice or experience. Further they defined the term *teacher* as someone charged with the responsibility of helping others to learn and to behave in new and different ways.

*Teacher effectiveness* encompasses ability to control, maintain, motivate, and promote learning through possession of enough command of theoretical knowledge about learning and human behavior. In addition the respondents defined *educational quality* as the type of education capable of producing citizens that are conversant with the needs and meet the expectations of a nation in contributing to its development and desirable standards. A *quality teacher* is someone who is equipped for effective service delivery. A *high quality teacher* is one who understands and demonstrates ability to address the content, character, challenges and complications of being a teacher. Every child deserves a caring, competent and qualified teacher. Research evidence has shown that the quality of teaching in our classrooms is the most important school-related factor in ensuring students' achievement. This is why policy makers at all levels are focusing on teacher quality with emphasis on the issues of teacher recruitment, preparation, licensing and certification standards, as well as professional development.

The teacher is the representative of the content and the school. How a teacher presents himself makes an impression on administrators, colleagues, parents, and students. Often a student links the preference to a particular subject to a teacher and the way the subject was taught. A teacher who exudes enthusiasm and competence for a content area may transfer those feelings to the students. In addition, how the teacher relates to the pupils has an impact on the students' experience in the class. The teacher's personality is one of the first sets of characteristics to look for in an effective teacher. Many aspects of effective teaching can be cultivated, but it is difficult to effect change in an individual's personality.

### **Department for International Development (DFID)**

The Department for International Development (DFID) is the United Kingdom's government department for administering foreign development assistance. It is also a member of the Development Assistance Committee (DAC), a group of prominent and influential aid organizations throughout the world. Originally, it was called the Ministry of Overseas Development and lay within the UK's Foreign and Commonwealth Office. It began to function in the 1960's. It was eventually separated from the Foreign Office in 1997, from then on being known as the Department for International Development. The DFID states that it "leads the UK's work to end extreme poverty. We're ending the need for aid by creating jobs, unlocking the potential of girls and women and helping to save lives when humanitarian emergencies hit" (DFID About). In 2009, it underwent a rebranding effort in an attempt to emphasize that its contributions to global development were coming from the UK, and introduced the "UKaid: from the British people" logo; the title "Department for International Development" apparently did not clearly link the department to the British government (DFID Malawi, 2007). It is a

supporter of the Millennium Development Goals (MDGs) and participates in many bilateral and multilateral development projects.

The following section is organized to synthesize and present institutional priorities of DFID; the first one to be presented is vision and mission followed by structure of the organization. Secondly data indicators and their aim are presented followed by some criticisms that have received from different scholars and commentators.

**Vision, Mission and Goals of DFID.** DFID's overall vision is to reduce poverty, as outlined in the International Development Act of 2002: "The Secretary of State may provide any person or body with development assistance if he is satisfied that the provision of the assistance is likely to contribute to a reduction of poverty" (Dessoff, 2010, p. 19). The organization also provides a list of "responsibilities" and "priorities" that considers to be related to its vision. Among its responsibilities, DFID is obligated to honor the UK's international commitments, such as the United Nations Millennium Development Goals. As with many other aid organizations, DFID focuses on women's issues, stating that it has a responsibility for "improving the lives of girls and women through better education and a greater choice on family planning" and "preventing violence against girls and women in the developing world" (DFID Malawi, 2007, p. 9).

In its quest to end extreme poverty, DFID has made it its mission to improve education, health, economic growth and the private sector, governance, the environment, and water and sanitation. Regarding education, DFID's more specific goals are to promote equality in education (specifically gender equality in primary and secondary schools,) and to increase the number of trained teachers. (DFID Malawi, 2007).

**Structure of DFID.** DFID is organized as a government department, currently headed by Justine Greening in the post of Secretary of State for International Development. The Secretary of State for International Development is a cabinet minister with executive capacity, whose main duty is to generate and guide government policy on international development. Its central office is in London, with overseas offices primarily located in Africa, Southeast Asia, Central Asia and the Middle East.

DFID is set up mostly to provide aid in the form of grants, loans, and subsidies. DFID is one largest providers of bilateral aid to developing countries in the world. DFID prefers to give money to local organizations in order to cut down on its own bureaucracy. In DFID's blue book, the department's protocol guide, the guideline is that when working with other organizations, DFID provides development partners with Financial Aid or Technical Assistance (mainly in the form of personnel, research, training or goods and equipment) purchased by DFID (DFID, 2013). Thus, DFID as an organization is set up to work with institutions and organizations and helping them help themselves by giving them the means and resources to do so. Even when providing technical assistance, the personnel and research is only purchased by DFID and not provided directly by it.

**DFID's data indicators and their aims.** DFID is a large supporter and donor of research in the field of international development. DFID states that it is "committed to commissioning world-class research that directly improves people's lives. We also want to make the research we fund available to those who can use it around the world" (DFID, 2013, p. 15). DFID therefore provides the means for other organizations to carry out their research, which is always development-based. Funding is DFID's largest role when it comes to research. Quoting from DFID's Research Strategy published in 2008, "Traditionally, research has not been a top priority

for aid donors but this is changing” (DFID, 2008, p. 12). Thus, while DFID funds had been traditionally diverted specifically to the purposes of fighting poverty and providing humanitarian aid, DFID is changing its stance on the importance of research to international development.

In 2008, DFID published a research strategy that was to be implemented over the following five years, culminating in 2013. Through its research strategy, DFID aimed to accomplish the following: “Through the Department for International Development (DFID) [the UK] will invest up to £1 billion on development research in the next five years. Our new Research Strategy explains how we will use these funds to put research at the heart of efforts to reduce poverty in developing countries” (DFID, 2008, p. 23). The research strategy focuses on six areas: growth, sustainable agriculture, climate change, and health, governance in challenging environments, and future challenges and opportunities. Additionally, DFID states two ways its research will make faster progress in fighting poverty and achieving the Millennium Development Goals: by producing new knowledge and technologies to tackle the most important development challenges and by “helping make sure that developing countries and the wider development community use the knowledge and technologies” (p. 33). Those two guiding principles, together with the six focus areas, form the bulk of DFID’s five-year Research Strategy (DFID, 2013).

DFID refers to some important data indicators when determining how and when to allocate aid. The main indicators are best understood as the six aforementioned focuses of DFID’s Research Strategy—growth, sustainable agriculture, climate change, health, governance in challenging environments, and future challenges and opportunities. A common thread for all indicators is that they aim to help realize DFID’s vision of ending extreme poverty. They can also all be broken down into sub-indicators and more tightly focused research areas.

Growth is defined in economic terms. DFID states that it wants “to put a debate about economic growth at the heart of international development policy and action” and will thus create an International Growth Centre, whose task will be to “provide careful, practical research that is relevant to our partner countries and contributes to their policy decisions” (Roser & Sabrina, 2005, p. 205) . Sub-indicators for growth will be infrastructure, political processes, social processes, and education. Focusing on education, DFID has three main indicators for education: quality of education, access to education, and results/outcome of education. Education is seen as a component of what is needed in order to stimulate economic growth, which in turn is focused on because DFID believes that it is one of the main indicators that will help eliminate extreme poverty.

Sustainable agriculture, another indicator, is characterized as “agriculture that can be maintained in the long term to provide for future generations” (DFID, 2013, p. 16) . DFID believes that agriculture will be an essential part of helping developing get out of poverty and is tied to its agenda for growth as well. Climate change is a focus because DFID believes that the effects of climate change may have a greater impact in places like Africa than is currently known. Health is also a high priority for DFID, as poor health is a strong indicator of poverty and it fits well thematically in DFID’s mission and vision. Governance as an indicator looks specifically at conflict, social exclusion, inequality, and state effectiveness. Lastly, within the “future challenges and opportunities” area of focus, DFID examines aid’s future beyond the Millennium Development Goals and how to implement new technologies.

For other programs and projects, DFID uses data indicators that come from its data sources, such as United Nations Educational, Scientific, and Cultural Organization (UNESCO), and Organization for Economic Co-operation and Development (OECD). Most of the data

gathered by DFID regards its own activity and expenditures. According to the 2002 Review of DFID's Statistical Information Systems, DFID statistics are of good overall quality, and fit for purpose. The main policy-relevant aggregates are correctly reported according to accepted international norms (DFID, 2002). The 2002 Review states that it is

limited to the statistics which DFID itself collects, collates and publishes either directly or through reporting to outside bodies, including the OECD and various UN agencies. These data relate to official and private flows of UK resources to, or in favor of, developing and transition countries. (2002, p. 35)

Thus most of DFID's data regard its own expenditures—how much money was spent, to whom it was allocated, etc. The Review then goes on to specify that when DFID publishes other data, it is obtained through third parties:

DFID also publishes data about developing and transition countries themselves. However, these data are obtained as finished statistical products from other agencies – especially the World Bank. Except as regards selection of data series, DFID has no control over their quality or fitness for purpose, and they are therefore not included in this Review. (Moon, 2007, p. 369)

**Criticism of DFID.** DFID is, on the whole, a highly regarded international development organization. According to OECD's 2010 Peer Review of DAC members,

The United Kingdom (UK) is a recognized international leader in development. This is the result of clear vision, consistent political leadership, strong human resource and financial capacity the UK is in many ways seen as a model by other donors. (OECD, 2010, p. 25)

Despite DFID's many admirable points, the OECD peer review does outline some points of criticism. One of the issues is that while DFID's vision of poverty reduction has been a powerful asset, DFID has been attempting to broaden its agenda without clearly outlining which policy objectives it wants to pursue. While the UK has clear legislation (the International Development Act of 2002) that outlines DFID's commitment to poverty reduction, goals stated more recently have begun to diffuse the focus on poverty that has served DFID well in the past. The recommendation is that DFID "should prioritize clearly its policy goals and streamline further its policies and strategic guidance around core priorities linked to the Millennium Development Goals (MDGs)" (OECD, 2010). Although broadening DFID's policy objectives is seen as a good thing, it should not come at the expense of its tight focus on poverty reduction.

Another criticism is that DFID could do more to increase transparency at all levels of its fund disbursements. The OECD peer review states that DFID could do more to implement its commitment ... to make public all conditions linked to disbursements, particularly with regard to human rights issues (OECD, 2010) . With the appointment of Justine Greening as the Secretary of State for International Development, new focus is supposedly going to be placed on increasing transparency, specifically on what aid money will eventually be used for. According to an article in *The Economist*, the most significant part of Ms. Greening's strategy is the requirement that any organization receiving DFID funds publish clear information about where the money is going. The transparency requirement, which will be phased in over an unspecified time period, appears to mean that NGOs, private contractors and possibly even governments that receive DFID funds would have to publicly disclose how they spend the money. The current DFID disclosures only show the money flowing outwards, but don't shed light on where the funds end



up. Currently it is nearly impossible for anybody to figure out what aid money is actually being spent on. (Ministry of Finance, 2006).

Reforms of that nature would go a long way toward improving transparency and reducing criticism over how DFID funds are eventually used by recipients. The end goal is not transparency for transparency's sake, but to increase effectiveness by making sure that aid funds actually go toward DFID's vision of fighting poverty.

**DFID's role in Africa/Malawi.** Africa receives a large portion of DFID's aid. Many projects are focused on Africa, and the five-year Research Strategy is meant to specifically address Africa's challenges and opportunities. The climate change focus has Africa in mind; and in terms of research capability, the Research Strategy states the following challenges that Africa faces:

There is a close link between a country's capability to use and do research. But the research capabilities of many African countries are weaker today than at any time since Independence. According to UNESCO, there are just 48 researchers for every million Africans living south of the Sahara compared with nearly 3,000 for every million people in OECD countries. (Lodge et al., 2002, p. 275)

For this reason and others, Africa remains at the center of the DFID's international development agenda.

One example of one of DFID's projects in Africa is called the Girls Education Challenge (GEC). It is defined as a new initiative aimed at helping NGOs, charities and the private sector to find better ways of getting girls into primary and lower secondary education in the poorest countries in Africa and Asia (DFID November 2011). GEC will ask non-government and other organizations to develop ideas to improve education, and then will back the most promising

proposals. More examples of DFID working in Africa include recent projects aimed at removing red tape, improving infrastructure, and improving trade between African countries in an effort to reduce dependency on foreign aid.

In Malawi, DFID outlines three main priorities: addressing poverty and inequality; supporting economic growth and wealth creation; and promoting good governance. DFID's Operational Plan 2011-2015 for Malawi starts with the Government of Malawi's (GOM) Growth and Development Strategy, and for Malawi specifically, there are six priorities, each with a main performance indicator. The first is wealth creation, and its data indicator is the number of additional people accessing credit through DFID support. For the second priority, poverty, hunger, and vulnerability, the indicator is the number of people directly supported by DFID to cope with natural disasters and the effects of climate change. For health/HIV, the indicators are the number of births delivered through DFID support and the number of additional women using modern methods of family planning through DFID support. For water/sanitation, the indicator is number of people provided with access to clean drinking water. For governance and security, the indicator is the number of girls and women with improved access to justice services through DFID support. Lastly, for education, the indicators are number of children supported by DFID in primary school, and the number of girls in secondary schools supported by DFID (DFID Operation Plan) (Ministry of Education, Science and Technology, 2009).

In 2010, DFID announced that as part of its "Making sure children in developing countries get a good education" policy, it would be helping Malawi implement its new education reform program. The program, which has been implemented from 2010 to 2013, would receive DFID support to construct over 3,000 new permanent classrooms; build new Teacher Training Colleges; recruit and train more than 20,000 primary school teachers (DFID, 2013) . The

implementation of this support, once delivered via DFID funds, would be carried out by GOM according to its data indicators. In that effort, as well as in many others, DFID remains one of Malawi's most important sources of bilateral aid; in 2010, OECD reported that DFID was Malawi's number one donor in terms of Gross Official Aid Development (Ministry of Education, Science and Technology, 2008).

**Pupil-Teacher Ratio in Malawi according to DFID.** According to DFID the current PTR is at 78:1 which is also below 100 like MoEST and UNESCO. At present DFID has an education program in Malawi. The aim of this program is to support the Government of Malawi to construct over 3,000 new permanent classrooms; build new Teacher Training Colleges; recruit and train more than 20,000 primary school teachers (DFID, 2013) . The program will run until 2015. Because of the persistent inequities, political problems, and severe resource scarcities that have historically burdened the country, Malawi is particularly sensitive to challenges created by an imbalance of teacher supply and demand (DFID Malawi, 2007).

Despite the different figures these organizations present for PTR, the bottom line is that there is still huge demand for primary teachers in Malawi. The shortage is compounded by a fairly incoherent teacher deployment system with little correlation between the number of teachers allocated and the number of students. Teacher allocation across location and school divisions/districts is uneven, with the deployment of teachers highly skewed toward urban areas instead of rural areas. More details can be provided if needed.

**DFID definition of education key construct.** It is generally accepted that the competence and commitment of teachers are two of the most important determinants of learning outcomes. The teacher is the representative of the content and the school. How a teacher presents himself makes an impression on administrators, colleagues, parents, and students. Often a

student links the preference to a particular subject to a teacher and the way the subject was taught. A teacher who exudes enthusiasm and competence for a content area may transfer those feelings to the students. In addition, how the teacher relates to the pupils has an impact on the students' experience in the class. The teacher's personality is one of the first sets of characteristics to look for in an effective teacher. Many aspects of effective teaching can be cultivated, but it is difficult to effect change in an individual's personality.

DFID suggests that effective teachers can be seen, heard, and sensed. The effective teacher engages in dialogue with students, colleagues, parents, and administrators and consistently demonstrates respect, accessibility, and expertise. Effective teachers are easily identified through their adept use of questioning and instruction given in the classroom. Finally, an observer who knows from all sources that this person truly makes a difference in the classroom can sense the presence of an effective teacher. The true teacher is a master of teaching.

### **Japan International Cooperation Agency (JICA)**

Japan International Cooperation Agency (JICA) is an independent governmental agency that coordinates official development assistance for the government of Japan. Its main goal is to foster growth and international cooperation in developing countries through a variety of channels including research, loans, grants, and technical assistance. The beginning of Japan's official development assistance (ODA) goes back to right after World War II. Over the following decades, the official government body that administered aid went through several variations and change until they arrived at what was termed the *new* JICA in 2003. New JICA differs from its predecessors in that it is now an independently administered governmental organization. Previously, it was attached to Japan's Ministry of Foreign Affairs and influenced by their foreign policy objectives. New JICA enjoys much more autonomy; it is now "no longer a public

corporation under the thumb of the Ministry of Foreign Affairs but an independent agency that has gained more policy-making as well as policy implementation clout” (Yasutomo, 2007, p. 299). It receives official funding from the government of Japan. JICA has many topics of focus, including poverty reduction, health, both rural and urban development, and education (JICA, 2013a).

The following segment is organized to synthesize and present institutional priorities of JICA. The first priority to be examined is vision and mission followed by structure of the organization. Secondly, data indicators and their aims are presented followed by some criticisms that have been received from different scholars and commentators.

**JICA Vision, Mission and Goals.** JICA’s vision is *Inclusive and Dynamic Development*, dividing development into two areas of focus (JICA: Mission Statement) (JICA, 2013b).

*Inclusive development* refers to JICA’s aim to involve governments in their own development—not to take control and lead from afar, but rather to advise, educate, and empower people and make them central to improving their own situation. *Dynamic development* means development that is adaptive and self-reinforcing. JICA recognizes that a country’s situation is not and will not be static, and so development should be sufficiently innovative and flexible to meet these ever-changing demands. In short, JICA’s plan for development is meant to include and foster the participation of those receiving aid, and also to be dynamic enough to face the demands of a changing world.

JICA’s mission has four parts: to address the global agenda, to reduce poverty through equitable growth, to improve governance, and to achieve human security. By creating programs to fulfill this mission, JICA seeks to mitigate the negative effects of globalization, effects such as uneven wealth distribution and the cross-border issues of climate change, infectious diseases,

terrorism, and expanding economic crises (JICA, 2013b). As a subset of its broader mission, JICA's more immediate goals related to education in Malawi are to improve enrollment in and quality of primary and lower secondary education. Ultimately, JICA's efforts to address these issues serve the long-term interests of Japan even as they improve conditions in the rest of the global community (JICA, 2013a).

**Structure of JICA.** JICA's central strategies for implementing its mission include assistance through "technical cooperation, ODA loans, and grant aid," as well as "promoting domestic partnerships and enhancing research and knowledge sharing" (JICA, 2013a). Grants and loans are the primary means to foster inclusive development by providing assistance that client governments will be accountable for. Technical cooperation consists of JICA's experts sharing practical expertise and assistance. Technical assistance is usually carried out through various projects coordinated by JICA. Its other official strategies are listed as seamless assistance or a holistic approach to assistance; promoting development partnerships, or guiding development partners through their self-help efforts; and enhancing research and knowledge sharing through the JICA Research Institute to generate knowledge and publish it (JICA, 2012a).

**JICA's data indicators and their aims.** JICA collects data itself as part of special projects, or when the data it requires is not readily available or cannot be obtained from reputable sources. JICA's primary focus, as an organization, is to provide aid through special projects, loans, and grants. However, JICA does have a research arm—JICA Research Institute (JICA-RI). JICA-RI has four main research areas: Peace and Development, Growth and Poverty Reduction, Environment and Development/Climate Change, and Aid Strategies (JICA, 2005).

Peace and Development is primarily concerned with conflict resolution. "Peace and Development research projects are designed to be comparative analyses of the political

conditions that lead to armed conflict, and the governance institutions conducive to durable state-building (JICA, 2013a).” Through analysis, JICA-RI proposes ways that developing countries can avoid conflict and form stable governments. One of JICA-RI’s two current projects in this topic is “Prevention of Violent Conflicts in Africa: The Roles of Development Cooperation.” For example, JICA-RI states that its aim is to conduct a comparative analysis of several African countries as case studies, and from that analysis create a theoretical framework that can advise policy. JICA-RI hopes that it will differentiate its research from other efforts on the topic, which focused on “statistical interpretations” of conflict causes and were also limited by “examinations of the political processes of individual countries” rather than JICA-RI’s comparative approach JICA-RI: Research Areas (JICA, 2013b).

Growth and Poverty Reduction’s focus is fairly self-explanatory. It exists to conduct research on how to stimulate economic growth and reduce poverty. JICA-RI considers Japan and a few other of its East Asian neighbors economic success stories, but is concerned by Africa’s vulnerabilities and worries about the sustainability of its current economic growth. One example is JICA-RI is focusing on Africa is by examining rice production in their study *An Empirical Analysis of Expanding Rice Production in Sub-Sahara Africa*. This study looks critically at how countries such as Tanzania, Mozambique, Uganda, Ghana, and Senegal could potentially increase rice production and decrease poverty JICA-RI: Research Areas (JICA, 2012a).

Environmental and Development/Climate Change is a research area that is currently in development for JICA-RI. JICA-RI states that JICA-RI studies measures for climate change mitigation and adaptation suitable for developing countries, utilizing the latest natural sciences knowledge and methodologies, and JICA's own accumulated experiences and data acquired through its development assistance activities (JICA, 2013b). Climate change is one of the key

themes of this research area, and JICA-RI focuses particularly on climate change's effect on poor peoples in Africa and Asia. JICA-RI currently has not posted any projects in development in this research area (JICA, 2006).

JICA-RI's final research topic is Aid Strategies. This research investigates JICA's own methods of providing aid to the developing world. In this research area, JICA-RI attempts to evaluate the impacts and outcomes of aid programs in order to ensure accountability to the taxpayers that fund them. Aid Effectiveness is the key research theme here, and JICA-RI has created projects such as Impact Evaluation Analyses, the Role of Budget Support, and an empirical analysis of the effectiveness of training programs. The end result of this research topic and its projects should be an increase in aid effectiveness and greater potential for growth in developing countries (JICA, 2012b).

**Criticism of JICA.** JICA usually only collects data itself when the data it requires is not available or not entirely reliable. However, it often relies upon multiple databases for figures and statistics when it creates its reports and recommendations. For example, in creating the Basic Education Sector Analysis Report for Malawi (BESAR-M), it used data and information from a variety of sources to complete the analytical portions of the reports. Most of Malawi's information was collected from Malawi's MoEST and Education Management Information Systems (EMIS). Other sources included Malawi's National Statistics Office (NSO), UNICEF, UNESCO, World Bank, and Education Policy and Data Center (EPDC). With JICA's data coming from a variety of sources, JICA admits that this could be potentially problematic to the study. JICA did not list itself as a primary source for any data, and therefore it would need to reconcile the data collection methods of its various sources to prevent irregularities (JICA, 2012b):



Because of the different data collection method employed by the UNESCO from the method used for educational statistics of MoEST, a direct comparison cannot be made for analysis of the relationship between the UNESCO statistics and MoEST statistics, careful consideration is required in the comparative analysis of the study using these two sets of statistical data. (JICA, 2012b, p. 7)

In recognizing these differences, JICA is at least attempting to raise the quality of its own analysis and to solve some of the logistical problems of gathering data from multiple sources. However, some of the sources are problematic. JICA recognizes that there are and will be limitations coming from the Government of Malawi's (GoM) data. The following quote was a footnote referring to a data table of "Trends of Nationwide Number of Teachers in Primary and Secondary Education (persons)" (JICA, 2006):

As in the case of the number of schools or number of enrollments, the figure is the total number of teachers at schools which replied to the EMIS questionnaire. It can, therefore, be inferred that the number of teachers in secondary education where the number of private schools is relatively high does not indicate the actual number interview with the head of MoEST EMIS section. (JICA, 2012b, p. 35)

Here, teacher data was based on which schools replied to the EMIS questionnaire, distributed by MoEST. Not all schools may have answered the questionnaire, and with the possibility of some teachers working at multiple schools, those teachers could potentially be double counted. This is just one of the problems with the data obtained from EMIS.

Due to the multiplicity and at times, undependability, of its data sources, the reports and recommendations that JICA may make could be slightly unreliable. However, it is quite apparent

that JICA is aware of the extra caution required due to these many sources when completing its education analysis, and is doing all that it can to minimize error (Yasutomo, 2007).

**JICA's role in Africa/Malawi.** JICA has long been interested in improving basic education stating that education both aids economic development while improving quality of life. Additionally, education is seen as an important element in many other areas of interest for JICA, such as economic development, poverty, health, human rights, and democracy. Improvements in education will lead to improvement across the board, being an investment in human capital. JICA's goal is to achieve universal access to basic education in developing countries. In its Thematic Guidelines on Basic Education report (TGBE) five priorities are listed: improvement of enrollment in primary and lower secondary education; improvement of quality in primary and lower-secondary education; reducing gender disparity; promotion of non-formal education; and improvement of education management. The Thematic Guidelines also include strategies specific to each priority that are to be utilized in facing those challenges (JICA, 2006) .

In order to better understand JICA's methods for conducting research and analysis in the education sector in Africa and more specifically, Malawi, JICA's Basic Education Sector Analysis Report for Malawi (references in the criticism section), completed in August 2012 can be examined. JICA conducted this report as part of a larger study commissioned to carry out a comprehensive and in-depth analysis of the education sector in 13 countries in Sub-Saharan Africa and Latin America. One purpose of the study was to gather data and information and the other focus was to be somewhat introspective for JICA to propose how to improve the quality and the methodologies of JICA's analysis on basic education. Some of this information is stated in the report's conclusion, which will be touched on hereafter (JICA, 2012b).

In order to gather relevant data, JICA followed the protocol laid out in its Standard Research Items and Methodology of the Education Sector Analysis (which was in draft form at the time of the education report's completion and presumably has not yet been published in English). According to its Standard Research Items, the main data items and indicators of JICA's data survey fell under the following groupings: population projection; educational development trend; donor assistance; access to education; literacy, non-formal education; internal efficiency; equity; quality; teachers; educational administration system; analysis of education finance; and public-private partnerships (White & Smith, 2005). Each main grouping was then broken down into sub-groupings and then into many individual items and indicators, such as the number of teachers per pupil, management capacity of MoE, percentage of expenditure of MoE budget per fiscal year, and so forth. The main aim of these indicators is to assist JICA in assessing the status of education development in Malawi, identifying challenges facing education, and advising policy that would help address these challenges (Yasutomo, 2007).

Data and information were then collected from a variety of sources in order to complete the analytical portions of the report (previously discussed in Criticism section). While the multiplicity of databases presented a problem, JICA seemed to be aware of these problems and worked to overcome them (JICA, 2006).

The overall data, once compiled, was then used as the basis for writing the Basic Education Sector Analysis Report. The report first looks broadly at the political and socioeconomic situation in Malawi, then Malawi's education policies and reforms, then moves into careful analysis of the status and challenges of education development in Malawi. JICA's report uses the collected data to analyze factors such as access to education, internal efficiency,

gender equity, learning outcomes, learning environment, textbook distribution, curriculum, and teaching staff. Education budgeting and finance are also analyzed and are included in the report.

The result of the analysis led to the conclusion that Malawi's "prioritized challenges ... are the low internal efficiency of primary education, high PTR [pupil-teacher ratio] of public schools, fewer annual instruction hours, low transition rate to secondary education and budget-related issues" (JICA, 2012b, p. 16). Low internal efficiency refers to several indices, such as rate of promotion to the next grade, grade repetition rate, and dropout rate among students. The high pupil to teacher ratio is due to "the slow pace of teacher training which is unable to catch up with the rapidly increasing enrollment figure for primary education since the introduction of free primary education" as well as the fairly high level of teacher depletion each year due to death caused by HIV/AIDS and other reasons (JICA, 2012b). Fewer instruction hours is a problem built into the system, as school days are often only three to four hours long. This problem is made worse by other factors as well, such as teacher absenteeism. The transition to secondary education is due to a variety of issues, including the issues with low internal efficiency mentioned earlier (high dropout rates, etc.) and being unable to pay the fees for secondary education. Above it all, JICA's data gathered on the government of Malawi's spending in the education sector indicates the government has a low priority [for] educational development, stating that the percentage of education expenditure is lower than average for the Southern African Development Countries (JICA, 2012b). The JICA report goes on to list what the priorities of Malawi's National Education Sector Plan (NESP) are, but concludes the list with the statement that although the realization of these priorities in the NESP certainly addresses the top priorities, the reality is that neither the NESP nor the ESIP offer concrete strategies or plans for the necessary activities (JICA, 2012b).

Prior to the creation of the 2012 Basic Education Sector Analysis Report, JICA has also been involved in several projects in Malawi to provide practical assistance to GoM. From August 2008 to August 2012, JICA implemented *Strengthening of Mathematics and Science in Secondary Education (SMASSE) Phase 2*, a technical cooperation project. The project's goal was to target and strengthen math and science skills among pupils and raise the country's standards for math and science education. The main strategy was to provide in-service training for teachers, including activities such as teacher training, developing training materials, and conduct in-service for district trainers. Published results of this project are forthcoming (JICA, 2006).

Another recent project was the *Project for the Re-Construction and Expansion of Selected Community Day Secondary Schools*, conducted from 2010 to 2012. This project was funded by a grant provided by JICA, and implemented by Malawi's MoEST. The goal for this project was to improve access to education facilities and increase the quality of existing schools. Target outputs for this project were to achieve a high quality educational environment; increase enrollment in targeted areas; improve internal efficiency in project areas; and to improve gender equity, or the male to female ration in enrollment in target areas (JICA, 2006).

Older projects from the previous decade included the generation of The National Implementation Program for District Education Plans (NIPDEP) and the assignment of an Education Planning Advisor to the Malawi MoE. The former took place from 2003 to 2005 and its main purpose was to formulate and update District Education Plans, as well as to train district staff in planning and project management (Guarino et al., 2006). JICA reported that as a result of this project, "The capacity among the pilot district education officers was improved in data management, project planning, implementation, monitoring and financial management, which also enhanced their confidence, competence and leadership in education improvement in their

districts” (JICA, 2005, p. 25). The assignment of an Education Planning Advisor was meant to “improve planning capacity in the Ministry of Education” and to put a JICA expert on the ground to “assess current conditions ... [and] to identify development needs” (JICA, 2006, p. 9) . There has been an education advisor in place from JICA at the MoE since 1999, and the position is instrumental in aiding and influencing policy implementation (JICA, 2010).

**JICA’s pupil-teacher ratio in Malawi.** JICA has no official PTR numbers, however in a 2011 organization news report they indicated that Primary schools in Malawi have class sizes of 100 pupils per teacher in urban schools whereas in rural areas class sizes will go up to 200 pupils per teacher. Further studies have indicated that the prevailing shortage of teachers is about 25% worse than necessary because of inefficiencies in teacher deployment (JICA, 2012b). For example, teacher shortages and surpluses often exist in the same districts. So districts which are more rural have high pupil teacher ratios than those districts that are developed such as Lilongwe and Blantyre.

In addition, the majority of teacher shortages exist in rural areas where turnover rates are higher than in urban areas although both are in double digits (Anzar et al., 2004). Rural schools are much harder places to teach because of cultural norms and expectations in the rural communities. For example, female teachers typically fill lower-prestige positions in the education sector than men and often take rural teaching jobs. However, female teachers also migrate more as they marry and move to urban areas where their husbands have jobs, or take an urban post because they may not feel safe living as a single female in a rural community (Anzar et al., 2004).

**JICA’s definition of education key construct.** JICA’s philosophy of teaching is that a teacher is a person who is able to motivate students by using creative and inspirational methods

of teaching. He must always seek to find new ideas. He not only teaches in a traditional way but also find another way to transfer the lessons. A good teacher needs to find many kinds of teaching methods such as: using mass media, preparing presentation slide shows on the computer; and transferring knowledge through games. Being a creative teacher will make students enjoy classes because they know there are many new and interesting things in the lessons. In addition, a good teacher must be a person who is open to change. He must know the only real constant in life is change. There is a place not only for tradition but also for new ways, new ideas and new methods. To be a good teacher, he is willing to learn from other peers and from his students. A good teacher needs to know that his student is visual, auditory and kinesthetic learners. Teachers are adept at creating presentation skills for many kinds of learners. If a teacher can do these things, that teacher will get more respect from students.

### **United States Agency for International Development (USAID)**

The United States Agency for International Development is an independent federal organization that oversees US economic and humanitarian assistance programs across the globe. It was established by John F. Kennedy November 3, 1961, but the seeds for an agency such as this were planted much earlier. Post World War II, several short term development projects appeared that are thought of as precursors to USAID: the Marshall Plan, The Mutual Security Agency, The Foreign Operations Administration, and The International Cooperation Administration. USAID became the first government agency to promote long-term assistance for social and economic development. The agency has had a long and diverse history, focusing on basic human needs, free markets, sustainability and democracy, and most recently, war and rebuilding (U.S. Department of State, 2012).

The following section is organized to summarize and present institutional priorities of USAID. USAID's vision and mission will be discussed followed by structure of the organization. Data indicators and their aim are presented followed by some criticisms that have been received from different scholars and commentators.

**Vision, mission and goals of USAID.** USAID's mission is twofold: to foster sustainable socioeconomic progress while furthering America's interests abroad through the expansion of free markets and the creation of new trade partners (USAID, 2012). In pursuit of this mission, USAID's immediate goals as they pertain to education are to improve literacy in primary schools, to strengthen higher education and workforce development programs, to provide access to education for children in crisis regions, and to facilitate innovation in education through a program called *All Children Reading* (which is designed to create new learning materials and improve literacy through devices such as mobile phones and tablets). It is important to note that, similar to UNESCO's EFA goals, USAID works to empower women and to promote gender equality through its programs. The long-term vision of USAID is to create sustainable social and economic development without depleting natural resources or damaging cultural, economic or environmental surroundings. (USAID, 2012).

**Structure of USAID.** Dr. Rajiv Shah is the current administrator for USAID, overseeing more than 8,000 professionals in 80 missions around the world. Dr. Shah was appointed by President Obama, and confirmed by the Senate. The USAID headquarters is located in Washington D.C. USAID is divided into bureaus, each covering different geographical locations, administrative functions, or development subject areas. USAID is active in Africa, Asia, Latin America and the Caribbean, Europe and Eurasia, the Middle East, and Afghanistan and Pakistan. The policies and procedures that guide the agencies operations can be found in the Automotive



Directives System (ADS) which is administered by the Bureau for Management, the Office of Management Policy, and the Budget and Performance Office. The ADS is divided into six headings: (a) Agency Organization and Legal Affairs: this portion provides specific policies and guidance in areas of program organization, (b) Programming: this heading provides specific policies in relation to planning, achieving, accessing and learning, (c) Acquisition and Assistance: this section outlines and describes policies in areas dealing with direct contracting, (d) Human Resources: this segment focuses on specific policies focusing on leave, benefits, and evaluations, (e) Management Services: this part highlights agency notices, records management, and privacy policies, and (f) Budget and Finance: this section looks at foreign-owned currency, obligations, and gifts and donations (USAID, 2012).

USAID concentrates on improving five key dimensions of sustainable development. The first is the environment. USAID works with individuals and governments to ensure the safety and preservation of the environment. They strive to create programs that are energy efficient, clean, and effective. The next focus is population and health. The most significant idea in reference to the population and their health is that only long-term plans are made. USAID has made sustainability a priority, and that is even more important when dealing with human resources. Third, USAID works to encourage democracy. Working with local governments and indigenous organizations to endorse free and fair elections helps USAID support a political system that is true to the community's culture, while teaching the residents of that community the skills of democratic governance. The fourth focus is on broad based economic growth. Endorsing economic growth is good for multiple parties, and on multiple levels. It allows developing communities to progress further, while creating a market for American goods and services (Smith & Baker, 2001) . USAID ensures this growth is carried out in a way that is fitting

for the skills, resources and needs of the people in the given community. Lastly, USAID concentrates on humanitarian assistance and support for post-crisis transitions. Being the agency responsible for disaster relief, USAID not only arranges for emergency assistance and food aid, but also helps countries with their own specific needs to recover from internal conflict (USAID, 2010).

**USAID data indicators and their aims.** The indicators USAID chooses vary widely due to the diverse nature of their programs. The main aim of the USAID is to promote sustainable economic and social development while creating positive opportunities and relationships abroad for America. The indicators provide accurate research outlines and objectives for each specific project USAID creates or supports (USAID, 2012).

USAID's process of data collection appears to be thorough. A research question is posed, and then indicators are chosen. Each indicator will have its own performance indicator reference sheet, in which indicator targets and partners who contribute to the indicator are summarized. Data quality assessments are performed on all indicators to assure their value. Included with the research question is any background information available, previously existing data, target groups, participant information, methodological limitations, geographical information, evaluation questions, oversight and management, final evaluation design report, and budget information. A requirement for data collection is that methods should be consistent and comparable over time. This can be achieved by using a variety of tools of measurement, such as thermometers, scales, distant measurement devices, and other instruments with quantitative descriptors. Another way replicable measures are obtained is through surveys with closed and open-ended questions that can be used over time. Scales, rating systems, and structured

observation forms with precise characteristics are also an option when trying to collect consistent data (USAID, 2013).

USAID uses the data they collect to contribute to several sources. The US Official Development Assistance Database contains detailed files describing where US contributions flow and in what form they are contributed. Information can be selected by specific recipient countries, or US government agencies for a list of countries that agency assisted. The Trade Capacity Database contains information concerning how the US Government has helped build trade capacity and transitional economies in developing nations. USAID also has a website detailing where foreign aid is spent by quarter, and lists the top 20 benefitting countries. The monitoring Country Progress system is another of USAID's analytical databases that follows and analyzes a country progress, using five determinants: (a) economic reforms, (b) governing justly and democratically, (c) macro-economic performance, (d) investing in people, and (e) peace and security. All of USAID's databases serve as a lesson book that communicates what form of aid is most effective in certain types of communities. The data also reveals the best way to forge positive connections with the local people, agencies and government bodies (USAID, 2012).

**Criticism of USAID.** Sociologists Pamela Paxton and Rummi Morishima evaluated the effects of the monetary aid given by USAID to promote democratic institutions and effective governance (particularly in the Middle East), and they found that over a period of eight years, there was significant and positive change. While they do address the overwhelmingly large amount of capital USAID had contributed, they believe the money subsequently did large amounts of good (Chapman & Quijada, 2009). Nancy Birdsall, from the Center for Global Development, highlighted USAID's 2011 policy that sought to foster a new culture of transparency and learning. The policy promoted extended evaluations, which pleased many

critics and supporters alike. The fact that USAID was willing to champion more evaluation and transparency—two facets of organizational management that can often harm the company—was extremely significant; all international development organizations should be encouraged to take a similar step (Birdsall, 2011). An analysis of USAID's contributions to education was carried out by David Chapman and Jessica Quijada of University of Minnesota, and their findings were positive as well. Overall, the contributions afforded by USAID improved student access, retention, and learning. While the majority of their findings were supportive of the organization, the authors mentioned that some projects were over-promised at the start and over-stated at the conclusion (Chapman & Quijada, 2009).

While the information about the reliability factor of USAID is largely positive, the organization InterAction felt strongly that USAID's lack of leadership heavily limited their ability to provide effective foreign service. InterAction thought USAID to be outdated and unstructured, leading inevitably to a complete lack of focus (United Nations, 2009). Recently Bolivian President Evo Morales declared the expulsion of USAID after almost five decades in the country due to what he felt was manipulation and conspiracy. Morales thought the US agency was too concerned with the political dealings occurring in Bolivia and not concerned enough with the social dealings (USAID, 2013).

**USAID role in Africa/Malawi.** The United States Agency for International Development recently funded Malawi Teacher Professional Development Support (MTPDS). This project aims to develop a framework for the development of teachers and school managers at a professional level. This is a three year project that is meant to build upon the path of successes garnered by the teacher development programs sponsored by the Government of Malawi and other development partners. This project is intended to offer technical support to the

Ministry of Education, Science and Technology in implementing its Program of Works. The Program of Works includes unified teacher training and professional development. It also includes systems management in support of the execution of the National Primary Curriculum (USAID, 2012).

With the University of Texas at San Antonio, and the College of Education and Human Development, USAID started a project in 2009 called *Read Malawi*. The three year, \$13 million agreement led to the distribution of five million books for 1,000 elementary schools in Malawi. The main goal of this project was to improve children's literacy rates (Chapman & Quijada, 2009). Another project funded by USAID is The FORECAST Malawi Program. This initiative supports both the education and health sectors. This academic excursion has been under way since 2007. Since its inception, 40 Malawians have graduated from Lakeland College. Those students have returned to Malawi and have taken teaching positions at training colleges. There are 15 more students who will graduate before the termination of the contract. Five more students have either graduated or are in the process of earning their Master's Degrees in Community Health in Kenya (USAID, 2012).

USAID has commenced and funded a multitude of projects in Africa, specifically in Malawi. They have successfully implemented these projects on small and large scales, so that all those involved can reap benefits. They play and will continue to play a large role in educational development in Malawi.

**USAID Pupil-Teacher Ratio in Malawi.** USAID, in contrast to MoEST and UNESCO, presented different PTR figures. USAID reports a PTR of 184:1 as the average ratio in Primary school, while in first grade the PTR is as high as 220:1. USAID (2013) suggested

Steeply rising primary school enrollments have overcrowded Malawi's primary schools, with the astounding student-teacher ratio of 184:1 in first grade. At the same time, teachers have insufficient training and support, and education quality has suffered as a result. A quarter of students drop out after the first year of school; for those who remain, by the time they reach sixth grade, more than 70 percent cannot read and comprehend at their grade level. (USAID, 2013)

The quote above alludes to the trend that demand for more teachers in Malawi continues to grow as many children get a chance to go school. The government needs to come up with more programs to reduce the demand.

**USAID's definition of education key construct.** USAID did not give a clear definition of a teacher but rather they give some attributes of a good teacher. They suggest that a good teacher is someone who has characteristics of caring, supportive, concerned about the welfare of students, knowledgeable about their subject matter, able to get along with parents and genuinely excited about the work that they do. Effective teachers are able to help students learn. Further they suggest that a teacher who is excited about the subject being taught and shows it by facial expression, voice inflection, gesture, and general movement is more likely to hold the attention of students than one who does not exhibit these behaviors. This is true whether or not teachers consciously perceived these behaviors in themselves.

### **United Nations Educational, Scientific and Cultural Organization (UNESCO)**

UNESCO was founded on November 16, 1945 as an agency of the United Nations. While it only had 20 states when the agency was first formed in 1945, the number has grown and it now has 195 member states and eight associate members. UNESCO currently holds over 50 field

offices around the world, with its headquarters being located at Place de Fontenoy in Paris, France (UNESCO, 2012b).

The institutional priorities of UNESCO will be presented including the vision and mission followed by structure of the organization. Data indicators and their aims are examined followed by some criticisms that have been received from different scholars and commentators.

**UNESCO's Vision, Mission and Goals.** UNESCO's vision is to promote just and prosperous societies based on knowledge, tolerance and equal opportunities for all through education, science, culture and access to information (UNESCO, 2012a). UNSECO's overall mission is quite broad, but its mission with regard to education is to promote quality education as a basic human right (UNSECO, 2014a).

UNESCO's educational goals are codified in the Education for All (EFA) goals, which the organization considers essential to meeting its broader Millennium Development Goals (MDG). The summarized EFA goals are the expansion and improvement of early childhood care and education; by 2015, ensuring that all children, but particularly minorities, girls, and the disadvantaged, can access free, high-quality education; meeting the needs of children and adults through appropriate learning and life-skills programs; by 2015, achieving a 50 percent improvement in adult literacy levels, particularly for women, and ensuring fair access to adult continuing education; by 2005, to eliminate gender disparities in primary and secondary education, and achieve gender equality in education by 2015; and an overall improvement in the quality of education, with measurable outcomes, and a special focus on literacy, numeracy, and life skills (UNESCO 2014b).

**Structure of UNESCO.** The structure of UNESCO is quite simple. It is split into two bodies: the General Conference and the Executive Board. The General Conference determines

the policies and objectives of UNESCO and is responsible for setting the programs and the budget. It also elects the Members of the Executive Board and appoints a Director-General every four years. The General Conference is made up of the representatives of each Member State. It meets every two years, and is attended by Member States and Associate States, as well as observers from non-Member States, intergovernmental organizations and non-governmental organizations. Each country has one vote; size and contribution to the budget are not taken into consideration. The Executive Board meets twice a year and stands as the management of UNESCO. It is made up of 58 members whom are elected by the General Conference. It prepares the work of the General Conference and oversees how decisions are carried out. The duties and responsibilities are taken from the Constitution and from rules or directives given by the General Conference. Other functions are determined by agreements between UNESCO and the United Nations, the specialized agencies, or other intergovernmental organizations.

UNESCO addresses many problems, but it endeavors to focus on education, natural sciences, human and social sciences, culture, and communication and information. UNESCO provides each priority with its own sector within the organization to ensure that sufficient attention is paid to the needs and challenges that face each issue.

The mission of the Education Sector is to provide the international leadership necessary to create learning societies with educational opportunities for all; it provides expertise and fosters partnerships in order to strengthen national educational leadership and increase the capacity of countries to offer quality education. It also seeks to work as an intellectual leader, an honest broker, and a clearing house for ideas, with the purpose of propelling both individual countries and the international community towards further progress on mutual goals. Finally, it facilitates the development of partnerships and monitors progress through publishing an annual Global



Monitoring Report. The Global Monitoring Report tracks the achievements and progress of countries and the international community towards the six Education for All goals. UNESCO's Education Sector also helped to develop several initiatives in response to the need for sustained and concerted action to address persistent education challenges. One such initiative was *LIFE: The Literacy Initiative for Empowerment*, which was a 10 year initiative targeting 35 countries with 85% of the world's illiterate population. Another initiative is *EDUCAIDS: The Global Initiative on Education and HIV/AIDS* which was carried out in conjunction with 10 UN agencies to help governments provide a comprehensive response in HIV and AIDS education. Global partnerships towards girls' and women's education in *Better Life, Better Future* helped to address the dropout rate for adolescent girls and the scaling up of women's literacy programs through stronger advocacy and partnerships. A final initiative is *Education First*, which was launched in September 2012 in large part due to the Secretary-General. This is a five year initiative that aims to enhance global action on education.

The Natural Science Sector aids UNESCO's mission in using science to build peace, eradicate poverty, and promote sustainable development. Its main objective is to mobilize scientific knowledge and policy for sustainable development through acting on three program objectives. The first objective is to use scientific knowledge for the benefit of the environment and management of natural resources. The second is to foster policies and capacity-building in science, technology and innovation. The third objective is to contribute to disaster preparedness and mitigation.

The mission of the Social and Human Sciences Sector is to advance knowledge, standards, and intellectual cooperation in order to facilitate social transformations that are conducive to the universal values of justice, freedom, and human dignity. Its responsibilities are

to determine what should be in terms of ethics and human rights, anticipate what could be in a philosophical manner, and “study what is” through empirical social science research. UNESCO urges that the ethical aspect of its values be fully addressed in order to ensure that scientific and technological progress can be placed in a context of ethical reflection rooted in the cultural, legal, philosophical and religious heritage of all communities (UNESCO, 2012b) . This can be accomplished through several methods: (a) promoting international conventions and instruments related to the Universal Declaration of Human Rights, (b) encouraging ethical principles and creating recommendations for decision-makers, (c) developing an educational approach to inform the public on the human rights implications of scientific/technological progress and globalization, and (d) employing UNESCO’s advisory role in order to aid in the development of national capacities and to assist the scientific community and decision-makers in incorporating ethics into their endeavors through creating an ethical watch. UNESCO plays an important role in the field of human rights through publicizing these four aims of strengthening awareness, acting as a catalyst for regional, national, and international action in human rights, and fostering cooperation with all actors and networks. The philosophy aspect is important in that it creates a search for understanding through critical thought and creativity. It forces world players to look at basic ideas—like democracy, human rights, and a just society—through intercultural reflection. The empirical social science research aspect focuses on bridging research with policy-making, and includes processes such as formulation, the monitoring and evaluation of development actions and processes, the dissemination of research results, and best practices and capacity-building (UNESCO, 2013) .

There are currently two main objectives of the Culture Sector for 2012-2013. The first is protecting and promoting heritage and cultural expressions. This is accomplished through

promoting, reinforcing, and increasing awareness of cultural identities and programs. The second objective for this year is advocating the inclusion of culture and intercultural dialogue in development policies in order to foster a culture of peace and non-violence. The Culture Sector aims to achieve this through strengthening and mobilizing international policies and programs that reinforce cooperation between cultures and societies.

The Communication and Information Sector was created in 1990 to promote the “free flow of ideas by word and image.” It is made up of both the freedom of expression and media development and the knowledge societies division. Its three principle strategic objectives focus on (a) promoting the free flow of ideas, (b) providing universal access to information, and (c) promoting the expression of pluralism and cultural diversity in media and world information networks. Its current activities are based on building inclusive knowledge societies through information and communication (UNESCO, 2012a) .

**UNESCO’s data indicators and their aims.** The UNESCO Institute of Statistics (UIS) was created in an effort to collect the kind of current and reliable statistical data required for any sort of policy analysis by national governments. The UIS collects educational statistics from official administrative sources at the national level. Collected information encompasses data on educational programs, access, participation, progression, completion, internal efficiency and human and financial resources. These statistics cover formal education in public (or state) and private institutions (pre-primary, primary, basic and secondary schools, and colleges, universities and other tertiary education institutions); and special needs education (both in regular and special schools). The data are gathered annually by the UIS and its partner agencies through the following three major surveys that can be downloaded from the UIS website at [www.uis.unesco.org/UISQuestionnaires](http://www.uis.unesco.org/UISQuestionnaires).

The first major survey is the UIS survey. The UIS education questionnaires are sent to all UNESCO Member States annually. The questionnaires are based on international standards, classifications, and measures that are regularly reviewed and modified by the UIS in order to address any emerging statistical issues and to improve the quality of data.

The second survey is the UOE survey. UIS, the OECD and Eurostat (UOE) have jointly administered this annual data collection since 1993. The UOE questionnaire compiles data from high- and middle-income countries that are generally members or partner countries of the OECD or Eurostat. The UOE survey gathers more detailed education statistics.

The third survey is the World Education Indicators (WEI) program. The UIS partnered with the Organization for Economic Cooperation and Development (OECD) in order to develop the World Education Indicators. The WEI program provides a platform for middle-income countries to develop a critical mass of policy-relevant education indicators beyond the global core set of education statistics. This also allows for direct comparisons to countries participating in the UOE survey. The collection of data from WEI countries is based on a common set of definitions, instructions and methods that were derived from the OECD Indicators of National Education Systems (INES) program. Participating countries in the WEI data collection are Argentina, China, Egypt, India, Indonesia, Jamaica, Jordan, Malaysia, Paraguay, Peru, the Philippines, Sri Lanka, Thailand, Tunisia and Uruguay. It produces more detailed information of the participating countries than the regular UNESCO Institute for Statistics (UIS) education survey. Countries participating in the WEI program are also actively involved in the design and analysis of special data collections, such as the Survey of Primary Schools (SPS), which provides information on the quality and equality of primary education in 11 countries. International benchmarks are used to assess progress towards national education goals. WEI countries can

compare results with similar data from the Organization for Economic Co-operation and Development (OECD). This benchmarking was highlighted in the Education Counts publications in both 2007 and 2006.

The World Education Indicators program seeks to develop indicators and methodologies based on a common set of policy concerns where cross-national comparisons can (a) add value, (b) review methods and data collection instruments, and (c) set the direction for future development work and analysis. The WEI program is meant to serve as a forum of ideas. Countries do not just collect data; rather, they design and test innovative surveys and methodologies. The main aim of the WEI program is to establish a comparative perspective on key policy issues to better monitor education systems. It seeks to address new information needs as countries shift to more advanced stages in educational development (UNESCO, 2012a). The most common indicator within the WEI is the gross graduation ratio, which is calculated by dividing the total number of graduates from an education program or level by the total population of typical graduation age.

The WEI survey focuses on the pre-primary, primary, lower secondary, and upper secondary levels (UNESCO-UIS). Countries are able to decide whether they wish to collect information on the situations of particular country-relevant population subgroups (regional, ethnic, linguistic, etc.). They are given this freedom if they explain each situation clearly in the country report in order to facilitate national level aggregations which allows for accurate comparisons across countries.

In terms of administrating the WEI survey, National Coordinators determine the most appropriate data sources to complete the questionnaire (UNESCO, 2010a). For specific questions, policy documents often provide the necessary information in most countries. The

different sources may lead to different results so it is necessary to report, specifically and precisely, which sources of information have been used in filling out the questionnaire. There must be exact information about the data sources for each data collection table.

The data gained from these surveys is used by researchers and country officials to assess the performance of each educational system through using international comparisons. It provides benchmarks for development while taking into account national conditions like population size. The information from these surveys has been serving member countries since 1997 through providing a forum for developing indicator methodologies focused on addressing common policy concerns that were revealed through cross-national comparisons. The data is also used to set the direction for future development work and analysis.

More specifically, the data can be used by international agencies that focus on educational reforms in developing countries through emphasizing any of three standpoints: human rights, economic growth, or social integration. Educational reform indicators relating to enrollment and gender disparity are particularly important because they emphasize equity and justice through the diffusion of education (Dessoff, 2010). Indicators relating to the *completion and content* of education are also important to the economic growth standpoint because the future labor market is concerned with the quality of labor which is directly related to educational reforms. In terms of social integration, indicators that deal with access to opportunity for education help to create the foundation of educational reform (Dessoff, 2010).

**Criticism of UNESCO.** One main concern has been UNESCO's rocky history. When UNESCO first established a statistical division, it gained a reputation as the premier education statistics institution in the 1950s and kept it well into the 1960s, thanks to the backing of the United States (Heyneman, 1999). UNESCO maintained its impressive reputation until the 1980s,

when the quality of its educational statistical data began to deteriorate. The quality of its educational statistics was less accurate in the 1980s than in the 1960s (Heyneman, 1999). Lack of funding, Cold war politics, and the gravity of the task all played a role in UNESCO's inability to maintain its former standing. With the lack of funding for indicator collection, UNESCO "could not afford its view of itself" and thus it failed to keep valid educational indicators. Many of the analyses and conclusions on educational statistics were collected by other agencies and not UNESCO as UNESCO could no longer rely on their own data (Barmby, 2006).

When educational data once again became a priority for UN agencies in the 1990s, UNESCO began to improve the quality of its educational data. In 1996, the World Bank sponsored the International Program for the Improvement of Educational Outcomes that funneled additional funding into restructuring UNESCO's statistical system (Heyneman, 1999). Around the same time as this increase in funding, UNESCO moved its Institute of Statistics headquarters from Paris, France to Montreal, Canada in order to make it more autonomous. Since this move, the UIS has increased funding in educational statistical data collection, in Education for All, and in the World Education Indicator project. To date, collected data is entered into the database of UNESCO's statistical services in order to allow storage, calculation, verification, correction, estimation and dissemination of statistics and indicators (Kadzamira & Rose, 2001). The data is then compared with other official sources of data including national statistical yearbooks. When inconsistent data is discovered, participating countries are asked to resubmit their findings. Due to the high inconsistency and invalidity of collected data during the 1980s, UNESCO now makes great effort to validate and check the data for inaccuracy.

Despite the care that UNESCO takes to check and recheck its data, another concern has been that UNESCO simply does not have the capacity to deal with the entire world's statistics

and standards as it is only one organization. Every country has different concerns and interests related to human rights, economic growth, and social integration that could play into their education sector. Thus, it only makes sense that education indicators should not be uniformly utilized; rather, there should be a more flexible consideration of each country's political, economic, social, and cultural situations (Keigher & Cross, 2010).

Furthermore, the statistics gathered may not address every aspect of the educational system in each country (OECD, 2001). Certain aspects of the educational systems of different countries are harder to quantify, such as the teaching methods used or the extent of remedial help available. Increasing demand can be found in literature for more comprehensive and reliable measures of student achievement to be developed (with the help of more extensive micro-level data) in order to better understand less quantifiable characteristics such as the attitudes of teachers and countries that expect too much or too little of their educators (OECD, 2001). The provision of such data remains one of the most important future objectives for the OECD/UNESCO WEI program. A related concern has to do with the fact that the world of statistics is continually changing along with individual countries; some fear that it is not possible for UNESCO to keep up with all of these changes (Heyneman, 1999). At the same time, some wonder whether these changes should even affect UNESCO as reliable statistics should not be sacrificed for popular opinion.

**UNESCO's role in Africa/Malawi.** In October of 2009, UNESCO funded an international seminar on "Curriculum Innovations, Peace Education and Poverty Alleviation in Sub-Saharan Africa. The main objective of this seminar was to submit a completed version of the toolbox Preparation for Life and Work in the 21st Century (UNESCO, 2011) . The toolbox was meant to support capacity building activities, which promote curricula innovations



emphasizing life/work skills and basic education. Thirty participants from 15 countries including Angola, Burkina Faso, Burundi, Congo-Brazzaville, Mali, Mauritius, Mozambique, Niger, Rwanda, South Africa, Botswana, Guinea, Kenya, Malawi, and Senegal attended.

In 2006 and 2007, UNESCO advocated and supported Education for All (EFA) through supporting (a) national policies, plans, and management, (b) statistical capacity building, (c) Early Childhood Education, (d) inclusive education, (e) Adult Literacy, (f) Girls in Science Education, and (g) Teacher Quality Education (unmalawi.org, 2012).

Over this same period of time, UNESCO participated in many smaller projects. First was the development of the District Education Management Information Systems pilot phase within the Lilongwe District. They also participated in the introduction of Open and Distance Learning (ODL), training for ECCE Policy Review and Implementation, situation analysis in the provision of literacy and non-formal education, and training of National Experts in mainstreaming of Gender in national education programs, curriculum, and learning materials. Lastly, UNESCO participated in the documentation of good practices in the management of education systems in Malawi and the sub-regional seminar on Technical and Vocational Education.

Although UNESCO does not create policies, it does suggest policies. The analysis of their data does determine the formation of policies in certain countries. If a country or region is failing educationally in comparison to the other member countries, then UNESCO will make a special effort to raise their numbers. Using the World Education Indicators program as a forum of ideas, participating countries analyze data in order to create policies or national strategies that allow for less disparities in education between countries.

**UNESCO's pupil-teacher ratio in Malawi.** Contrary to MoEST's report and projections, in October 2013 GMR reports that Malawi's PTR is 76:1 (2013). UNESCO suggests

the teacher shortage is actually getting worse in some countries. If current trends continue, there will be more children needing primary teachers in 2030 than today in Côte d'Ivoire, Eritrea, Malawi and Nigeria. The teacher gaps are widening because of staggering attrition rates and the rising demand for primary education (UNESCO, 2013, p. 13).

Although MoEST and UNESCO present different figures, there is general consensus that PTR is still high. According to UNESCO, the number and distribution of teachers are important policy parameters helping to determine the quality of education. The pupil-teacher ratio is a commonly used indicator, reflecting the human resource capacity of education systems. Thus it is very important to make sure that the numbers and figures presented are consistent and that they portray the real situation on the ground. UNESCO further suggests that pupil teacher ratios are higher at the primary schools than secondary schools in Malawi.

The geographic distribution of education personnel, referring to their spatial allocation in rural and urban zones, as well as more or less preferable locations within those zones is considered as major barrier to balance pupil teacher ratio. Geographic distribution is considered to be imbalanced when a normative rationale, such as population/personnel ratios or more sophisticated needs-related indicators (Verspoor, 2005), are not followed. Geographic distribution matters in education since it determines which educational services will be available to which populations, focusing on the quantity and quality of those services. Imbalances raise problems of equity (services not available according to needs), efficiency (surpluses/shortages), effectiveness (outcomes), as well as the general satisfaction of users. Education for All cannot be achieved if vulnerable populations do not have reasonably equitable access to qualified teachers.

**UNESCO's definition of education key construct.** UNESCO defines a teacher as someone who has been trained to teach learners in a formal classroom. UNESCO further

suggests that teachers are a key enabling factor in improving the quality of education. The evidence of this and many other reports is that teachers are critical to any reforms designed to improve education quality. There have been several studies around the globe about teacher quality and why it is important to recruit good people to serve as teachers. The process of preparing good teachers is critical to education quality. Preparing teachers for the challenges of a changing world it means equipping them with subject-specific expertise, effective teaching practices, an understanding of technology, and the ability to work collaboratively with other teachers, members of the community, and parents.

Available data suggest that large proportions of primary school teachers lack adequate academic qualifications, training and content knowledge, especially in developing countries. This suggests that much pre-service training may be ineffective. Pre-service training usually combines theoretical and content knowledge with teaching practice in schools but there are wide variations in the relative weight given to these two elements and in their modes of delivery. In some countries, where there is a pressure to recruit new teachers quickly, and the length of college-based training is shortening and the sequencing of practical and academic training changing.

Available UNESCO sources define students as those in secondary or tertiary levels, the term they used in the sources referring to students is learner and pupil referring to learners in primary school. Whereas on qualified teacher, the definition used refers to someone who has been trained and is certified to teach. Qualified teacher for primary school is the one who has gone through formal training at Teachers Training College.

## Conclusion of Case Studies

The Ministry of Education, Science, and Technology of Malawi claims that its vision for the education sector is to “be a catalyst for socio-economic development, industrial growth, and instrument for empowering the poor, the weak, and voiceless” (malawi.gov.mw). Education has proven itself a crucial tool for the development of any country. As Castle and Arends state, “There is no doubt that education contributes to the advancement and enrichment in cultural, social, and economic development in all societies by endowing individuals with the means to improve their health, skills, knowledge, and capacity for productive work” (Castle & Arends, 2003, p. 117). However, access to current, quality information will play a crucial role in the development of that vision. While it may be true that education is crucial to the development of a nation, information has proven itself crucial to the development of education.

The education sector in Malawi is rapidly expanding, and MoEST is struggling to keep up. Now, more than ever, it needs reliable, timely information on the current state of the educational system in order to facilitate informed decision making and policy analysis. While EMIS plays an important role in this process, it most definitely has its shortcomings. However, MoEST has its pick of databases to use as there are several external organizations that also analyze the Malawian educational system. UNESCO, USAID, DFID and JICA are external organizations that all seek the further development of Malawi, and have data collectors/analyzers that have done educational research within Malawi. However, each organization has its own history, mission and vision, structure, and methodology towards collecting/presenting data. It is important to understand these organizations at their core in order to have a better idea of how a particular dataset could have a varying effect on the decision-making process of MoEST, should they choose to adopt that particular dataset in the future.

EMIS and other data-collection agencies will play an essential role in the further development of education in Malawi as they are designed to support information-based decision-making processes. Castle & Arends (2003) claim that it is this kind of support that Ministries of Education need and that policy makers in the Ministries of Education deserve. If any one of these organizations can manage to conquer their challenges, they will prove themselves an invaluable tool to the further educational and national development of Malawi.

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