EdData II

Effective Teaching and Education Policy in Sub-Saharan Africa

A Conceptual Study of Effective Teaching and Review of Educational Policies in 11 Sub-Saharan African Countries

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A Conceptual Study of Effective Teaching and Review of Educational Policies in 11 Sub-Saharan African Countries

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Abbreviations

CAP	*Certificat d'Aptitude au Professorat de l'Enseignement General*
CAR	Central African Republic
CEAP	*Certificat Elementaire d'Aptitude Pedagogique*
CEART	Committee of Experts on the Application of the Recommendations concerning Teaching Personnel
CPTD	Continuing Professional Teacher Development
DBE	Diploma in Basic Education
DRC	Democratic Republic of Congo
EFA	Education for All
EGRA	Early Grade Reading Assessment
ENI	*Ecoles Normales d'Instituteurs*
FFT	Framework for Teaching
GDP	gross domestic product
INSET	In-Service Education and Training
ISCED	International Standard Classification of Education
MET	Measure of Effective Teaching
NCE	Nigerian Certificate in Education
NEEDU	National Education Evaluation and Development Unit
NGO	nongovernmental organization
OECD	Organisation for Economic Co-operation and Development
PGDE	Postgraduate Diploma in Education
PIRLS	Progress in International Reading Literacy Study
PISA	Program for International Student Assessment
PRIMR	Primary Mathematics and Reading

PTR	pupil-teacher ratio
QMS	Quality Management System
RESEP	Research on Socioeconomic Policy
SACE	South African Council for Educators
SACMEQ	Southern and Eastern Africa Consortium for Monitoring Educational Quality
TIMSS	Trends in International Mathematics and Science Study
UIS	UNESCO Institute for Statistics
UNESCO	United Nations Educational, Scientific, and Cultural Organization
USAID	U.S. Agency for International Development
USD	U.S. dollars
UTDBE	Untrained Teacher Diploma in Basic Education
WPM	words per minute

Executive Summary

It is commonplace to assume that teachers, and the actions they take in the classroom, have fundamental impacts on student learning. Both educational stakeholders and policymakers regularly assert this direct relationship between teaching and learning without adding many qualifying statements. Often it is stated that educational systems are only as good as the quality of their teachers. Such declarations about the importance of the teaching profession are commonly held across many societies, and, as affirmations of value on an important societal role and function, they are both legitimate and reasonable. Teachers, after all, are the individuals a society charges with simultaneously caring for its children and advancing their skills for learning and living. Teachers are remunerated for their service on the front lines of the societal function of teaching and learning and while they are not solely responsible for what a student learns (since students clearly learn a great deal outside of the classroom), most societies concur that some manner of a formal teaching and learning process is a necessary and valuable service to be established and upheld.

Within these ubiquitous valuations of both teaching and teachers lies the sober realization that individual teachers have differential effects on student learning. That is, teachers are either more or less successful at facilitating their students' progress toward agreed-upon learning outcomes, and therefore fall somewhere along an idealized continuum of purported "effectiveness". The variable effects of teachers on student learning outcomes has, in turn, swayed the attention of educational policymakers towards the identification and specification of those aspects of teaching and of teachers that are more likely to facilitate student learning. In doing so, four general areas of the teaching and learning process have been explored as indicative gauges of instructional effectiveness: (1) teacher characteristics and classroom-level inputs, (2) teacher professionalism and conduct, (3) student learning outcomes, and (4) teaching practice.

Currently, the most prominent—in terms of both research and policy—of the four general areas are teacher characteristics and student learning outcomes; these are nearly ubiquitously employed to define effective teaching. The latter (student learning outcomes) is particularly emphasized in high- and middle-income countries, especially with the advent of regional and international assessments of student learning, but it is also becoming more commonplace in low-income countries. However, the areas of teacher characteristics and student learning outcomes define effective teaching not on its own terms, but rather as either teachers who possess certain characteristics seen as profitable for teaching or as teachers whose students make progress against learning outcome metrics. In other words, effective teaching tends to be conflated with either effective *teachers* (i.e., personal characteristics and professional attributes) or with *successful* teaching (i.e., those whose students are successful on accepted forms of assessment).

This bidirectional conflation of good teaching with *effective teachers* and with *successful teaching* is subtle, but important, because it has had disastrous consequences for both education research and policy. Conflating good teaching with effective teachers has led to a sustained focus on how to recruit, train, and support teachers with the requisite traits that are (nearly) assumed *a*

priori to facilitate student learning. Put otherwise, the emphasis has been on equipping a teacher workforce with the personal characteristics that make "good teachers" and has largely treated teachers as important but perfectly interchangeable components of an educational system. Mistaking good teaching with *successful* teaching, on the other hand, has led policymakers to emphasize and place value on information that students can recall and put into practice on formal assessments.

The conflation has also significantly affected the collection and reporting of educational statistics. This report finds that the teacher-centric measures of educational systems that are most widely available and reported on are those that enumerate effective *teachers* (i.e., teacher characteristics) and *successful* teaching (i.e., student outcomes). However, very few international databases and assessments, or ministries of education, collect measures on classroom instructional processes. Rather, evidence of classroom practice (and the improvement of it) in sub-Saharan African countries tends to come from non-governmental sources (who work in collaboration with ministries of education).

Research conducted for this report, which involved the review of international, regional, and national datasets, was also informed, on the one hand, by a proliferation of evidence relating to teachers and school resources and, on the other hand, by the relative dearth of data germane to classroom practice. With regard to teaching credentials, the proportion of teachers who met the national criteria equal to "qualified" was found to range widely between countries. However, in 15 of 38 sub-Saharan African countries with available recent data, more than one in three teachers were not considered "qualified" according to national standards. More positive was the finding that a much higher proportion of recent recruits to the teaching profession met these standards; indeed, in 15 of 24 countries with available data, this proportion was at or near 100%. Of course, meeting national criteria for a "qualified" teacher varies too by context (and over time) and does not guarantee that teachers have content-specific pedagogical knowledge or training. Rather, research undertaken for this study found the opposite—training on content-specific instructional techniques is rare among teachers in sub-Saharan Africa, as is in-service training in general. Evidence reviewed for this paper found that teachers' content-specific knowledge (e.g., in mathematics or reading) was predictive of student outcomes on certain assessments in certain countries, but very little (i.e., approximately 17%) of the total variation in student achievement was explained by these statistical models.

In terms of the conditions of teaching and learning, it was found that average primary pupil–teacher ratios (PTRs) varied widely between countries; from 20:1 in Mauritius to extremely high values of 80:1 in the Central African Republic (CAR). Two-thirds of sub-Saharan African countries with available recent data had official primary PTRs over 40:1. The ratio in the secondary phase tended to be lower (i.e., most countries with available data had ratios lower than 30:1), and this is in part was due to the fact that the number of secondary teachers increased dramatically (i.e., 115%) from 2000 to 2011 in sub-Saharan Africa as a whole. These average values, however, hide intra-country variation, and substantially higher PTRs were found in numerous recent studies conducted by RTI International. Twenty-one of 33 sub-Saharan African countries reviewed for this report were found to lack adequate teaching and learning materials,

particularly textbooks. Indeed, in 11 of 33 countries with available recent data, students were required to share materials with at least one of their peers. This was corroborated by regional assessments that found that less than half of students have access to their own textbook. RTI International, too, has found that most schools in sub-Saharan African countries do not begin the year with the appropriate number of books for pupils, and most of these schools have to wait at least three months before receiving them. Of course, access to textbooks cannot be taken to imply that teachers routinely use them effectively, or that the books are of sufficient quality to warrant their use. Rather, research presented here suggests the opposite is oftentimes the case.

This report found that teachers, particularly at the secondary level, tend to be paid well, at least in relative terms when compared to gross domestic product (GDP) per capita. This is surely due in part to the fact that teachers tend to have higher academic qualifications than the general population. It also means, however, that teachers are an "expensive" investment (relatively speaking) for most countries in sub-Saharan Africa. The eventual outcome of this is that the majority of expenditure in educational budgets is often consumed by personnel remuneration; in 17 of 26 countries with available recent data, salary expenditure amounted to a higher than ideal proportion of total spending (i.e., more than 66%).

Teacher absenteeism was found to be high (i.e., as high as 30%) in numerous contexts reviewed for this study. Though attrition rates were not uniformly high across countries studied here, in nine countries with recent data available, attrition rates were higher than the rate at which new recruits graduated from teacher training programs. In other words, more teachers were leaving the profession in these countries than were entering it.

While data on teachers' classroom practices was not widespread, this report also reviewed observational data of teachers' pedagogic moves. In general, time spent on task tended to be low. For example, the proportion of time spent reading in class during a reading lesson was dramatically low. Oftentimes this was due to teachers' overuse of teacher talk and explanation to deliver lesson content. Teachers also tended not to employ active and constructive pedagogical moves that reinforced students' attempts at and desire for learning. For example, teachers were apt to punish students for incorrect responses or did not use assessment for anything but determining grades. Nevertheless, some pockets of good practice exist in this regard, with teachers reporting more sophisticated instructional practices despite low levels of experience and training.

The neglecting of teaching practice in favor of characteristics of teachers, as reported here, is not accidental; rather, it is driven, at least in part, by the fact that national educational policies and plans place their focus on teachers as well the practice of teaching. Indeed, this report finds, in the review of 11 sub-Saharan African nations' policies and plans, those that touch upon teacher issues tend to be used to describe the profile of the ideal teacher and, by extension, the teacher workforce. These profiles articulated in national policies and plans tend to stop after describing characteristics of teachers, instead of extending to the pedagogical interactions that teachers have with students in classrooms. The review of educational policies in 11 sub-Saharan African countries revealed several common themes, including national registration and certification,

teacher training, conditions of service, remuneration and advancement, gender considerations, and mother tongue instruction.

In some cases, policies and plans do not explicitly address certain key issues of interest. In others, official legislative and political documentation are ambiguous, do not commit to specific courses of action, or do not suggest workable accountability mechanisms for improving teaching practice and conditions of work. As such, it would seem a logical extension to argue for the adoption of *specific* policies to address the teacher issues featured in this report, as well as others which would encourage the development of higher quality teaching practices in classrooms in the sub-Saharan African countries of focus. Education policy, however, has historically not been sufficiently salient to the classroom practice of *teaching* to substantially impact upon teachers' beliefs and routines, as well as pedagogical "moves." Policies and plans, though they can accomplish much in educational systems, rarely address the "instructional core" (i.e., the interaction between curricula, teaching practices, and student engagement) of classrooms or enter into the black box (i.e., mysteries) of teaching and learning practices. Even when the enigma of classroom instruction is breached, policy, and just as importantly, practical knowledge on how to support teachers, may not be sufficiently strong to influence teacher practices. Specifically, this report highlights four constraints—related to finances, data, implementation, and system design—to enhance teaching quality in sub-Saharan African classrooms. These four constraints are elucidated and expanded upon in the body of the text.

The general patterns discussed in the previous paragraphs relating to data on teacher characteristics and school contexts were not found to vary substantially according to region or any other sub-grouping of nations (e.g., Anglophone and Francophone) in sub-Saharan African countries. Rather, the aforementioned patterns and those presented in the main body of this report can be assumed (unless expressly stated otherwise) to be more or less indicative of sub-Saharan Africa countries in general. This finding, it should be noted, is not intended to assert homogeneity either across or within sub-Saharan African countries with regard to the data analyzed for this report. Indeed, it will be shown that, on the contrary, substantial variation exists on the indicators reported herein. However, regionally specific patterns were not discovered during the research conducted for this report, which implies that no sub-region or set of countries within sub-Saharan Africa can reasonably claim to exhibit "best practices" with regard to effective teaching. Equally, though, the opposite is also true: the lack of regionally specific patterns suggests that no subset of countries can be pegged as "worst performing" vis-à-vis effective teaching. What is clear is that there remains a great deal of work to do in order to support and facilitate effective teaching in sub-Saharan African classrooms, both at the policy and school levels.

Five Policy Recommendations

In light of the four constraints (i.e., finances, data, implementation, and system design) noted above, this report concludes with several policy recommendations that could lead towards establishing the facilitating conditions necessary for the enhancement of instructional practices in sub-Saharan African classrooms.

Establish baseline practices of quality teaching and desired instructional behavior

First, this report shows how educational policies and plans that attempt to influence teachers' behavior tend to focus on levers that in fact do not substantially influence teachers' classroom practices. Second, this instructional behavior is difficult to change even when policy explicitly explains ways in how to handle it. As such, it would be tempting to specify heavily prescriptive policies that either prescribe desired instructional behaviors or proscribe undesired ones and to subsequently hold teachers accountable for enacting the new instructional norms. However, such behavioral prescriptiveness would be a mistake and would likely prove to be a fruitless endeavor. Instead, policies should be used to establish baseline practices for classroom teaching which are non-negotiable, but which also leave room for professional judgment, improvisation, and flexibility. This approach to policy acknowledges that there are some basic hallmarks of classroom teaching that all teachers should be expected to exhibit in their practice, but that these professional norms are merely baselines of professional practice and therefore establish the structure that enables professional learning among teachers about their practice (with some evidence variation depending upon subject and grade).

Devise measures of, and start collecting data on, the processes of teaching

Ministries of Education are not inherently confined to reporting evidence that, at best, is at the margins of classroom teaching practices. Further, most ministries are equipped well-enough to systematically gather data on classroom instruction via their inspection offices and data collection systems. Inspectors could travel to schools, talk with teachers, observe lessons, gather data on specific teaching and learning processes in classrooms, and report back to the Ministry (all while keeping data anonymous). Starting to collect data on specific instructional practices through classroom observation would establish a bank of evidence that would provide insight into teachers' classroom instruction, signal to all educational stakeholders that the quality of classroom instruction matters greatly, and provide examples of good practice that other countries could adopt.

Reconfigure the school day to allow time and space for teachers to work differently

If teachers are expected to work in a different manner than they have in the past, then they must be given both time and space necessary to work in this new model. It is not realistic to assume teachers' instructional behaviors will be substantially altered if their daily schedules and work profiles remain unchanged. Time can be allotted to teachers by altering any of the following: instructional time (starting or ending times, breaks within the day), class composition (sizes or organization), or teaching responsibilities (job descriptions). All of these are changeable through policies. Space can be afforded to teachers learning new instructional techniques by providing them opportunities to practice in classrooms and to obtain structured feedback from peers. Teachers could also be given space in which to work by relieving, at least partially, extant expectations or requirements of instructional sequences (e.g., by temporarily suspending curricular sequences).

Allow experimentation with alternative remuneration schemes

Instead of the conventional remuneration schemes, teachers' salaries could be linked to the role they are expected to fulfill in classrooms and schools, which in turn could be made to reflect what a given society values in teaching and its outcomes. Teachers in sub-Saharan African countries, as elsewhere, engage in much more activity in the classroom than simply assessing their pupils. Although assessment is an important element of the teaching profession, it is not the only component. Therefore, to tie salary bonuses only to achievement performance is rather simplistic and reductionist. Rather, remuneration could be based on what a society values in its teaching profession, such as a teachers responsibilities, professional actions, and functions, as well as the extent to which an individual teacher fulfills these roles.

Encourage risk-taking behavior among teaching staff

Requiring teachers to make instructional changes from less effective instructional practices to more effective ones entails risk, both real and perceived. Therefore, if Ministries of Education want teachers to overcome their natural risk-aversion and adopt new, more ambitious teaching techniques they will have to explicitly encourage teachers to do so. This encouragement could take many forms and is not limited to financial incentives.

Introduction and Background

It is commonplace to assume that teachers and the actions they take in the classroom have fundamental impacts on student learning. Both educational stakeholders and policymakers regularly assert this direct relationship between teaching and learning without adding many qualifying statements. Often it is stated that educational systems are only as good as the quality of their teachers. Such declarations about the importance of the teaching profession are commonly held across many societies, and, as affirmations of value on an important societal role and function, they are both legitimate and reasonable. Teachers, after all, are the individuals a society charges with simultaneously caring for its children and advancing their skills for learning and living. Teachers are remunerated for their service on the front lines of the societal function of teaching and learning and while they are not solely responsible for what a student learns (since students clearly learn a great deal outside of the classroom), most societies concur that some form of formal teaching and learning process is a necessary and valuable service to be established and upheld.

Within these ubiquitous valuations of both teaching and teachers lies the sober realization that individual teachers have differential effects on student learning. That is, teachers are either more or less successful at facilitating their students' progress toward agreed-upon learning outcomes, and therefore fall somewhere along an idealized continuum of purported "effectiveness". The variable effects of teachers on student learning outcomes has, in turn, swayed the attention of educational policymakers towards the identification and specification of those aspects of teaching and of teachers that are more likely to facilitate student learning. In doing so, four general areas of the teaching and learning process have been explored as indicative gauges of instructional effectiveness: (1) teacher characteristics and classroom-level inputs, (2) teacher professionalism and conduct, (3) student learning outcomes, and (4) teaching practice.

The first general area that is often posited as an indicator of instructional effectiveness—characteristics of teachers and classroom inputs—asserts that observable inputs at the classroom level can serve as sufficient proxies for effective instruction. This vein of reasoning focuses on teacher characteristics, such as educational backgrounds, degrees, professional certification, the extent and composition of teacher training, teacher content knowledge, and years of experience. It also incorporates classroom-level inputs, such as the availability of learning materials, numbers of teachers, teacher–student ratios, and other teaching and learning resources.

The second general area thought to be indicative of effective teaching—teacher professionalism and conduct—purports that the professionalism with which teachers conduct themselves in schools and classrooms is related to effective instruction. Both research and policy in this area have focused on teacher absenteeism, tardiness, and educators' attitudes towards their profession in general and their present jobs (i.e., motivation).

The third general area explored by policymakers and researchers—student learning outcomes—assumes that outcomes are inherently tied to effective teaching practices. To some extent, this assumption may be based on a view that teaching practices are too variable, too difficult to specify and monitor, and that there are too many ways to teach well; therefore, one might as well

judge the teaching process by its result. Thus, this area tends to place primary importance on the measurement of student learning over teaching practice. As such, effective instruction becomes defined as those actions which enhance student learning outcomes and is measured essentially by the outcomes rather than measures of teaching. This emphasis on, and valuation of ,student learning outcomes over teaching practices also means that information obtained on instruction is paltry in comparison with that obtained on measurement of student learning.

The fourth general area posited as indicative of effective teaching—classroom practices—represents the only attempt of the four areas to open up the "black box" of teaching and discern the work that teachers are actually doing with students in classrooms. This is also the only area that attempts to define effective teaching on its own terms by concentrating on teaching practices rather than personal characteristics, teacher conduct, classroom resources, or student success. However, the conceptualization and measurement of effective teaching, without recourse to these other aspects of the teaching and learning process, has proven difficult and contentious to say the least. Therefore, while forays have been made into the observation and measurement of actual instructional practices (as will be described in this report), research and policy has predominately focused on activities that do not directly touch upon teaching practice. Instead, activity in this area has focused on classroom management practices, classroom organization, time spent on task, student engagement (defined as whether or not students are following the lesson), and fidelity of instruction (i.e., whether teachers are following prescribed lessons and sequences).

These four general areas explored as indicative of effective teaching are neither mutually exclusive nor categorically independent; they are, rather, overlapping and, in all likelihood, mutually reinforcing. For instance, while the fourth point of view noted above is, some extent, radically different from viewpoints two and three, it does assume that practice is "intelligible" and can be specified, observed, and perhaps even inculcated in prospective and current teachers. To some degree it lends support to the first viewpoint, but only if the qualifications and diplomas received by the teachers are based on an accurate "model" of good teaching practice. It is worth noting, however, that in their attempt to enhance teaching and learning, most of the areas tend to focus on levers that in fact do not significantly influence instructional practices. Even in the general area of teacher practice, much research work and policy activity has emphasized classroom management rather than the conceptualization and definition of quality within instructional practices—it has certainly not focused on understanding how to enhance classroom teaching by systematically learning from contextually-bound experience (both failures and successes).

Currently, the most prominent (in both research and policy) of the four general areas are teacher characteristics and student learning outcomes; these are nearly ubiquitously employed to define effective teaching. The latter (student learning outcomes) is particularly emphasized in high- and middle-income countries, especially with the advent of regional and international assessments of student learning, and is also becoming more commonplace in low-income countries. However, the areas of teacher characteristics and student learning outcomes define effective teaching as either teachers who possess certain characteristics seen as profitable for teaching or as teachers whose students make progress against learning outcome metrics. In other words, effective

teaching tends to be conflated with either effective *teachers* (i.e., personal characteristics and professional attributes) or with *successful* teaching (i.e., those whose students are successful on accepted forms of assessment).

This bidirectional conflation of good teaching with effective *teachers* and with *successful* teaching is subtle, but it is important, because it has had disastrous consequences for both education research and policy. Conflating good teaching with effective teachers has led to a sustained focus on how to recruit, train, and support teachers with the requisite traits that are (nearly) *a priori* and assumed to facilitate student learning. Put otherwise, the emphasis has been on equipping a teacher workforce with the personal characteristics that make "good teachers" and has largely treated teachers as important but perfectly interchangeable components of an educational system. Mistaking good teaching with *successful* teaching, on the other hand, has led policymakers to emphasize and place value on information that students can recall and put into practice on formal assessments.

The conflation has also significantly affected the collection and reporting of educational statistics. As will be seen in this report, the teacher-centric measures of educational systems that are most widely available and reported on are those that enumerate effective *teachers* (i.e., teacher characteristics) and *successful* teaching (i.e., student outcomes). Very few international databases and assessments, however, collect measures on classroom instruction processes.

This report, which is broadly tasked with presenting evidence on the state of teacher effectiveness in sub-Saharan Africa, represents an attempt to bridge the gap between what has hitherto been a sustained focus on teacher characteristics or student outcomes and a more holistic conceptualization of effective teaching, one that also emphasizes teachers' actual instructional practice and pedagogical moves. To do so, the report draws on data and findings germane to teacher effectiveness from international databases and assessments and critically supplements these data with recent findings from donor-funded projects and evaluations that specifically attempt to observe teachers' classroom instruction. The second section of the report presents evidence from the educational plans and policies of 11 sub-Saharan African countries and shows that these often focus on teacher characteristics, classroom inputs, professional guidelines, and (to some extent) teaching practices. A third section of the report describes four barriers to focusing more on effective teaching (as opposed to *effective* teachers and *successful* teaching) in sub-Saharan African countries. The report concludes with policy recommendations and considerations.

Methods and Approach

This report explores teacher issues and policies in sub-Saharan African countries via three inter-related questions and methods, each of which is discussed in turn.

First, the paper presents the state of issues related to teaching and learning in sub-Saharan African countries. Recent data and evidence, obtained from international, regional, and national databases for numerous sub-Saharan African countries are presented that speak to the state of

teacher issues and conditions of service for teachers. Data were obtained from the United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics (UIS) databases, the World Bank databank, *Pôle de Dakar* databases, and recent research conducted by RTI International. This analysis is supplemented by a review of previously conducted studies of teacher issues in sub-Saharan Africa in order to discern how these issues have been addressed in recent research and to identify which issues related to quality teaching are commonly discussed.

Second, the paper outlines national policies and educational plans germane to teaching and learning in 11 sub-Saharan African countries. The objective of this section is to present the national policy frameworks within with teachers work and to identify how teacher issues are addressed via national policymaking. For this section, national policies and educational plans, as well as major projects and independent reports, were reviewed for the 11 sub-Saharan African countries of interest.

A third section of the paper highlights reasons why educational policies and plans may not be sufficiently salient to substantially influence the classroom practice of teachers. In other words, though policies and plans are important in shaping the contexts in which teachers work and designing and maintaining the facilitating conditions in which quality teaching can take place, they tend to be rather blunt tools in shaping actual instructional practices. This section discusses four such constraints related to finances, data, implementation, and system design.

Issues Related to Effective Teaching in Sub-Saharan Africa

Many studies have reviewed teacher issues in sub-Saharan African countries. These studies differ in terms of their approaches, ranging from econometric analyses of large-scale regional datasets, national policy analyses, programmatic reviews, and national case studies. The studies also differ slightly with regard to their findings and recommendations. However, what is common across most of these studies is a sustained focus on the *characteristics* of teachers (e.g., their training, experience, academic backgrounds, and content knowledge), rather than on the *act* of quality teaching.

As will be discussed in this section, the focus on teacher characteristics is bolstered by national-level data that are readily available and widely used; international datasets such as the World Bank Databank, UIS databases, and others routinely collect and report on teacher characteristics.[1] Underlying this tendency is the assumption that a host of various teacher characteristics, correctly and carefully assembled, will beget quality teaching. This assumption (or rather, conflation), is not shared by this report. This is not meant to suggest that these

[1] Several international datasets exist that hold data on quality teaching practices (e.g., International Association for the Evaluation of Education Achievement datasets from Trends in International Mathematics and Science Study [TIMSS] and Progress in International Reading Literacy Study [PIRLS] assessments, and Organisation for Economic Co-operation and Development [OECD] datasets from the Program for International Student Assessment [PISA] assessment), but Sub-Saharan African countries rarely, if ever, participate in these assessments.

characteristics of teachers are immaterial to quality teaching; rather, they are indeed important, but they are insufficient. This critique notwithstanding, this section presents recent data on a number of the teacher issues broached previously in an attempt to describe the state of these issues in sub-Saharan African countries.

Where possible, these data are supplemented with findings observed by RTI in national education projects and evaluations. In particular, a final section on teachers' classroom practices and pedagogical moves presents findings from RTI projects and evaluations that attempt to shed light on instructional patterns and tendencies among teachers in sub-Saharan African countries.

Teacher Qualifications

It is widely held that high-quality teacher education and training is one of the pre-requisites for quality teaching and enhanced learning outcomes.[2] This is predicated on the assumption that good teaching is observable, "intelligible," and can be communicated and inculcated, and that the conferring of degrees, diplomas, and certificates is a form of "signaling" that this inculcation has happened.[3] However, it has also been asserted that traditional teacher training institutions are very likely to lack the capacity to provide future teachers with "high-quality" learning opportunities for the simple reason that they have not done so to date. This, in turn, may be based on the fact that those who provide training and development to the teachers themselves have not made "good teaching" intelligible to themselves, or are unable to communicate, demonstrate, impart, or help in a discovery process of what constitutes good practice.[4] In addition to these quality issues, there is an eminent concern over the number of teachers that require training (either initial or continuous) in order to meet universal schooling goals. According to the UNESCO UIS, nearly 1 million primary and 1.6 million lower secondary teachers would be needed to achieve universal lower secondary education in sub-Saharan Africa by 2015; many more would be needed (due to attrition and population growth) if those goals were delayed until 2030.[5]

As a result of the needed increase in the volume and quality of teacher initial education and training, a number of recent reviews has been undertaken to assess sub-Saharan African countries' teacher education and training systems. In 2010, Herman Kruijer conducted a review of the process of upgrading unqualified primary teachers in three sub-Saharan African countries

[2] See, for example: UNESCO. (2014). *Teaching and learning: Achieving quality for all. EFA global monitoring report 2013/14*. Paris, France: UNESCO. See also: Moon, B. (Ed.) (2013). *Teacher education and the challenge of development: A global analysis*. London, UK: Routledge. See also: Bird, L., B. Moon, and A. Storey. (2013). The context for teacher education in developing countries. In B. Moon (Ed.) Teacher Education and the Challenge of Development: A Global Analysis, pp. 19–31. London: Routledge.

[3] This represents a merging of viewpoints one and four, discussed above.

[4] See, for example: Dladla, N. and B. Moon. (2013). *Teachers and the development agenda: An introduction*. In B. Moon (Ed.) Teacher Education and the Challenge of Development: A Global Analysis, pp. 5–18. London: Routledge. See also: Moon, B. (2000). *The open learning environment: A new paradigm for international developments in teacher education*. In B. Moon, S. Brown, and M. Peretz (Eds), Routledge International Companion to Education. London: Routledge. See also: UNESCO, 2014, op cit.

[5] UIS. (2013). *A teacher for every child: Projecting global teacher needs from 2015 to 2030. UIS Fact Sheet 27*. Montreal: UIS.

(Tanzania, Malawi, and Nigeria) by combining literature reviews with empirical field investigations.[6] Kruijer found that, in all three countries, there has been an increasing demand for additional teachers, which has been filled in part by the hiring of unqualified or underqualified contract teachers[7] as a result of free primary education and increased minimum professional standards for teaching. Common to all three programs was a hurried introduction and implementation; little regard was given to design, piloting, and redesign. The quality of teacher training is highly dependent upon trainee mentors and trainers, their skills and capabilities, and the materials at their disposal. It is also dependent upon a correct balance between in-service mentoring and face-to-face tutoring components, but this balance can often be upset by long distances between training facilities and centers from schools. In some cases, trainees criticized the face-to-face sessions as too crowded, too short, and too passive (trainees spend much of their time in lectures). Further, the content of training does not always match the needs of educators. For example, content often emphasizes participatory teaching methods, but there is little discussion about the appropriateness or possible adaptation of these methods for classrooms with 80 to 100 students—participatory teaching is often invoked more or less as a mantra. Likewise, some programs suggest teachers develop content knowledge up to the level of senior secondary school. In two countries (Tanzania and Nigeria), the use of English has hindered the training and implementation of past upgrading attempts. Student teachers are often expected to master English, but this might not be the language they use for instruction or the language spoken at home.

Lee Nordstrum also conducted an in-depth review of teacher training programs in Ethiopia and Tanzania for the 2013/14 EFA Global Monitoring Report.[8] In terms of general trends, Nordstrum found that both Ethiopia and Tanzania were able to increase the number of primary teachers in the ten years between 2000 and 2010, but the percent increase in Tanzania did not keep pace with the percent increase in pupils over the same time frame. However, Tanzania was more successful in training a higher proportion of new recruits while Ethiopia has relied, to some extent, on the hiring of unqualified teachers to meet new education demands. In each country, the proportion of trained teachers varies substantially by region and school phase. In Ethiopia, primary teachers tend to be under-qualified, particularly in the early grades (only 20% of teachers in Grades 1–4 meet the Ministry's definition of "qualified" as holders of four-year tertiary diplomas). Urban locations also tend to have a larger proportion of trained teachers. In Tanzania, urban–rural distinctions were also brought to light, but qualified teachers are more common in primary grades.

Another issue commonly reported by Nordstrum in Ethiopia and Tanzania was the financial constraints on the implementation of training programs with integrity. In Ethiopia, less than one-

[6] Kruijer, H. (2010). *Learning how to teach: The upgrading of unqualified primary teachers in sub-Saharan Africa*. Brussels: International Education.

[7] Contract teachers are non-civil service teachers who are hired locally by the school or community, have fixed-term renewable contracts, tend not to meet official certification standards, and who are paid lower salaries than their civil service counterparts.

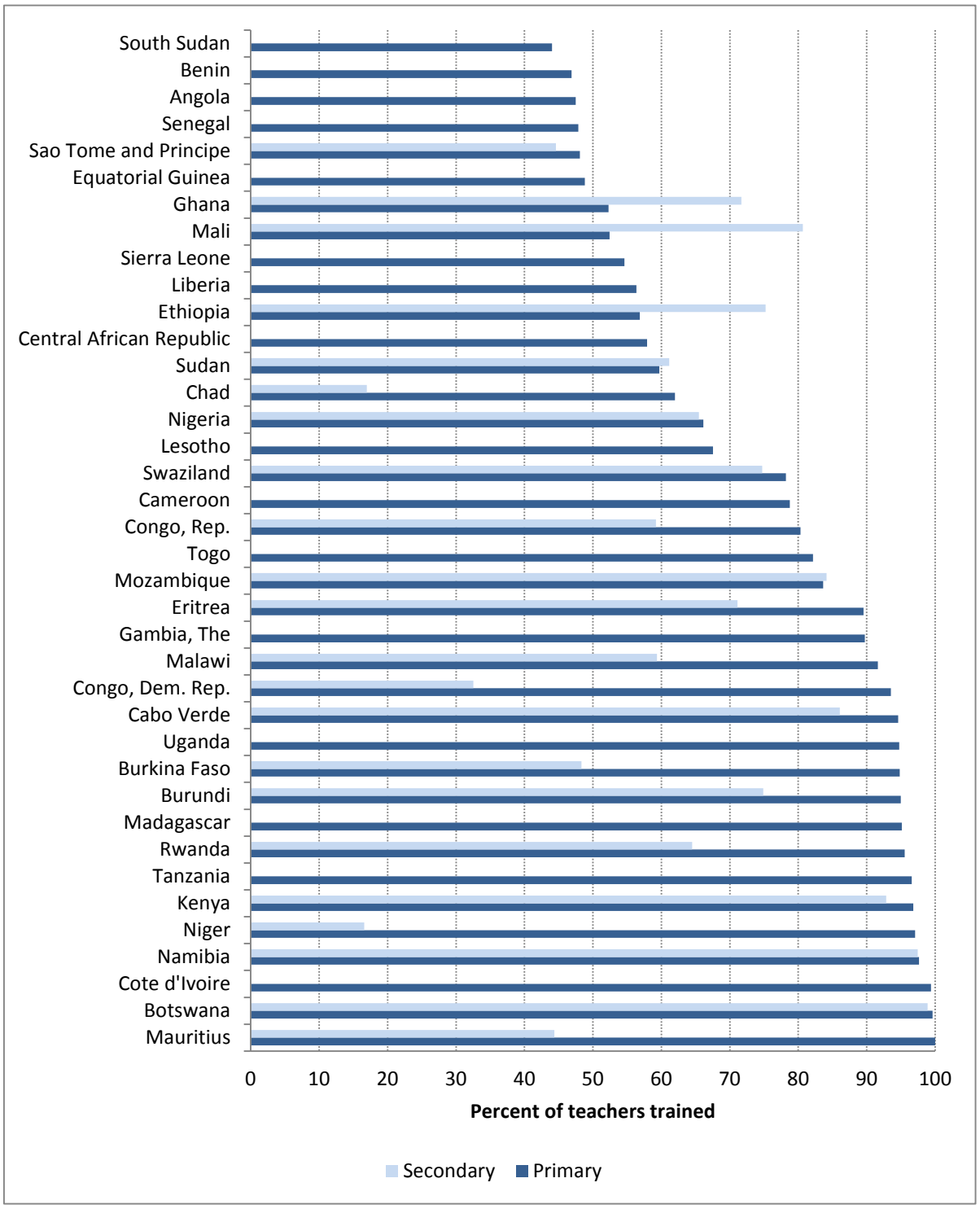
[8] Nordstrum, L.E. (2013). *Teacher supply, training, and cost in the context of rapidly expanding enrollments*. Background paper for EFA Global Monitoring Report 2013/14.

third of the budget projected for the teacher training program was executed in 2010/11, which had obvious implications for the capacity to implement the program. In Tanzania, an analysis of teacher education budget based on 2009 fiscal records showed that only 55% of the budget was allocated to line items that directly impacted the quality of the training program (e.g., trainers' salaries and training materials) while the remaining 45% was allocated to administrative purposes, travel, and meals for trainees. The proportion of the teacher education budget devoted to administrative and employee allowances was so large because Tanzania relied almost exclusively (with the exception of continuing professional development) on residential teacher training models rather than, for example, distance learning or self-study. This in turn inflated unit costs as the teacher education budget had to reimburse teachers for the loss of their salaries and living expenses when training was conducted during the academic year and when trainees were residing at a teacher training institution. While some costs are borne by the trainees themselves (e.g., travel expenses to and from the teacher training institution), non-residential training models may offer opportunities for cost efficiencies.

As will be explained in the following section, many national education plans in sub-Saharan African countries, when referring to teaching quality, set minimum qualification standards that teachers (both new recruits and extant professionals) are expected to meet. The resulting common metric of teacher quality is often the proportion of the teaching workforce that has met national minimum qualification standards. ***Figure 1*** displays recent data on this metric at the primary and secondary level for 38 sub-Saharan African countries. As shown in the figure, the proportion of primary and secondary teachers meeting national minimum qualification standards varies markedly by country— some countries have less than half of the teaching workforce meeting national standards while others have more than 90% of teachers deemed as "qualified." As shown, in 15 of 38 countries with available data, more than one in three teachers does not meet national standards. It is also evident that proportions of trained teachers tend to be lower at the secondary levels in the countries featured in ***Figure 1*** (partly because the requirements for meeting the national definition of "trained"[9] are higher), with the notable exceptions of Ethiopia, Ghana, and Mali. Indeed, the percent of trained secondary teachers ranges from only 17% in Chad and Niger to approximately 99% in Botswana. While it is true that national standards differ substantially between countries and have evolved over time (which makes cross-national comparisons difficult) these data at the least provide a picture of how effectively and efficiently national systems of education are equipping teachers with the training they (i.e., education systems) deem necessary for minimally competent professionals.

[9] Definitions of and requirements for "trained teachers" differ by country. Generally speaking, a "trained" teacher is one that has achieved the minimum criteria (in terms of teacher preparation and training) for teaching a particular level.

Figure 1. Proportion of primary and secondary teachers meeting national qualification standards in 38 sub-Saharan African countries



Source: Author's rendering based on data from UIS Data Centre: http://www.uis.unesco.org/Datacentre/Pages/instructions.aspx?SPSLanguage=EN (accessed 10/14/2014)
Note: Data are from 2012 or latest available.

In addition, research conducted by RTI has confirmed varying levels of teacher qualification both across and within countries. For example, a 2013 study conducted by RTI in the Nigerian state of Bauchi as a part of the Nigeria Northern Education Initiative found that 70% of lower primary teachers in government schools were holders of a Nigeria Certificate in Education, but only 40% of teachers in religious schools held this qualification.[10] Further, a small pilot study of school management and effectiveness conducted in Zambia revealed that 66% of sampled Grade 2 and 3 teachers reported their highest level of education to be secondary school.[11] In a larger study in Ethiopia, however, RTI found that unqualified teachers were rarely found in regions sampled for the report (e.g., Addis Ababa, Harari, and Oromia).[12]

Evidence was discussed earlier regarding recent trends in the proportion of teachers trained in sub-Saharan African countries. Recall that Nordstrum found that trends were mixed when comparing the proportion of teachers trained between 2007 and 2011: nearly equal numbers of sub-Saharan African countries reported increasing proportions of trained teachers as those that reported decreasing proportions at the pre-primary, primary, and secondary levels.[13] This suggests that some countries, despite cost and spending constraints after the global economic downturn, were able to provide additional training to help teachers upgrade their qualifications. It also suggests that national-level policies may have an impact on training the teaching workforce.

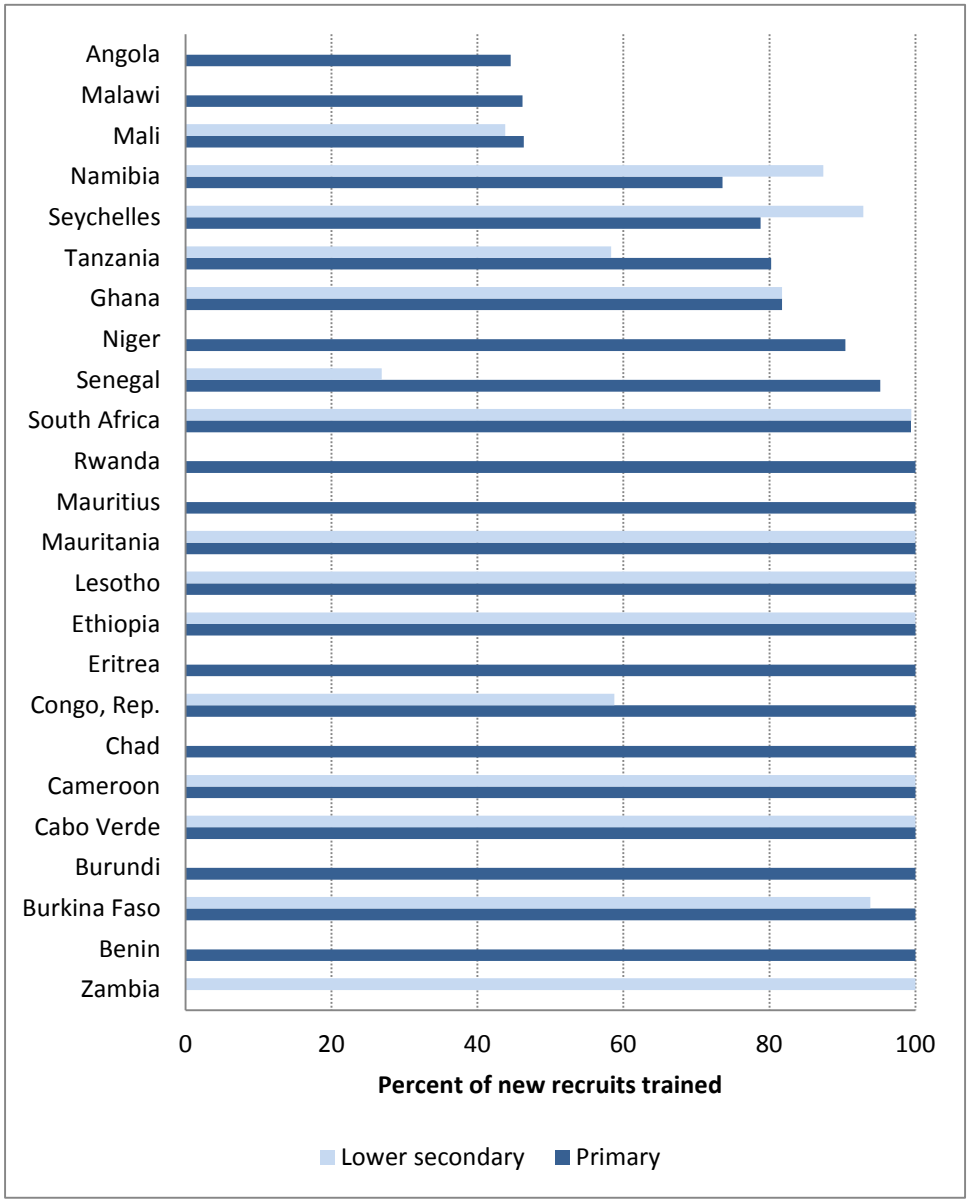
Even more recent data from UIS databases also disaggregates the proportion of teachers meeting national minimum qualification standards for new recruits. ***Figure 2*** shows these data for 24 sub-Saharan African countries with recent data available. Data displayed in ***Figure 2*** indicate that a number of trends found in ***Figure 1***, when considering the overall teacher workforce, do not seem to hold when only looking at new recruits. While the proportion of teachers meeting national minimum qualification standards still varies between countries, there is significantly less variation in ***Figure 2*** than in ***Figure 1***.

In 17 of 24 countries, the proportion of new recruits who met national standards was 95% or higher. Newly recruited secondary teachers also tend to be trained at approximately the same rate as primary teachers: of 14 sub-Saharan African countries which have data for both primary and secondary new recruits, only four countries have significantly lower proportions of trained secondary teachers while two (Namibia and the Seychelles) actually train newly recruited secondary teachers more frequently than their primary counterparts. These findings seem to suggest that most national departments of education in sub-Saharan Africa (or at least of those countries represented in ***Figure 2***) have had more success putting in place systems to provide training that is deemed adequate for newly recruited teachers, and that recruitment and training

[10] RTI International. (2013). *Results of the 2013 Early Grade Reading and Early Grade Mathematics Assessments (EGRA and EGMA) in Bauchi State*. Research Triangle Park, NC: RTI International.
[11] Collins, P., P. De Galbert, A. Hartwell, E. Kochetkova, A. Mulcahy-Dunn, A. Nimbalkar, and W. Ralaingita. (2012). *Pupil performance, pedagogic practice, and school management: An SSME pilot in Zambia*. RTP, NC: RTI International.
[12] Piper, B. (2010). Ethiopia Early Grade Reading Assessment. Data Analysis Report: Language and early reading. RTP, NC: RTI International.
[13] Nordstrum, L.E., 2012, op cit.

strategies appear more or less aligned. It also suggests that countries are perhaps relying less on the recruitment of untrained contract teachers to match education demand in their respective countries. Of course, this indicates that younger teachers in general have more training—a reasonable result, given that quick expansion is not necessarily new. "Crash" training programs for recruiting teachers were widely used in the past and past standards for being considered "trained" or "qualified" tended to be lower. As such, the trend towards higher levels of qualifications for new recruits would be a positive development.

Figure 2. Proportion of newly recruited teachers meeting national qualification standards in 24 sub-Saharan African countries



Source: Author's rendering based on data from UIS Data Centre: http://www.uis.unesco.org/Datacentre/Pages/instructions.aspx?SPSLanguage=EN (accessed 10/14/2014)
Note: Data are from 2012 or latest available.

However, it should be noted again that what constitutes a "qualified teacher" differs from country to country and, in some cases, within countries (e.g., different qualification standards for primary and secondary teachers). Moreover, these minimum qualifications generally refer to standard training courses that recruits (or current teachers) must undertake in order to meet the standards. That is, national standards are typically qualification-based standards (i.e., whether recruits have taken and passed certain training modules) rather than competency based standards (i.e., whether recruits can teach well). On top of this, other studies have shown[14] that qualification-based standards tend to focus on educational theory and pedagogical knowledge rather than clinical practice in a school setting. To say the very least, teachers should have some expertise in the content areas they are expected to teach in.

Data from RTI-administered assessments, however, often find the opposite in sub-Saharan African countries. For example, data from a national baseline assessment of reading and mathematics in Tanzania found that only one in four reading and mathematics teachers had undergone any pre- or in-service training that specifically pertained to the teaching of their respective content area.[15] A similar study in Morocco found that a majority of reading teachers (64%) had received training on how to teach reading, but of these 64%, 83% had undertaken such modules as a part of pre-service training.[16] Only a small minority (16%) of teachers experienced any continuing professional development on the teaching of reading. A baseline study conducted in Kenya as part of the Primary Mathematics and Reading (PRIMR) Initiative found that in-service training for teachers in the subjects of Kiswahili, math, and English amounted to less than three days per school year in both formal and non-formal schools.[17] In the aforementioned study conducted in Nigeria, a minority of teachers reported receiving specific pre-service instruction for teaching Hausa (25%), English (28%), and mathematics (33%).[18] While RTI found relatively high levels of teacher pre-service qualifications in Ethiopia, two-thirds of surveyed teachers reported not having any in-service professional development in reading methods or pedagogical techniques, and 61% reported not having any in-service training at all.[19] Similar findings were uncovered in Rwanda where 84% of teachers reported not having received any pre-service training in the instruction of reading, and 73% reported not having any

[14] See, for example: UIS. (2011). *Financing education in Sub-Saharan Africa: Meeting the challenges of expansion, equity, and quality*. Montreal: UIS. See also: Pryor, J., K. Akyeampong, J. Westbrook, and K. Lussier. (2012). Rethinking teacher preparation and professional development in Africa: An analysis of the curriculum and teacher education in the teaching of early reading and mathematics. *The Curriculum Journal*, *23*(4), 409–502. See also: Kruijer, 2010, op cit. See also: Nordstrum, 2013, op cit.

[15] Brombacher, A., L.E. Nordstrum, M. Davidson, K. Batchelder, C. Cummiskey, and S. King. (2013). National baseline assessment for the 3Rs (Reading, Writing, and Arithmetic) using EGRA, EGMA, and SSME in Tanzania. Study Report prepared for USAID/Tanzania. Research Triangle Park: RTI International.

[16] Messaoud-Galusi, S., A. Mulcahy-Dunn, W. Ralaingita, and E. Kochetkova. (2012). *Student performance in reading and mathematics, pedagogic practice, and school management in Doukkala Abda, Morocco*. Study Report prepared for the Bureau for Economic Growth, Agriculture, and Trade; USAID; and USAID/Morocco. Research Triangle Park: RTI International.

[17] RTI International. (2012). *The Primary Math and Reading (PRIMR) Initiative: Baseline Report*. RTP, NC: RTI International.

[18] RTI International, 2013, op cit.

[19] Piper, 2010, op cit.

related in-service training.[20] Pedagogical training related to mathematics instruction was found to be slightly more common among surveyed teachers in Rwanda; still a majority of mathematics teachers (58%) reported having neither pre- nor in-service training related to math instruction. The finding that teachers have not received much in-service professional development on the teaching of reading can help explain the low reading results since the accumulating evidence generated by instructional improvements projects shows that coaching and good support of teaching practices can be quite effective in boosting student learning—at least for the more basic level of reading or pre-reading.[21]

Aside from the frequency and extent of content-specific pedagogic training for teachers, a central question is whether teacher training (either pre- or in-service) is related to student outcomes. That is, does increasing the level of training teachers receive enhance academic outcomes? In studies conducted by RTI International, student outcomes are often measured in terms of reading ability and, specifically, reading fluency (i.e., the number of correct words read per minute). In these terms, RTI has generally found that different levels of existing teacher training may be related with increases in reading fluency, but the differences tend to be small. For example, Kenyan students of teachers who reported having some training in reading instruction read, on average, 4.1 words per minute (wpm) faster than students of teachers who did not have such training.[22] Returns to increased levels of pre-service teacher qualifications were even lower in formal schools in Kenya as students of teachers with bachelor's degrees read, on average, 2.9 wpm faster than students of teachers who held a lower certification. Note that larger differences were found in non-formal schools with students of unqualified teachers reading over 14 wpm more slowly than their peers who were taught by teachers with a diploma. Though these differences should be noted and examined in more detail, it holds that, on aggregate, the relationship between student outcomes and teacher credentials and general professional development is insignificant or weak. However, the evidence also demonstrates that fairly intense support and coaching, specifically in reading instruction (and presumably in other subjects) in pilot projects, seems to have a strong effect. Thus, the somewhat unappealing baseline situation could, in principle, be improved upon significantly.

Teacher Content-Specific Knowledge

A review undertaken for the 2013/14 EFA Global Monitoring report conducted by Nadir Altinok considered the impact of teacher knowledge on student achievement. Altinok analyzed datasets from 14 sub-Saharan African countries that participated in the third round of the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) and that agreed to

[20] DeStefano, J., W. Ralaingita, M. Costello, A. Sax, and A. Frank. (2012). *Early grade reading and mathematics in Rwanda: Final report*. RTP, NC: RTI International.
[21] See, for example: Piper, B. and M. Korda. (2011). *EGRA Plus: Liberia – Project evaluation report*. Monrovia, Liberia: USAID Liberia. See also: Piper, B. (2010b). *Kenya Early Grade Reading Assessment.* Findings Report, Research Triangle Park: RTI International.
[22] RTI, 2012, op cit.

also test teachers on their knowledge of reading and mathematics.[23] SACMEQ III was conducted in 2007 and assessed Grade 6 pupils in reading and mathematics.

Unsurprisingly, descriptive statistics of teacher achievement revealed that teachers of students with high socioeconomic status tended to perform better on the assessments administered by SACMEQ, particularly in reading. The performance differential between teachers of low and high socio-economic status students in South Africa was especially marked (i.e., a 94-point difference relative to an average of 500). Significant differences in teacher knowledge in reading were also found between rural and urban areas in Kenya and South Africa, in favor of urban areas. In Namibia, significant differences were found in urban teachers' knowledge in both subject areas (urban teachers outperformed rural counterparts by 21 points in reading and by 13 points in mathematics).

Altinok also tested the determinants of teachers' reading and mathematics achievement by fitting a multiple regression model for each sub-Saharan African country that included gender, age, education level, training, experience, whether teachers gave tests at least once per week, and the level of teaching and learning resources teachers have access to. No notable patterns held across all 14 sub-Saharan African countries save that very few variables were found to be statistically significant predictors of teachers' content knowledge in either reading or mathematics. In terms of teachers' reading content knowledge, participating in tertiary-level education appeared to increase the teachers' knowledge in Botswana, Mozambique, Namibia, and South Africa (thought tertiary education in Malawi was associated with *lower* reading content knowledge). Teachers who frequently gave tests (at least once per week) were also associated with lower content knowledge, though this variable was only significant in Mozambique, Namibia, and Zambia for reading, and in Botswana, Mozambique, Swaziland, and Tanzania (Zanzibar) for mathematics. With regard to mathematics content knowledge, gender appeared to predict teacher assessment performance with male teachers more likely to outperform their female counterparts. With regard to teachers' mathematical content knowledge, both experience and age also significantly predicted their assessment performance in five countries, though the association was not uniformly positive as was expected. Indeed, Altinok found negative returns to age in South Africa and negative returns to experience in Seychelles and Tanzania. However, the highest R-squared value of Altinok's models was 0.17, which suggests that very little variation in teacher content knowledge was explained by the explanatory variables chosen and therefore, there are factors related to either the inherent characteristics of the students or unobserved variation in actual teaching, school management, and atmosphere (as generally suggested by the "effective schools" literature),[24] that likely account for the variability in results.

Altinok next explored whether teacher content knowledge significantly impacted student performance on the SACMEQ assessment by specifying multilevel regression models for each country. Using a baseline model without controls, Altinok found a significant and positive

[23] Altinok, N. (2013). The impact of teacher knowledge on student achievement in 14 sub-Saharan African countries. Background paper prepared for the EFA Global Monitoring Report 2013/14. Paris: UNESCO.
[24] See, for example: Levine, D.U. and L.W. Lezotte. (1990). Unusually effective schools: A review and analysis of research and practice. *School Effectiveness and School Improvement, 1*(3), 221–224.

relationship between teacher content knowledge and student performance in seven countries (Botswana, Kenya, Mozambique, Namibia, South Africa, Tanzania, and Uganda) for reading and seven countries in mathematics (Botswana, Kenya, Mozambique, Namibia, South Africa, Tanzania, and Zanzibar). This teacher knowledge effect was particularly strong in South Africa, where a one standard deviation increase in teacher content knowledge was associated with a 0.38 and 0.43 standard deviation increase in student assessment performance. After introducing student, school, and teacher controls, however, the effect of teacher knowledge on student learning was reduced by a factor of two. Most coefficients remained statistically significant, but the explanatory strength of teacher content knowledge was lower when controlling for student, school, and teacher characteristics.

Based on these results, teacher content knowledge is very unlikely to be the sole means by which to improve student performance or learning. Another factor might be the inhibition of teachers' content knowledge from directly enhancing student outcomes. For example, Zambia (one of the countries which did not hold a positive association between teacher knowledge and student performance) also had low levels of school resources compared to other countries. Furthermore, content knowledge may not necessarily lead to effective *teaching*. Such constraints may impair teachers' abilities to pass their knowledge of content on to their students.

Classroom Context and Resources

The context in which teachers teach and in which students learn matter greatly, as it influences both the quality of teaching and learning, as well as teacher recruitment and retention.[25] Two aspects of the classroom context for which data are readily available are the ratio of pupils to teachers and the availability of teaching and learning resources. ***Figure 3*** presents recent data on pupil-teacher ratios (PTR) for 38 sub-Saharan African countries at the primary and secondary levels. The ideal pupil teacher ratio allows teachers to deliver quality instruction, to devote individual attention to pupils, and provide for small group or individualized instruction. Specific numerical benchmarks for PTRs have not been formally adopted, nor have they been recommended by the International Labour Organization/UNESCO recommendation. Nevertheless, the benchmarks of 40:1 and 30:1 are used by much of the development literature as approximating tolerable ratios for primary and secondary, respectively.[26]

The advent of free universal primary education resulted in significant increases in PTRs throughout sub-Saharan Africa with the official abolition of formal school fees. Approximately two-thirds of the sub-Saharan African countries with available data (25 of 38) have primary average PTRs higher than 40:1 with some countries such as Malawi and the Democratic Republic of Congo (DRC) with PTRs above 70.

[25] ILO. (2012). Handbook of good human resource practices in the teaching profession. Sectoral Activities Department. Geneva: ILO.

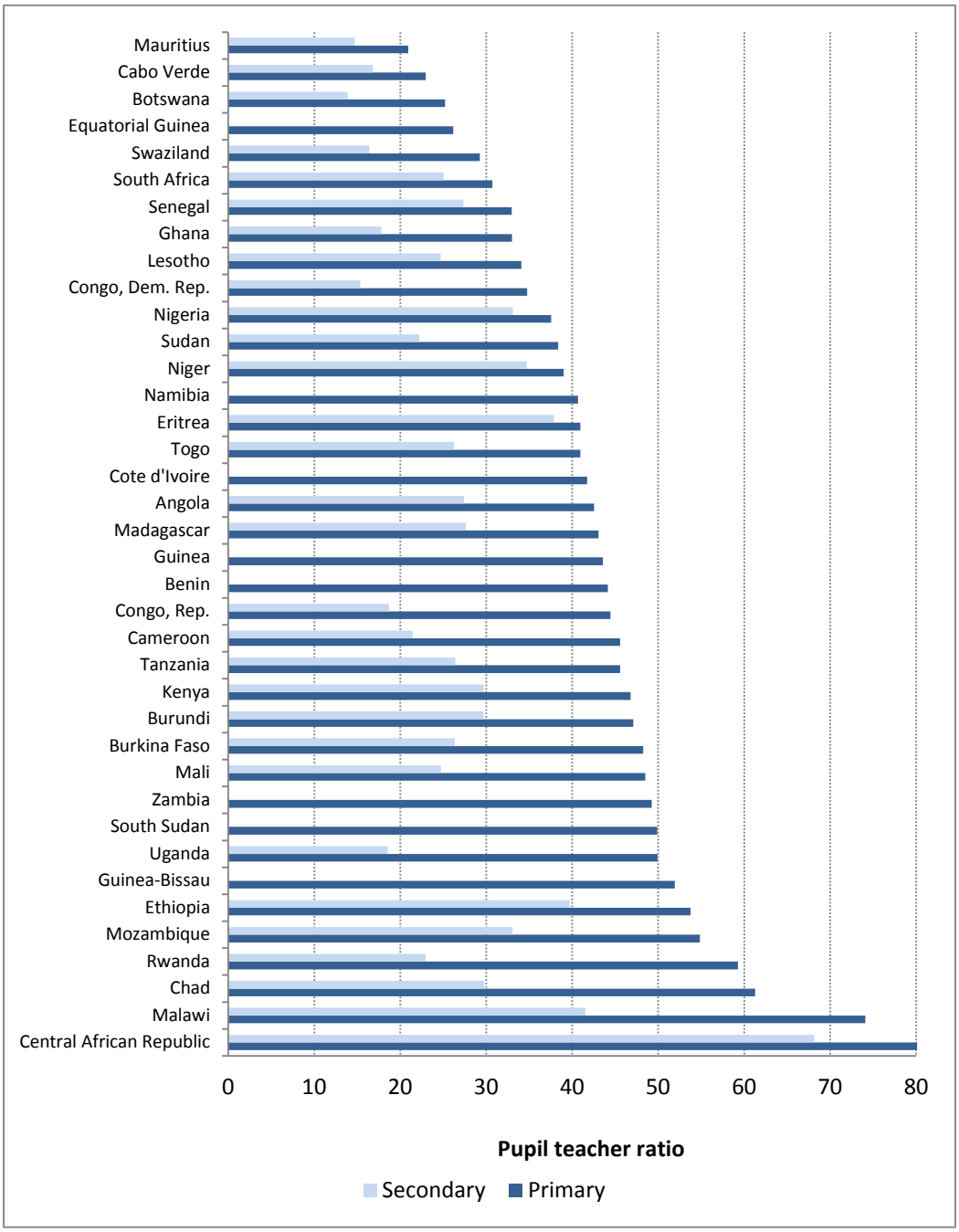
[26] These benchmarks were, in part, based on the fact that countries such as Japan and Korea attained high levels of achievement with ratios that were historically within this range.

At the secondary level, most sub-Saharan African countries with available data (23 of 30) have secondary PTRs lower than 30:1; only in Nigeria, Niger, Ethiopia, Malawi, Central African Republic (CAR), Mozambique, and Eretria have secondary PTRs that exceed 30:1. The lower secondary PTR ratio is due in part to lower participation rates at this level, but credit should also be given to the fact that sub-Saharan African countries managed to expand the number of secondary teachers by 115% between 2000 and 2011.[27] These findings indicate the enactment of specific recruitment policies designed to mitigate the increasing pressure on education systems to expand access to secondary education.

Data from studies conducted by RTI, however, have often found PTRs higher than those reported by the World Bank. In Malawi, for example, PTRs over 100 are not uncommon. Standard 2 class sizes have been found to average over 100 pupils in all areas but the Northern Division, and over 70% of Standard 1 classrooms were found to have PTRs in excess of 100.[28] Less extreme examples include Bauchi State in Nigeria, where PTRs in Hausa, mathematics, and English classrooms were found to range between 56 and 61 pupils per teacher in Standard 1, 2, and 3.[29] In Tanzania, PTRs were found to vary widely from as few as one pupil per teacher to 136; approximately one in four classrooms had more than 70 pupils or more.[30] In Zambia, PTRs averaged more than 50 pupils per teacher in evaluated classrooms.[31] Based on these (and other) studies, it is not clear that the PTR, below a threshold level, has a predictable and significant impact on student learning outcomes. In Kenya, for example, where PTRs averaged a more modest 40 in formal schools and 24 in non-formal schools, this indicator did not significantly predict oral reading fluency.[32]

[27] UNESCO, 2014, op cit.
[28] RTI International. (2011). *2010 Early Grade Reading Assessment: National baseline report*. RTP, NC: RTI International. See also: World Bank databank: http://data.worldbank.org/indicator/SE.PRM.ENRL.TC.ZS.
[29] RTI, 2013, op cit.
[30] Brombacher, A., L.E. Nordstrum, M. Davidson, K. Batchelder, C. Cummiskey, and S. King. (2014). *National baseline assessment for the 3Rs (Reading, Writing, and Arithmetic) using EGRA, EGMA, and SSME in Tanzania*. RTP, NC: RTI International.
[31] Collins et al, 2012, op cit.
[32] See, for example: Duflo, E., P. Dupas, and M. Kremer. (2012). *School governance, teacher incentives, and pupil–teacher ratios: Experimental evidence from Kenyan primary schools*. MIT Working Paper Series. Cambridge, MA: MIT Dept of Economics. See also: Hanushek, E.A. (1998). *The evidence on class size*. Occasional Paper No. 98-1. Rochester, NY: University of Rochester. See also: RTI, 2012, op cit.

Figure 3. Average pupil–teacher ratios in 38 sub-Saharan African countries

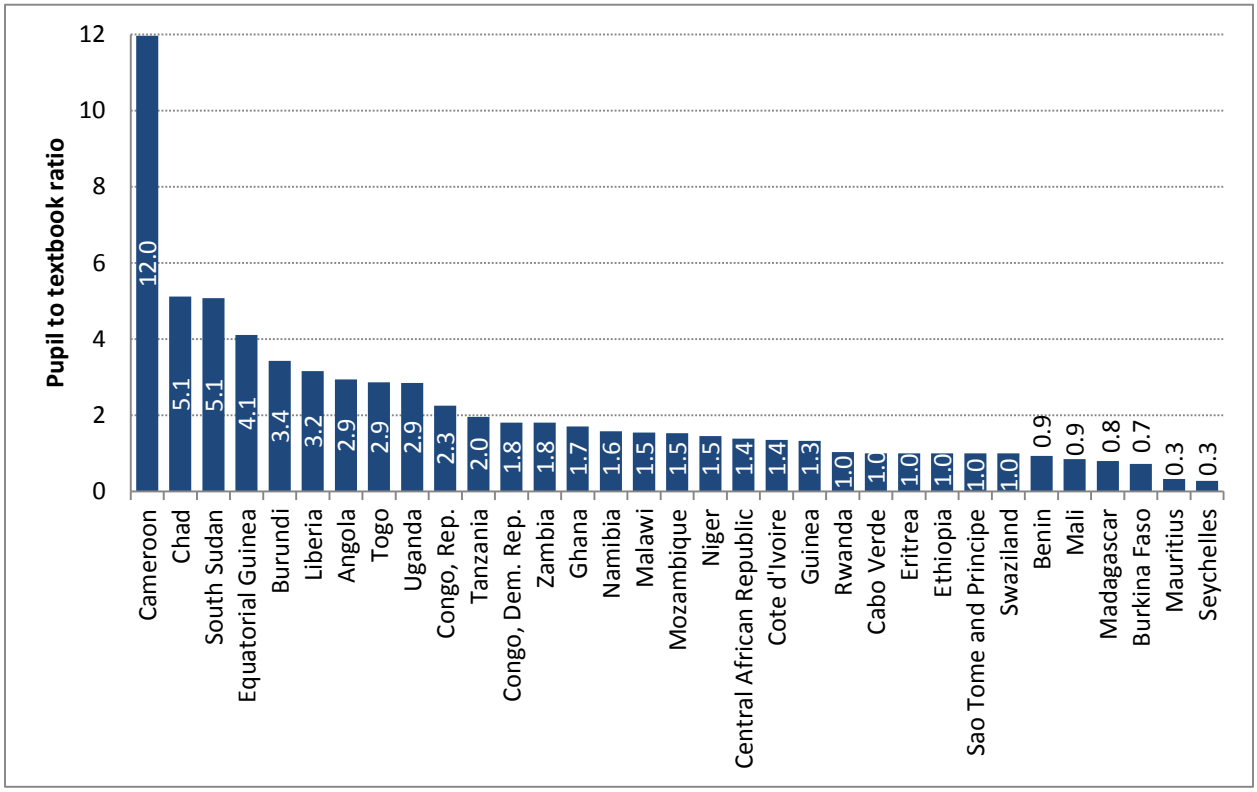


Source: Author's rendering based on data from World Bank DataBank Education Statistics: http://databank.worldbank.org/data/databases.aspx (accessed 10/14/2014).
Note: Data are from 2012 or latest available.

The ratio of pupils to reading textbooks is important in that the metric can serve as a proxy for access to the formal curriculum, but does not speak to the usefulness of the textbooks or whether the teacher uses them in the classroom. Ideally, pupil-textbook ratios would be 1:1. Higher ratios indicate a shortage of reading textbooks, and lower ratios indicate an oversupply of materials.

Figure 4 displays the ratio of pupils to reading textbooks in 33 sub-Saharan African countries for which there is recent data. As seen in the figure, one-third of sub-Saharan African countries with recent data have pupil-textbook ratios of 2:1 or higher, which means that, in these countries, at least two pupils must share one reading textbook. While a ratio of approximately 2:1, such as that found in Tanzania (2.0) and the DRC (2.3), might be workable, values much higher indicate that children do not have adequate access to curricular materials, which could impact their learning. Conversely, six sub-Saharan African countries (Mali, Madagascar, Benin, Burkina Faso, Mauritius, and Seychelles) have more books than pupils. Although, in theory, this indicates that all pupils should have access to reading textbooks in the primary grades, this also points to the problematic situation where a surplus of educational resources is being inefficiently stockpiled in schools and classrooms.

Figure 4. Number of primary pupils per reading textbook in 33 sub-Saharan African countries



Source: Author's rendering based on data from World Bank DataBank Education Statistics: http://databank.worldbank.org/data/databases.aspx (accessed 10/14/2014)
Note: Data are from 2012 or latest available.

Another take on this theme of pupil-textbook ratio is found in the third and most recent round of assessment managed by SACMEQ and conducted in 2007. In addition to testing both Grade 6 pupils and their teachers in several areas, including reading and mathematics competencies, SACMEQ III also collected data on access to textbooks. Specifically, students were asked during one-on-one interviews how they used reading and mathematics textbooks in their classrooms

during lessons. Possible responses for reading included: there are no reading textbooks; only the teacher has a reading textbook; I share a reading textbook with two or more pupils; I share a reading textbook with one pupil; I use a reading textbook by myself. ***Table 1*** shows the proportion of pupils who responded that they use a reading textbook by themselves without the need to share with other pupils.

Table 1. Proportion of pupils with their own textbooks in 10 sub-Saharan African countries

	Kenya	Lesotho	Malawi	Namibia	South Africa	Swaziland	Tanzania	Uganda	Zambia	Zimbabwe
Reading textbook	18	56	27	32	45	99	3	17	23	15
Math textbook	15	56	24	32	36	100	3	14	11	12

Source: Research on Socioeconomic Policy (RESEP) SACMEQ at a Glance Series[33]

From the table, it is clear that there is a significant amount of variation between countries with regard to pupils' access to reading and mathematics textbooks; the proportion of pupils who have textbooks and do not have to share with other pupils ranges from 3% in Tanzania to 100% in Swaziland. In most of the countries listed in ***Table 1*** (8 of 10) the proportion of pupils with access to their own reading or mathematics textbook is lower than 50%. Therefore, these findings from student interviews carried out during the administration of SACMEQ III suggest that the vast majority of pupils in these sub-Saharan African countries either had to share textbooks with at least one classmate, had only indirect access to textbooks (i.e. only the teacher has a book), or did not have any access to textbooks.

Data collected by RTI assessments on the availability of textbooks corroborates the somewhat grim picture painted by the SACMEQ III data. In Zambia, where the official Ministry policy expects pupils to share books, RTI found that only one in five children had a language or mathematics textbook.[34] Moreover, approximately one-half of the classrooms assessed had textbooks for 10% or less of their pupils, whereas less than 7% of classrooms had textbooks for the majority of pupils. In Tanzania, while many students (two-thirds or more) were found to be in possession of exercise books on the day of the assessment, much fewer were in possession of the corresponding textbooks.[35] At the classroom level, approximately one in three classrooms did not have any English textbooks, one out of four did not have any Kiswahili textbooks, and one out of five did not have any mathematics textbooks. Further, most Tanzanian Head Teachers surveyed for the study (89%) reported that they did not begin the year with the correct number of textbooks and 75% of those teachers had to wait more than three months (one-third of the school

[33] Spaull, N. (2012). *SACMEQ at a Glance Series*. Stellenbosch: Research on Socio-Economic Policy (RESEP), University of Stellenbosch.
[34] Collins et al, 2012, op cit.
[35] Brombacher et al, 2014, op cit.

year) before receiving them. In Rwanda, two-thirds of pupils were privy to exercise books, but textbooks were for the most part non-existent and very rarely used during classroom observations of language or mathematics instruction.[36] In Ethiopia, access to learning materials varied substantially by region. In Somali, only 42% of children reported that they had a language textbook, whereas most children in Harari (93%), Tigray (94%), Oromiya (90%), and Addis Ababa (90%) were in possession of a language textbook.[37]

A recent study of 2,000 Grade 2 and 3 pupils conducted in Ethiopia asked teachers whether they used the reading textbook and whether they felt that they had access to adequate learning materials.[38] While more than 90% of participating teachers reported that they perceived the reading textbook to be useful or very useful, approximately 25% of teachers only used it one or two times per week. Further, 46% reported that they did not have access to sufficient learning materials. Similarly, another study conducted by RTI International in Mali found that only 33% of pupils had a textbook, and only 22% of classrooms, when observed, were found to use these textbooks.[39] These findings differ significantly from those shown in ***Figure 4*** and highlight two further points on textbooks and learning materials in general. First, the availability of textbooks or other learning materials does not mean that these materials are used. Second, the availability and use of materials does not mean that they are used effectively (i.e., in a way that advances student learning). A related third point is that the existence and use of textbooks may in fact be undesirable if the textbooks are of sufficiently poor quality (or if the content in them is positioned at an inappropriate level of cognitive development).[40] Such points are arguably equally as important as the mere availability of teaching and learning materials.

Teachers' working time, and instructional time in classrooms, is impacted by national policies and guidelines and by practicalities. Overcrowding in many schools in sub-Saharan African countries has led to double-shift instruction in which students are only in classrooms for a few hours.[41] Recent surveys in Ethiopia indicated that only a small proportion (i.e., 33%) of students were in class and engaged in activities related to learning during one-hour reading lessons.[42] Double-shifting also tends to increase the work load for teachers, often without compensatory pay increases and may reduce learning achievement. Several sub-Saharan African countries (Ethiopia, Ghana, and Kenya) have successfully provided flexible timetables for instruction via mobile schools that enable teachers to provide lessons when children are not at work.

[36] DeStefano et al, 2012, op cit.
[37] Piper, 2010, op cit.
[38] RTI International. (Forthcoming). *Ethiopia 2014 Early Grade Reading Assessment: Report of findings*. Reading for Ethiopia's Achievement Developed Technical Assistance (READ-TA) Project. Research Triangle Park: RTI International.
[39] Varly, P. 2010. *The monitoring of learning outcomes in Mali: Language of instruction and teachers' methods in Mali Grade 2 Curriculum classrooms*. RTP, NC: RTI International.
[40] See, for example: Crabbe, R.A.B; M. Nyingi, H. Abadzi. (2014). *Textbook development in low-income countries: A guide for policy and practice*. Washington, DC: The World Bank.
[41] Figazzolo, L. (2012). *Terms and conditions of employment of teachers in relation to teacher shortages and Education for All.* Background paper for the 11th session of the Joint ILO/UNESCO CEART. Geneva: ILO.
[42] See, for example: De Stefano, J. and N. Elaheebocus. (2009). *School effectiveness in Woliso, Ethiopia: Measuring opportunity to learn and early grade reading fluency*. Washington DC: USAID/Save the Children.

Teacher Attrition and Recruitment

The loss of teachers through expected means, such as retirement, is largely predictable and can be expected in a typical teaching force. However, unpredictable losses of workers, through death, illness, or voluntary resignation are more volatile and depend greatly upon extant conditions in specific countries and labor markets. Both of expected and unexpected forms of attrition impact systems of education, schools, classrooms, and, ultimately, children. This issue is particularly important in sub-Saharan African countries that already need a large number of additional teachers to achieve universal primary and lower secondary education.[43]

Previous studies have shown that teacher attrition constitutes a substantial problem in some sub-Saharan African countries. A recent review of teacher attrition conducted for the International Task Force on Teachers for Education for All (EFA) examined teacher attrition in select sub-Saharan African countries with available data and found national averages of teacher attrition ranged from less than 2% in Liberia, to approximately 9% in Zambia. [44] In four out of the eight countries[45] sampled (Eritrea, The Gambia, Lesotho, and Liberia), annual attrition rates were reported to be 3% or less. For purposes of comparison, teacher attrition in the United States at the same time period was calculated at about 15.4%.[46] While this comparison may seem to indicate that attrition is not an issue in sub-Saharan African countries, the study also found that low attrition rates were due, in some cases, to exceptional age profiles of teachers (e.g., only 12% of teachers in Tanzania (Zanzibar) were found to be over the age of 50) or exceptional policies (e.g., Eritrea temporarily suspended teachers' abilities to retire due to teacher shortages). Moreover, the study found that attrition rates tended to vary by school type (e.g., turnover was as high as 37% in Zambian community schools), school phase (e.g., in Lesotho and Malawi, attrition rates of secondary teachers were at least two times higher than primary teachers), and on working conditions (e.g., higher attrition rates were found in rural Zambian districts with the lowest prevalence of electricity).

Furthermore, other studies have provided mounting evidence that teacher attrition may be harmful to student achievement,[47] but these conclusions have tended to be based on correlations rather than direct effects. Ronfeldt, Lankford, Loeb, and Wyckoff, using a sample of Grade 4 and 5 students in New York City, were able to calculate a direct effect of teacher attrition.[48] The

[43] UNESCO. (2014). *Teaching and learning: Achieving quality for all. EFA Global Monitoring Report 2013/14*. Paris: UNESCO.
[44] Mulkeen, A. (2010). *Teacher attrition in sub-Saharan Africa: The neglected dimension of the teacher supply challenge*. Paris: UNESCO.
[45] Countries reviewed were Eritrea, the Gambia, Lesotho, Liberia, Malawi, Tanzania (Zanzibar), Uganda, and Zambia.
[46] National Commission on Teaching and America's Future. (2004). *The true cost of teacher turnover*. Washington, DC: NCTAF.
[47] See, for example: Boyd, D., H. Lankford, S. Loeb, M. Ronfeldt, and J. Wyckoff. (2010). The effects of school neighborhoods on teacher career decisions. Teacher Policy Research Working Paper. See also: Goldhaber, D., B. Gross, and D. Player. (2007). Are public schools really losing their "best"? Assessing transitions of teachers and their implications for the quality of the teacher workforce. Washington, DC: Center for Analysis of Longitudinal Data in Education Research.
[48] Ronfeldt, M., H. Lankford, S. Loeb, and J. Wyckoff. (2011). How teacher turnover harms student achievement. National Bureau of Economic Research Working Paper, No. 17176. Cambridge, MA: NBER.

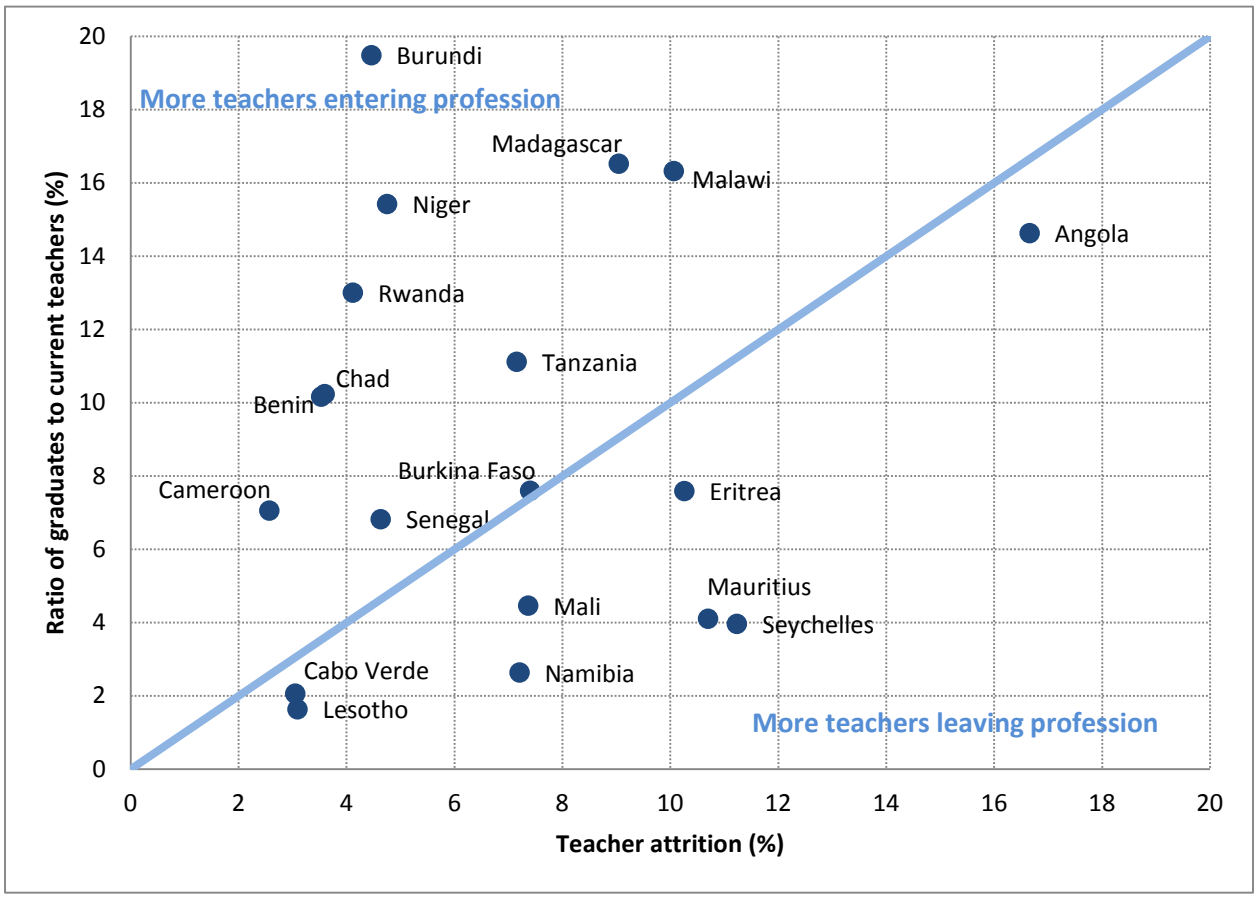
authors confirmed that students in grades with higher teacher turnover score lower in both English Language Arts and math and that this effect is particularly strong in schools with more low-performing and minority students. Bryk and Schneider have also discussed secondary effects of teacher attrition, such as the loss of trust between teachers and pupils, which in turn impacts student achievement.[49]

Given these effects on student achievement, Ministries of Education are therefore tasked with designing and implementing policies that at once address some of the factors pushing qualified candidates out or away from the teaching profession, as well as policies that might make the profession more attractive to prospective candidates and current teachers. Recent data from the World Bank allowed a comparison between teacher attrition vs. the rate of recruitment (i.e., the percent of teacher graduates to current teachers). These data are depicted in ***Figure 5***.

In ***Figure 5***, a light blue line indicates parity in the rates of attrition and recruitment. Countries that are positioned below the line have more teachers leaving than being recruited while countries above the line are recruiting more teachers than they are losing. As can be seen, more than half of the sub-Saharan African countries with available data (11 of 19) are above the rate parity line, which suggests that they are recruiting more teachers than they are losing through attrition. However, eight countries (Lesotho, Cabo Verde, Namibia, Seychelles, Mauritius, Mali, Eritrea, and Angola) are losing more teachers through attrition than they are recruiting. This is particularly problematic for countries such as Mali that need to recruit and train many more teachers to meet EFA targets.[50] It should also be noted that a few of the countries represented in ***Figure 5*** are reporting very low attrition rates, and that these are likely to increase as both the population and the teaching workforce age.[51]

[49] Bryk, A.S. and B. Schneider. (2002). *Trust in Schools: A Core Resource for Improvement*. New York: Sage Foundation.
[50] UNESCO, 2014, op cit.
[51] Mulkeen, 2010, op cit.

Figure 5. Teacher attrition and graduates entering teaching in 19 sub-Saharan African countries



Source: Author's rendering based data from World Bank DataBank Education Statistics: http://databank.worldbank.org/data/databases.aspx (accessed 10/14/2014).
Note: Data are from 2012 or latest available.

Phenomena related to both teacher attrition and professionalism are teacher absenteeism and tardiness. While large-scale data on these issues are not readily available, they have been documented extensively in either country-specific or cross-country studies. Numerous studies have shown that rates of teacher absenteeism vary substantially and that the phenomenon is extensive.[52]

[52] See, for example: Abadzi, H. (2007). *Absenteeism and beyond: Instructional time loss and consequences*. Policy Research Working Paper No. 4376. Washington, DC: The World Bank.

Independent reviews from Ghana,[53] Kenya,[54] Senegal,[55] and Uganda[56] have each estimated absentee rates (in various regions of these countries) at approximately 30%.[57] Many factors at the community, school, and teacher level influence absenteeism, and not all absences are illegal (e.g., attendance at in-service training and illness count as absenteeism). Nevertheless, absentee rates that suggest that one in three teachers is absent on a given day indicates a substantial loss of both instructional time and coherence.[58]

Data on absenteeism feature regularly in surveys of teachers and schools conducted by RTI International over the past 10 years. In Kenya, at least one teacher per school was absent and another was tardy each day.[59] In Nigeria, nearly one in three government school teachers and 22% of teachers at religious schools reported being absent at least once during the previous week.[60] Moreover, approximately half of the pupils in Grade 2 and 3 reported that at least one of their teachers (Hausa and English or mathematics) was absent on the day of the assessment. In Tanzania, over one-half of Head Teachers reported teacher absenteeism rates in excess of 10%, and one in four Head Teachers reported rates between 10% and 15% (although most of these absences were accounted for [excused]).[61] In Zambia, teacher absenteeism, as reported by Head Teachers, ranged from 3% to 50%; on aggregate, RTI found teacher absenteeism to average 11% across all schools sampled for the study.[62] Teacher absenteeism and tardiness obviously impacts pupils' opportunities to learn and the time spent on task, which in turn has been shown to impact student academic outcomes. Indeed, this was found to be the case in the Tanzania, Nigeria, Malawi, and Kenya studies.

Teacher Remuneration and Salary Expenditure

In a majority of countries, salary expenditure constitutes the majority of total education spending; it often exceeds 50% of the education budgets and can swell to more than 80% or 90% in developing countries. In many sub-Saharan African countries, this typical spending pattern places significant limitations on other important non-salary expenditures, such as in-service training and teacher support. ***Figure 6*** presents recent data that show the proportion of total

[53] EARC. (2003). *Teacher time on task*. USAID Grant No. 641-G-00-03-0055. Unpublished report. Osu, Ghana: Educational Assessment and Research Center.
[54] Vermeersch, C. and M. Kremer. (2004). *School meals, educational achievement and school competition: Evidence from a randomized evaluation*. Policy Research Working Paper No. 3523. Washington, DC: The World Bank.
[55] Diouf, A. (2005). *Temps scolaire et qualité des apprentissages dans les collèges et lycées*. Unpublished report. Diourbel, Senegal.
[56] Chaudhury, N., J. Hammer, M. Kremer, K. Mularidharan, and H. Rogers. (2004). *Teacher and health care provider absence: A multi-country study*. Washington, DC: The World Bank/DEC.
[57] Note that these studies were not nationally representative.
[58] Abadzi, 2007, op cit.
[59] RTI, 2012, op cit.
[60] RTI, 2013, op cit.
[61] Brombacher et al, 2014, op cit.
[62] Collins et al, 2012, op cit.

education spending consumed by salary costs relative to government spending levels in 94 countries, including 19 sub-Saharan African countries.[63]

It is evident from ***Figure 6*** that there is substantial variation in the size of education budgets relative to total government spending, as well as in the proportion of the education spending allocated to salaries. This is no less true in Africa than in other geographical contexts. Indeed, while Morocco allocated nearly 26% of total government spending to education and 18% to educators' salaries, Zimbabwe allocated only a little over 8% of government spending to education and 100% of this was given to salaries.[64] The budget allocation for educator salaries clearly varies based on need and context, but 66% of total education spending is a common rule of thumb. From ***Figure 6***, it is clear that Zimbabwe, Sierra Leone, and the CAR allocate more than two-thirds of their education budgets to salaries, which suggests a crowding out of other expenditure line items necessary for quality teaching, such as resources and teacher support.

Using available recent data, ***Figure 7*** accentuates the relationship between teacher salaries and the total education budget for 108 countries (including 26 sub-Saharan African countries). Sub-Saharan African countries are highlighted in the figure with dark blue bars. As can be seen, sub-Saharan African countries are spread out over the distribution of countries in terms of the proportion of education spending consumed by personnel remuneration with minimal clustering at either end of the distribution.

It is worth noting that the previously named EFA Fast-Track Initiative framework advocated that one-third of current expenditure be allocated to line items other than teacher salaries.[65] This recommendation was based on the argument that teachers constitute the most expensive line item in educational budgets and that too little spending on salaries indicates a low valuation on teaching as a profession, will discourage potential candidates from entering the profession, and represents an inordinate amount of resources on administration. On the other hand, too much of the recurrent budget allocated to salaries represents a "crowding out" of other necessary line items like classroom teaching and learning materials. Given this benchmark, ***Figure 7*** demonstrates that 17 of 26 sub-Saharan African countries allocate more than 66% (a higher-than-recommended proportion) of the education budget to salaries and 10 sub-Saharan African countries allocate more than 75%.

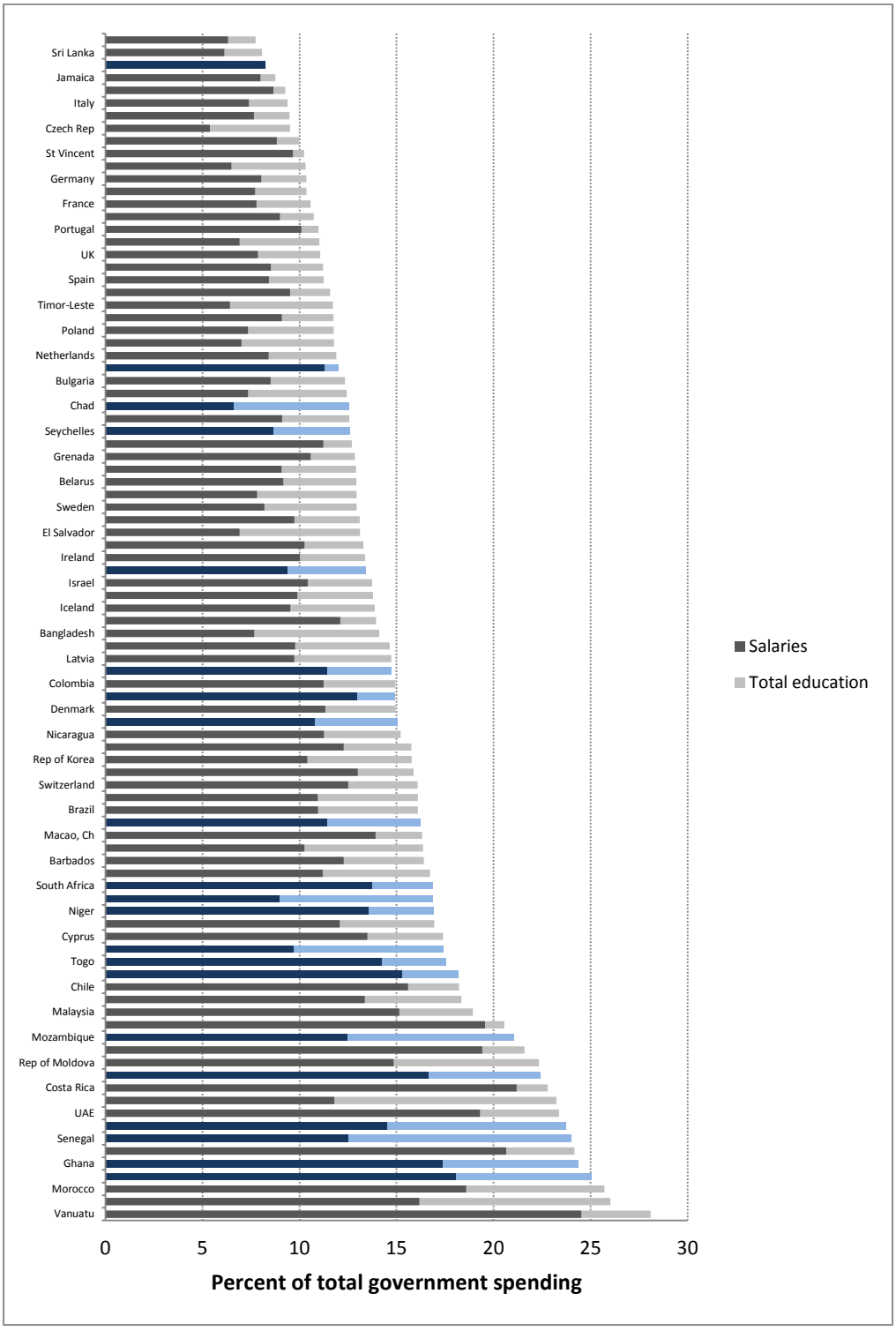
Perhaps what is most directly important for teachers in relation to their salaries is how much they are paid relative to country wealth; what may matter for teachers is not how much of the educational budget is allocated to remuneration, but rather how far they feel their remuneration goes and what it affords them in their country. To this end, a report compiled by the UNESCO UIS[66] found that the average annual remuneration of primary teachers amounted to 4.1 times

[63] While the focus of this report is Sub-Saharan Africa, other countries are included for illustrative purposes.
[64] The remainder may be supplemented by private household fees and contributions. UIS databases: http://www.uis.unesco.org/DataCentre/Pages/BrowseEducation.aspx (accessed 10/12/2013).
[65] See also: Bruns, B., A. Mingat and M. Rakotomalala. (2003). *Achieving universal primary education by 2015: A chance for every child*. Washington, DC: World Bank.
[66] UIS. (2011). *Financing education in Sub-Saharan Africa: Meeting the challenges of expansion, equity, and quality*. Montreal: UIS.

GDP per capita in 34 sub-Saharan African countries between 2003 and 2009.[67] Average salaries of lower secondary and upper secondary educators were 6.3 and 7.2 times GDP per capita, respectively. ***Figure 8*** presents more recent data for 29 sub-Saharan African countries and compares primary and secondary teachers' salaries, expressed as a proportion of GDP per capita. A light blue line in the figure indicates pay parity.

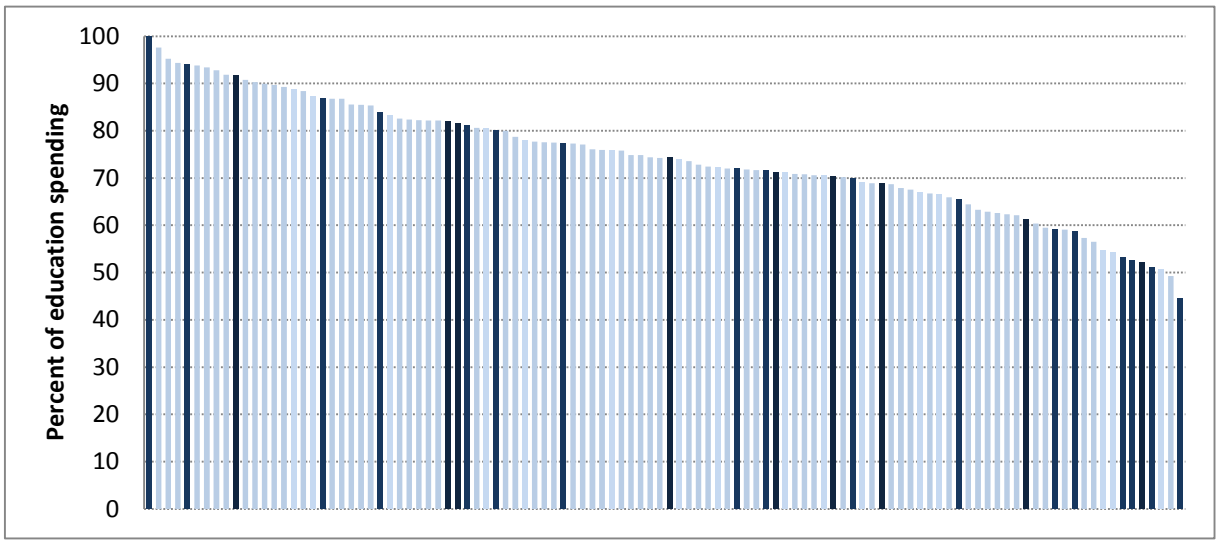
[67] The year of data varied by country.

Figure 6. Total education and salary expenditure in 94 countries



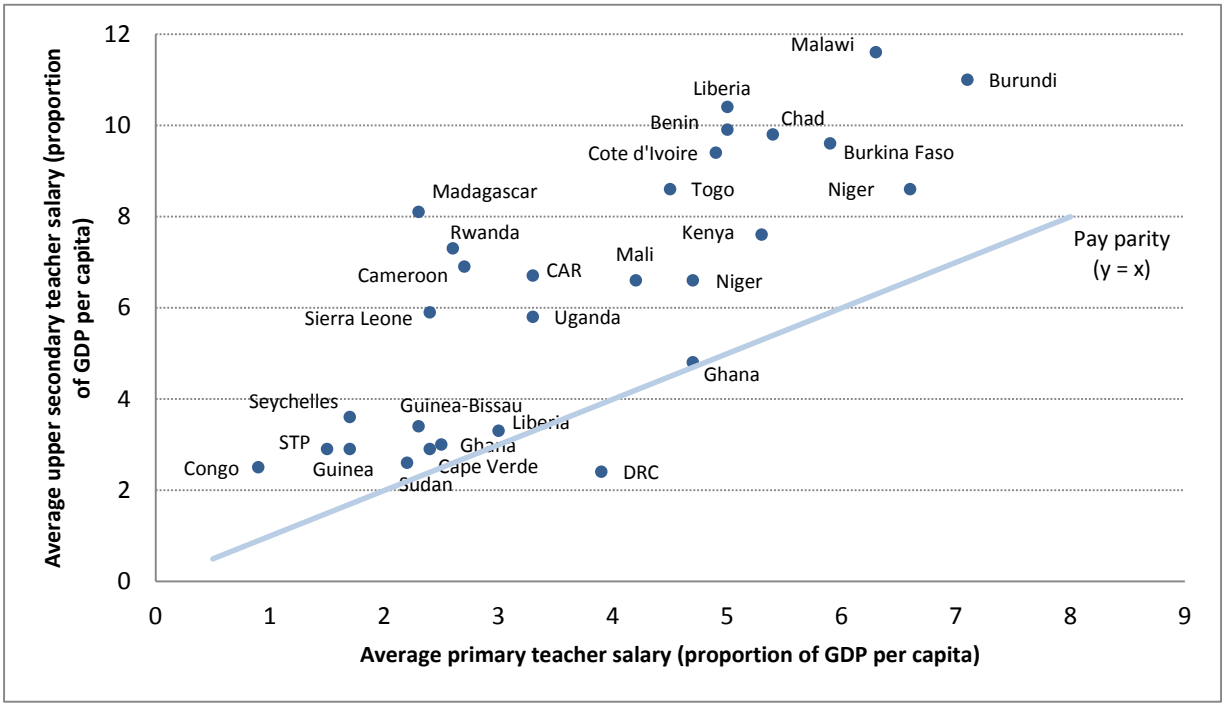
Source: Author's calculations based on data from UIS Data Centre: http://www.uis.unesco.org/Datacentre/Pages/instructions.aspx?SPSLanguage=EN (accessed 6/12/12)
Note: Blue bar graphs indicate sub-Saharan African countries. Grey bars represent countries from other regions. Data are from 2011 or most recent available.

Figure 7. Proportion of primary and secondary education spending consumed by personnel remuneration in 108 countries



Source: Authors' calculations based on data from UIS Data Centre: http://www.uis.unesco.org/Datacentre/Pages/instructions.aspx?SPSLanguage=EN (accessed 6/12/2012)
Notes: Dark bars represent sub-Saharan African countries (*n*=26); light bars represent other countries (*n*=82).

Figure 8. Primary and secondary teacher pay in 29 sub-Saharan African countries



Source: Author's rendering of data from UIS (2011) and *Pôle de Dakar* Indicator Database: https://www.iipe-poledakar.org/en/indicateurs-en/indicator-database (accessed 10/05/2014).

From ***Figure 8***, at least two points can be readily observed. First, a vast majority of sub-Saharan African countries pay secondary teachers significantly more than primary teachers, and in many cases it is an order of magnitude higher (e.g., Madagascar, Rwanda, and Sierra Leone). Second, most countries represented in the figure pay their teachers, both primary and secondary, highly (relative to GDP per capita). As a comparison, teacher pay (for both primary and secondary) is roughly equivalent to 1.0 to 1.5 times GDP per capita in OECD countries.[68] Only a very few sub-Saharan African countries pay primary teachers at this level, and none pay secondary teachers at this level. This is not to suggest that teachers are paid exorbitant salaries in these countries; rather, teachers tend to be paid more than the average citizens because they tend to be more educated than the average citizen. This is not usually the case in high-income countries.

Teachers are also at a relative premium because education, in the past, was a very scarce commodity. Instead, this analysis is meant to indicate that salaries, for many sub-Saharan African countries, constitute a significant and substantial investment, particularly when it comes to expanding access to secondary schooling. As such, there may be limited fiscal space (if all other expenditure patterns remain constant) for these countries to increase teacher pay universally.

Table 2 tabulates the data from ***Figure 8*** and disaggregates for lower and secondary education levels. In addition, ***Table 2*** includes several sub-Saharan African countries for which secondary data are not available.

Table 2. Teacher pay by school phase expressed as a proportion of GDP per capita in 35 sub-Saharan African countries

	Primary	Lower Secondary	Upper Secondary
Angola (2003)	1.5	…	…
Benin (2010)	5.0	5.5	9.9
Burkina Faso (2007)	5.9	8.8	9.6
Burundi (2010)	7.1	11.0	11.0
Cameroon (2011)	2.7	2.5	6.9
Cape Verde (2009)	2.4	2.7	2.9
CAR (2008)	3.3	6.5	6.7
Chad (2003)	5.4	8.8	9.8
Congo (2007)	0.9	2.0	2.5
Cote d'Ivoire (2007)	4.9	8.8	9.4
DRC (2005)	3.9	2.4	2.4
Eritrea (2003)	7.7	…	…
Gambia (2009)	2.5	2.8	3.0
Ghana (2007)	4.7	4.7	4.8
Guinea (2005)	1.7	2.9	2.9
Guinea-Bissau (2010)	2.3	3.4	3.4
Kenya (2004)	5.3	7.6	7.6
Lesotho (2004)	5.0	10.4	10.4
Liberia (2008)	3.0	3.1	3.3
Madagascar (2008)	2.3	5.1	8.1
Malawi (2008)	6.3	11.6	11.6
Mali (2008)	4.2	5.6	6.6

[68] OECD. (2011). *Education at a Glance 2011*. Paris: OECD.

	Primary	Lower Secondary	Upper Secondary
Mozambique (2003)	4.0	13.1	32.9
Niger (2008)	6.6	7.4	8.6
Nigeria (2003)	4.9	…	…
Rwanda (2008)	2.6	6.4	7.3
Sao Tome & Principe (2010)	1.5	2.9	2.9
Senegal (2004)	4.7	5.5	6.6
Seychelles (2010)	1.7	…	3.6
Sierra Leone (2010)	2.4	3.4	5.9
Sudan (2009)	2.2	2.6	2.6
Togo (2011)	4.5	8.1	8.6
Uganda (2011)	3.3	4.1	5.8
Zambia (2007)	1.5	–	–
Zimbabwe (2003)	6.1	–	–

Source: Author's rendering of data from UIS (2011) and *Pôle de Dakar* Indicator Database: https://www.iipe-poledakar.org/en/indicateurs-en/indicator-database (accessed 10/05/2014).

A 2012 report commissioned for the Joint ILO/UNESCO Committee of Experts on the Application of the Recommendations concerning Teaching Personnel (CEART) [69] investigated the extent to which financial incentives were used in teacher remuneration.[70] The report found that incentive payments were much more common in high-income and, to some extent, middle-income countries. Nevertheless, the author presented some evidence that sub-Saharan African countries have used incentives, such as offering rewards for excellent teaching or high student performance to retain effective teachers. Notably, the report highlighted that such schemes have had mixed results. For example, some teachers have requested transfers to higher-performing schools, often in situations where the school's performance is due to the students being easy to teach, rather than because of the teachers' efforts. Thus, performance schemes can incentivize "cherry picking" and other zero-sum behaviors instead of more effort and professional care.

Teachers' Classroom Practices and Pedagogical Moves

While all of the aforementioned issues are germane to the quality of teachers' experience in their profession and the conditions of their service, they should not be seen as synonymous with quality teaching. That is, teacher remuneration rates, classroom contexts, resources, pre- or in-service training, and teachers' credentials do not in themselves constitute quality instruction. Even when the indicators are associated with student learning outcomes (e.g., successful instruction), they are not the means of quality instruction. Instead, they are observable variables that are taken as proxies of quality vis-à-vis the conditions of teaching and learning. Nevertheless, these indicators are still frequently conflated with quality instruction. More so, these indicators are often monitored and are easily available via international educational

[69] See: ILO/UNESCO. (1966). The ILO/UNESCO Recommendation concerning the Status of Teachers. Geneva: ILO/UNESCO. See also: ILO/UNESCO. (2012). *Final report of the 11th session of the Joint ILO/UNESCO Committee of Experts on the Application of the Recommendations concerning Teaching Personnel*. Geneva: ILO-UNESCO.

[70] Figazzolo, L. (2012). *Terms and conditions of employment of teachers in relation to teacher shortages and Education for All.* Background paper for the 11th session of the Joint ILO/UNESCO CEART. Geneva: ILO.

databases. The upshot of these tendencies is that teacher characteristics and credentials have been traditionally valued to the detriment of actual classroom instruction and pedagogical practices. One result of this trend has been the overall lack of systematic data and metrics on the substance of classroom instruction and teacher–pupil interactions around content areas. While this reality is slowly changing, with large-scale assessments such as PISA, TIMSS, and PIRLS beginning to include aspects of instructional practice, most of these remain measured via survey questionnaires (e.g., teacher self-report or student questionnaires) rather than observation.

However, studies conducted over the past 10 years by RTI on early grade reading, early grade mathematics, school management, and the use of continuous monitoring tools in reading improvement projects have included aspects of classroom practice and pedagogical interactions between teachers and students—often via direct classroom observation. These aspects of instruction are presented below.

Teacher actions during classroom observations

Direct observations of classrooms were employed in Kenya, Mali, Rwanda, and Tanzania in order to determine teaching practices, instructional grouping, curricular content, and resources used during lessons. In Kenya, language lessons in Kiswahili and English were observed. It was found that the predominant activities undertaken by the teachers were monitoring pupils (as they worked individually at their desks), listening to pupils, speaking, and explaining.[71] Less than 13% of instructional time in both Kiswahili and English classes was actually spent reading. This suggests that teachers observed for this study primarily used the language class as a time to teach informational content, rather than to support the skills of reading and improving reading outcomes. The study also measured the use of instructional materials and found three main materials used in both Kiswahili and English classrooms: (1) the blackboard (used approximately 66% of the time); (2) textbooks (used 20% of the time); and (3) pupil notebooks (used 20% of the time). Other books were rarely used, if at all.

In Mali, observations were used to ascertain instructional grouping and curricular content. Overall, the study found that it was difficult to describe a "typical" reading and mathematics lesson among observed classrooms.[72] However, in reading classrooms most teachers worked extensively (over 50% of the time) with the whole class rather than with individual pupils or small groups. Though when textbooks were used (around 22% of the time in observed classrooms), pupils more frequently worked individually. In these lessons, only 25% of the pupils' work consisted of reading (either alone or in a group, silently or aloud). In mathematics lessons, individual work was more commonly observed, and individual writing was the predominant activity among students (seen 37% of the time). The study also attempted to correlate specific teacher actions with student outcomes, but no significant associations were found. This lack of association does not indicate that teaching itself is not an important element of student learning, but rather that the observation tools employed were not necessarily capturing the variations in teaching practice that make a difference in the outcomes measured.

[71] RTI, 2012, op cit.
[72] Varly, 2010, op cit.

Instruction across subjects and grades was almost exclusively whole class in Rwanda, and the most frequently observed teacher action was writing on the blackboard.[73] This study also attempted to correlate instructional techniques with learning outcomes and found that students tended to have better oral reading fluency scores in classrooms where silent reading occurred and where individual worksheets were used.

A further positive correlation was found between student reading scores and teachers' use of whole class and individual reading aloud in Tanzania. Observations found that the reading lessons of teachers associated with both low and high performance on the Early Grade Reading Assessment (EGRA) tend to commence with the teacher talking or presenting the lesson content in a didactic manner to the entire class. Over the course of the lesson, the teacher would then transition to individual work, during which they assisted with or monitored individual student work. The instructional grouping observations support the general idea that at the beginning of lessons, most classes are working as a whole group, although the vast majority then transition to individual work over the course of the lesson. Very few classes of teachers associated with either low or high performance on the EGRA used small groups during observed Kiswahili (reading and writing) lessons. Differences were evident, however, between classes of teachers in schools associated with low performance versus high performance on the EGRA a. For example, although most teachers associated with both low and high performance on the EGRA began lessons by direct instruction, more of the observed teachers associated with high performance on the EGRA could transition much more quickly to other instructional approaches that allowed for more student engagement (e.g., questions). In classrooms of teachers associated with low-performance on the EGRA, this transition did not take place until approximately 10 minutes into the lesson. In the classrooms of teachers associated with high performance on the EGRA, this transition occurred within 6 minutes. Teachers associated with high performance on the EGRA also tended to dedicate more time to answering students' questions and posing some of their own during the middle of the lesson. Furthermore, observed teachers associated with high performance on the EGRA were more likely to interrupt the flow of the lessons to address students' concerns or questions regarding the assigned task or lesson content (observed in 55% of classrooms). This was less likely to be the case for teachers of classes associated with lower performance on the EGRA (observed in only 33% of classrooms).

Use of participatory techniques in classrooms

Observation protocols employed by RTI in sub-Saharan African countries also frequently collect data on the extent to which a teacher encourages and facilitates pupil participation in lessons and interaction with curricular content. Protocols attempted to distinguish between classrooms in which pupils were actively engaged in lessons (e.g., by volunteering, offering answers, and discussing lesson content) and those in which pupils were passively engaged in lessons (e.g., by listening, responding only when called upon). In Mali, observers found that pupils tended to be passively engaged and spent the most amount of time listening to the instructor talk, explain, or (in the case of reading lessons) read aloud.[74] In Kenya, observers also found that pupil

[73] DeStefano et al, 2012, op cit.
[74] Varly, 2010, op cit.

participation was similarly constrained in reading and mathematics lessons.[75] During reading lessons, teachers tended to be the locus of attention and action, as students spent a significant amount of time listening to and watching the teacher. Choral reading also took up more than 15% of the time in these classrooms. In mathematics classrooms, teachers allocated more than 30% of instructional time to individual student desk work and another 25% on passive activities (e.g., listening to and watching the teacher). This meant that there was little time available for either the teacher or students to pose or answer questions or to solve problems together as a class. During mathematics lessons in Rwanda, teachers required that students listen to or watch them (30% of the time in observed classrooms), write on the board (15%), copy from the board (10%), or work individually at their desks (11%).[76] In both Tanzania and Zambia, students tended to participate when called on, but most would not volunteer to participate and there was little significant discussion during observed lessons.[77]

Reactions to pupil work and pupil responses

Teachers make pedagogical moves (i.e., actions with an instructional purpose or reactions to a classroom situation) numerous times throughout any given school day. Two such opportunities for instructional moves are represented by giving students feedback on their performance and by a teacher's reaction to students' misconceptions and incorrect responses. In several contexts, RTI has attempted to understand how teachers act by asking students about their teacher's typical reaction to these situations. In particular, survey questions attempt to differentiate between constructive and reinforcing pedagogic moves (e.g., repeating questions or encouraging pupils to try again when their responses are incorrect or by recognizing pupils' good performance) and non-reinforcing ones (e.g., scolding pupils when they answer incorrectly, asking another student, or by not recognizing pupils' good performance).

These pedagogic moves were evaluated in South Africa, Tanzania, and Zambia. In South Africa, 24% of pupils reported that their teachers employed reinforcing pedagogical moves when they are either unable to answer a question or when they provide an incorrect response (e.g., their teachers rephrase the question, explain the question, or encourage the pupil to try again).[78] However, over three-quarters of pupils reported that their teachers used non-reinforcing techniques in the event of an incorrect student response; 36% reported that the teacher called on someone else, 29% reported being hit by the teacher, and 10% reported being corrected by the teacher. In Tanzania, when students performed well on a lesson or test, most students reported that their teachers praised them (51%).[79] Other students reported receiving a prize for good performance (16%) or that their teachers did nothing (14%). When asked what teachers normally do when the student is unable to answer a question in class, a few students reported that their teachers encourage them to try again (15%), their teachers repeat the question (15%), or their teachers correct the student (9%). A significant minority of students (44%) reported that their

[75] RTI, 2012, op cit.
[76] DeStefano et al, 2012, op cit.
[77] Brombacher et al, 2014, op cit. Collins et al, 2012, op cit.
[78] Mulcahy-Dunn, A., L. Crouch, C. Pereira, A. Mayet, and J. Argall. (2010). *Education support to OVC in South Africa: Initial assessment and household survey.* RTP, NC: RTI International.
[79] Brombacher et al, 2014, op cit.

teachers normally hit students when they are unable to answer a question in class. In Zambia, the majority of pupils reported reinforcing techniques employed by the teacher; when they were unable to answer a question correctly, their teachers tended to rephrase the question or corrected or encouraged the pupil.[80] However, another 36% of pupils reported being punished (sent from the room or scolded) while some also reported being booed by their classmates or teachers.

Monitoring pupils' progress

Another set of measures of instructional practice centers on how teachers assess and monitor pupil progress and how they use assessment data to inform their teaching. At a bare minimum, "baseline" evidence of good teaching would indicate that classroom teachers employ more than one method to assess pupil progress (not just written tests) and would use assessment results to inform their practice (as opposed to merely give pupils grades).

Evidence from Tanzania and Zambia, however, suggests that most teachers do not pass this "baseline" of good teaching. Most teachers in Tanzania used formal written and oral assessments to ascertain and monitor student performance.[81] The measures of student performance obtained by these formal assessments were, more than anything else, used simply to grade students. Approximately 87% of classroom teachers indicated that they used written and oral assessment data in this way. Far fewer teachers (one out of every three) used assessment results formatively to evaluate students' understanding of instructional content, to adapt their teaching to better suit the needs of students, or to plan future teaching and learning activities. In Zambia, nearly all teachers (97%) reported that they rely on written tests to assess pupil knowledge and abilities, and 40% reported that they also considered formal end-of-term assessments.[82] Only a minority of teachers reported using other means of assessment, such as homework (33%) or oral evaluations (17%).[83]

National Education Plans and Policies Related to Effective Teaching

The previous section of the report presented evidence from large international databases (such as the World Bank, UIS, and SACMEQ), as well as from donor-funded evaluations and intervention programs that relate to teachers issues in sub-Saharan Africa. Data abound—as do studies—that touch upon issues related to teaching. However, for reasons already discussed, the study of effective *teaching* has traditionally been limited to identifying characteristics of effective *teachers* or determinants of *successful* teaching. In other words, a substantial amount of research has focused on teacher characteristics and learning outcomes. Unsurprisingly, this intense focalization on teachers rather than teaching has driven the availability of certain types of data over others. It has been shown that most international databases that are purportedly related

[80] Collins et al, 2012, op cit.
[81] Brombacher et al, 2014, op cit.
[82] Collins et al, 2012, op cit.
[83] Numbers total more than 100% as teachers were asked to report as many practices as they use regularly in the classroom.

to teaching in sub-Saharan Africa are really more applicable to teachers and their professional (or personal) characteristics. Certainly, these aspects of teachers are easier to observe, collect, and report, but this is at least due, in part, to the fact that data collection systems have been expressly designed to collect data on teachers rather than on the practice of teaching.

This data architecture is no accident. Rather, it is a reflection of the focus of national educational policies and plans that touch upon teacher issues and tend to be used to describe the profile of the ideal teacher and, by extension, teacher workforce. These profiles articulated in national policies and plans tend to stop after describing characteristics of teachers, instead of extending to the pedagogical interactions that teachers have with students in classrooms.

As such, it is worth investigating the categories related to teaching (though mostly related to *teachers*) that are often treated in national education policies and plans in sub-Saharan African countries. With this in mind, this section of the paper presents national education plans and policies that relate to teacher issues and quality teaching in 11 sub-Saharan African countries. Aspects of policies and plans that were reviewed and which are reported on include national registration and professional guidelines for teachers; pre- and in-service training; conditions of service; remuneration, promotion and advancement; supervision, feedback, and support; gender, religious, and cultural considerations; and teaching in mother tongue.[84]

Benin

National Registration/Professional Guidelines

Like many sub-Saharan African countries, Benin suffers from a lack of qualified and certified teachers. Its efforts to fill this gap led to large numbers of unqualified educators working in the country. In 2008, Benin made the decision to only recruit qualified teachers and work to bring up the qualifications of community teachers to match national standards. However, according to the government's calculations in 2010, 9.4% of schools still had no qualified teachers with a *Certificat d'Aptitude au Professorat de l'Enseignement General* (CAP) or *Certificat Elementaire d'Aptitude Pedagogique* (CEAP), and only in 11% of schools were all teachers qualified. Around 50% of all primary school and 27% of all secondary school teachers were qualified as of 2010.[85]

Pre- /In-Service Training and Student Teaching

Education students in Benin, like in other West African francophone countries, attend teacher training colleges and earn the CAP or CEAP, both of which typically take two years to complete. As of 2013, the maximum capacity of the country's teacher training colleges was to train 1,500 students per year, which represents approximately 3.6% of the primary teacher workforce. The government financially assists students and in 2010 supported 45% of education students with a scholarship during their first year; 62% received a scholarship in their second year. By 2014, the

[84] Much of the data on pre- and in-service training, conditions of service, remuneration, and proportion of female teachers reported in this section were obtained from World Bank or UIS databases. Other sources are cited as they are discussed.

[85] Republic of Benin Ministry of Education. 2013. *Plan Decennal de Developpement du Secteur de l'Education Actualise Phase 3 / 2013-2015.* Sector Plan, Cotonou: Government of Benin.

government planned to decrease the number of students receiving scholarships for their first year to 10% so that 100% of students could receive financial aid during their second year.

When the push to increase the number of qualified teachers began in 2008, currently serving teachers were given the opportunity to finish the CEAP through a combination of distance learning and face-to-face instruction over a period of three years. A total of 9,979 primary school teachers began the training, and 80% finished training and were awarded the CEAP in October 2011. Similar training for 11,278 secondary school teachers began in 2013.

Continuing professional development training is organized around school districts comprised of four or five schools. For primary schools, education instructors' teaching focused on issues identified by school supervisors. Secondary school teachers focused on professional development for two hours per week with educators in the same subject and on themes identified at the national level. However, while this professional development is laid out as a plan for implementation, implementation does not always occur.

Conditions of Service

As of 2010, Benin's schools averaged 47 students per teacher,[86] with two-thirds of schools in Benin averaging more than 40 students per teacher and 24% averaging more than 60. The poor physical conditions of classrooms do not help the situation— the government can identify only 39% of schools as having undamaged classrooms, a number which is most likely lower.

Remuneration, Promotion, and Advancement

From 2000 to 2010, Benin increased its education budget by 150%, with much of that increase going to teachers' salaries.[87] This led to an increase in the number of teachers and teacher salaries being raised. As of 2010, primary school, lower secondary school, and upper secondary school teachers were paid at a rate 5.0, 5.5, and 9.9 times the per capita GDP, respectively.

Supervision, Feedback, and Support

School visits by pedagogical counselors is part of Benin's support system for teachers. Counselor inspection visits are designed so that they can monitor the quality of instruction and provide feedback and support for teachers in order to improve pedagogical techniques. However, there are several factors that impeded this goal. There are not enough of counselors, they are not (in general) adequately trained in order to be effective, and they lack sufficient funds to pay for the travel to rural schools.[88] Further, these inspections are not necessarily positively perceived by Benin's teachers and principals as the inspections can affect educators' careers and are seen as assessments rather than a support mechanism.[89]

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[86] Lugaz, Candy, and Anton De Grauwe. 2010. *Schooling and Decentralization: Patterns and Policy Implications in Francophone West Africa.* Paris: International Institute for Education Planning.
[87] Republic of Benin Ministry of Education. 2013. *Plan Decennal de Developpement du Secteur de l'Education Actualise Phase 3 / 2013-2015.* Sector Plan, Cotonou: Government of Benin.
[88] Republic of Benin Ministry of Education. 2006. *Plan Decennal de Developpement du Sector de l'Education 2006-2015.* Sector Plan, Cotonou: Government of Benin.
[89] Lugaz, Candy, and Anton De Grauwe. 2010. *Schooling and Decentralization: Patterns and Policy Implications in Francophone West Africa.* Paris: International Institute for Education Planning.

Gender, Religious, and Cultural Considerations

As is common in sub-Saharan Africa, Benin's schools do not have a large number of female teachers. While 12% of schools have a majority female teaching staff, 54% have no female teachers. The Government of Benin acknowledges the low rate, the benefits female teachers provide (especially to female students), and has called for the rate to be improved.[90]

Teaching in the Mother Tongue

French, the national language of Benin, is generally the language of instruction at all levels of education.

Burkina Faso

National Registration/Professional Guidelines

Burkina Faso requires that its civil service teachers obtain a CAP to teach at the primary level. This two-year program is available to students who graduate from secondary school and pass end-of-secondary exams. To teach at the secondary level, teachers who already have the CAP and three years of teaching experience, or who also have a bachelor's degree, can enter a one- to two-year program to obtain a *Certificat d'Aptitude au Professorat de l'Enseignement Secondaire*. Further coursework is required for teachers to advance to positions of Head Teacher, inspectors, or advisors on pedagogy. Coursework must be taken through the *l'Ecole Normale Superieur de l'Universite de Koudougou*, but the fees are high and many teachers cannot afford the time or travel required to work towards these advanced certifications. In order to supply enough teachers for the country, Burkina Faso hired large numbers of contract teachers who now make up 60% of all primary and secondary teachers. These teachers are not required to have the same certifications as the civil service teachers mentioned.

Pre- /In-Service Training and Student Teaching

As of the 2012 school year, 95% of civil service primary school teachers had previously received enough training to meet certification standards, but that figure dropped to 48% at the secondary level.[91] However, civil service teachers made up only 40% of the teacher workforce, greatly reducing the overall training level of Burkina Faso's teachers. While the national requirements for teacher certification are high, the pre-service education and training is composed almost entirely of lectures on pedagogy and theory with little to no practical component. The national reform program that was in place from 2000 to 2009 included provisions for inspections and seminars to be held by teacher certification programs to provide in-service training for teachers. However, these are rare to be found.

[90] Republic of Benin Ministry of Education. 2013. *Plan Decennal de Developpement du Secteur de l'Education Actualise Phase 3 / 2013-2015.* Sector Plan, Cotonou: Government of Benin.
[91] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. http://data.uis.unesco.org.

Conditions of Service

Teachers in Burkina Faso must deal with massive shortages of textbooks, large class sizes, and a failure of the government to deliver promised benefits in the form of sick leave, health care, or housing allowances. Between 2000 and 2007, primary school enrolment rose by 25%—a trend that has continued. In 2005, 2007, and 2011, primary, secondary, and university teachers staged strikes to protest low salaries and benefits. The government signed agreements with the dominant teachers' unions, but as of 2013, substantial improvements in teachers' conditions have not been realized, with student to teacher ratios of 48:1 for primary school and 26:1 for secondary school in 2012.[92]

Remuneration, Promotion, and Advancement

Qualified civil service teachers in Burkina Faso are relatively well paid, with primary teachers making 5.3 times per capita GDP and lower and upper secondary teachers making 8.8 and 9.6 times the per capita GDP, respectively. In comparison, primary school and secondary school teachers in the region average 4.4 and 6.6 times their per capita GDPs, respectively.[93] However, only 40% of teachers are civil service teachers. The remainder are contract teachers who earn less than their civil service counterparts. Promotions require additional coursework and certification, which can be costly and inconvenient.

Supervision, Feedback, and Support

Special degree qualifications are available for supervisors and instructors responsible for providing feedback and support to teachers both pre- and in-service. *Conseiller Pedagogique Itinerant* (Educational Advisor) and *Inspecteur de l'Enseignment du Premier Degre* (Teaching Inspector) certifications require at least three and six years of teaching experience, respectively, and experience as a Head Teacher before candidates can be admitted to the programs. With such a shortage of teachers, there is an even greater shortage of qualified persons for these supervisory positions, resulting in many schools in Burkina Faso never receiving an inspection, especially for those in rural areas. Since inspections likely to do not have much pedagogical or teaching-support content, it is not clear that the lack of inspections is necessarily reducing teaching quality or learning achievement.

Gender, Religious, and Cultural Considerations

The low numbers of female teachers in Burkina Faso is an ongoing issue. Females only constitute 38% of the teacher population in primary schools and only 17% in secondary schools.[94]

[92] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. http://data.uis.unesco.org.
[93] World Bank. 2012. *Burkina Faso - Third Basic Education Program Support Grant.* Grant Report, Washington, DC: World Bank.
[94] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. http://data.uis.unesco.org.

Teaching in the Mother Tongue

Through education policy documents in 1996 and again in 2007, Burkina Faso's National Assembly officially established both French and national languages[95] as the languages of instruction in schools.[96] It is unclear how well this is operationalized.

Ghana

National Registration/Professional Guidelines

Ghana does not have a teacher licensure requirement beyond the teacher education certification requirements, which also means that teachers do not need to renew or reapply for licensure for the duration of their career. The certification process for school teachers ideally takes its candidates straight from secondary school into three-year or four-year programs depending upon whether the student wishes to teach at the primary or secondary school level. For those who already possess a university degree in their subject area, a one-year program to earn a Postgraduate Diploma in Education exists. Additionally, certification programs are available for teachers who are uncertified but who are already practicing.

Pre- /In-Service Training and Student Teaching

The Diploma in Basic Education (DBE) is a professional teaching certification obtained through one of Ghana's 41 colleges of education. It is a three-year program for candidates who have completed their secondary education, but only a two-year program for already practicing teachers possessing a Certificate "A". The DBE program certifies teachers to teach at the primary and junior secondary levels. The Bachelor of Education degree for aspiring secondary school teachers, available through the University of Cape Coast or the University of Education, Winneba, is normally a four-year program, but students can complete it in two years if they already possess a DBE.[97]

Teacher education institutions, in collaboration with the National Teaching Council, are responsible to include student teaching in their curriculum. Education students who wish to teach at the primary or secondary level are required to spend the last year of their teaching program working at a school and learning to teach with planned mentoring and coaching.

To combat the problem of untrained teachers currently working in the field, the Ghanaian Ministry of Education has implemented a four-year Untrained Teacher Diploma in Basic Education (UTDBE), which has, so far, trained 16,000 teachers through distance education.[98] As another measure to certify additional teachers to meet growing demand, the Certificate "A", a

[95] The national languages taught in schools in Burkina Faso include Mòoré, Jula, Fulfulde, Lyélé, Gulmencema, Dagara, Bisa, and Nuni.

[96] Burkina Faso National Assembly. 2007. "LOI No. 013-2007 / AN." Education Law Guidance, Ouagadougou.

[97] Asare, Kwame Bediako, and Seth Kofi Nti. 2014. "Teacher Education in Ghana: A Contemporary Synopsis and Matters Arising." *Sage Journals.* April 4. Accessed December 17, 2014. http://sgo.sagepub.com/content/4/2/2158244014529781.

[98] Ghana Education Service. 2012. "Pre-Tertiary Teacher Professional Development and Management in Ghana." Ministry of Education, January 31.

three-year certification, is available for already practicing teachers who cannot meet the requirements of the UTDBE. Additionally, the Ministry created an In-Service Education and Training (INSET) program for continuing professional development, which has elements that focus on the district, cluster, and school levels to increase teaching capacity and school management.

Conditions of Service

Teacher management is decentralized to the district level in Ghana, where districts' management plans encompass teacher recruitment, deployment, and transfers with included recommendations to improve teachers' work and living conditions. In 2013, student to teacher ratios were 32:1 in primary schools and 18:1 in secondary schools.[99]

Remuneration, Promotion, and Advancement

Ghana has created a career structure based on professional accomplishments at the classroom, school management, and district levels. While this system still mandates minimum years of teaching experience for promotion to each level, promotion is now determined by classroom evaluations, interviews, and completion of INSET training, allowing teachers to progress through the beginning teacher, licensed teacher, and senior teacher career levels. For those educators that aspire to become principal teachers, chief principal teachers, and directors, evidence of their management and leadership experience and skills are also required.[100] The average salary for civil service teachers when adjusted for purchasing power parity was $25 per day in 2011, or 4.7 times GDP per capita.

Supervision, Feedback, and Support

Upon being promoted from a beginning teacher to a licensed teacher, educators are assigned a senior teacher to act as their mentor.

Gender, Religious, and Cultural Considerations

Deeply religious culture and conservative attitudes towards women have affected official policies towards female teachers. It is not permitted under Ghanaian Ministry of Education guidelines for single female teachers to be assigned to schools in rural areas or in areas away from their homes. Single female teachers may not be given housing, but are instead expected to live with their families. Married women also do not often take assignments in rural areas or away from their homes as they are not so inclined, nor is it socially acceptable for them to live away from their husbands and children. This greatly limits the number of female teachers in rural areas, and further hinders the success of girls in these remote schools. In 2013, women made up 38% of the primary school and only 24% of the secondary school teacher workforce. One reason for this is the lack of qualified female candidates who have received university degrees and the perception that young children, and therefore primary schools, are the domain of women,

[99] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. http://data.uis.unesco.org.

[100] Ghana Education Service. 2012. "Pre-Tertiary Teacher Professional Development and Management in Ghana." Ministry of Education, January 31.

whereas both advanced academics and the strict classroom management required for secondary school are more appropriate for men.

Teaching in the Mother Tongue

Through 2009, English was the only official language of instruction in Ghana, but as a part of the National Literacy Acceleration Program funded by the U.S. Agency for International Development (USAID), schools now use one of 11 local languages[101] through Grade 3 as the language of instruction and switch to English beginning in Grade 4. However, a reading assessment conducted in 2013 found that roughly 15% of schools had not been assigned a national language by the Ghanaian Education Service and were English only.[102] It is also unclear whether the practical capacity to teach in national languages is up to the level that would be required. With good investment, however, the capacity could be created.

Kenya

National Registration/Student Guidelines

The Kenyan Constitution in 2010 established the Teacher Service Commission and charged it with teacher management to include teacher entry standards and registration. Teachers in Kenya, upon becoming qualified, were required by law to register with the Teachers Service Commission. However, in 2012, the government acknowledged that there was no established mechanism to ensure that all teachers were certified, which led to a large number of uncertified teachers. To combat this, the government increased its emphasis on ensuring all teachers become certified upon becoming qualified teachers. The Teachers Service Commission also created an online method for certification to ease the certification process. In order to become qualified, primary school teachers must earn teaching certificates from Primary Teacher Training Colleges or diplomas from Diploma Teacher Training Colleges. The quality of these certificates and diplomas is certified by the Kenya National Examinations Council. Secondary teachers, who must have bachelor's degrees, attend and receive their degree from one of Kenya's universities.[103]

Pre- /In-Service Training and Student Teaching

The length of pre-service teacher training in Kenya varies depending upon the type of certification. The Primary Teacher Training Colleges offer two-year teacher certificate programs and train roughly 10,000 primary school teachers per year, while the Diploma Teacher Training Colleges train around 12,000 primary school teachers per year in their three-year programs. Secondary teachers obtain either a bachelor's degree in education, which includes practical training and pedagogical instruction, or they obtain a bachelor's degree in another approved subject, and upon completion, finish a nine-month postgraduate diploma to become a certified

[101] Native languages taught in Ghanaian schools include Akuapem Twi (45), Asante Twi (115), Dagaare, Dagbani, Dangme, Ewe, Fante (45), Ga, Gonja, Kasem, and Nzema. English (1)
[102] RTI International. 2014. *Ghana 2013 Early Grade Reading Assessment and Early Grade Mathematics Assessment Report of Findings.* Assessment Report, Accra: USAID.
[103] Kenya Ministry of Education and Ministry of Higher Education, Science Technology. 2012. *A Policy Framework for Education and Training.* Sessional Paper, Nairobi: Republic of Kenya.

teacher. While practical experience and student teaching is gradually becoming acknowledged as being more important than classroom theory, there is still no set requirement for the amount of practical experience obtained during teacher training programs.[104]

In 2009, to curb education costs and help satisfy the growing demand for teachers, 18,000 contract teachers were hired, creating a 8.7% growth in the teacher workforce[105] and leading to strikes by the unions of civil service teachers, as the majority of these contract teachers had received no training at all. For these and other unqualified, already practicing teachers, a six-month in-service program was made available through distance learning in order for those educators to acquire certification. One shortfall identified by the Kenyan Government is the lack of a coordinated teacher professional development system and the absence of a method for teachers to become teacher educators. There is currently no set of established standards to qualify as a teacher educator.

Conditions of Service

As of 2009, student to teacher ratios averaged 47:1 for primary schools and 30:1 for secondary schools.[106]

Remuneration, Promotion, and Advancement

Kenya's powerful teachers union, the Kenyan National Union of Teachers, negotiates and petitions the government consistently to increase teachers' allowances, benefits, and conditions, such as housing allowances, medical insurance, free pension plans, maternity leave, and improved training programs to increase teachers' academic and professional competence.[107]

Kenya's promotion system creates an established pathway for promotions through performance evaluation, order of merit lists, and the Teacher Proficiency Course. In spite of this, many teachers are not promoted because of the limited funding available to pay for such advancement. The average salary for civil service teachers is currently set at $40 per day when adjusted for purchasing power parity. In order to keep the cost of wages down, the government established a mandatory retirement age of 60, which went into effect on January 1st, 2015. Teachers must retire by their 60th birthday, even if that date falls in the middle of a school term.[108]

Supervision, Feedback, and Support

Education resource centers around Kenya employ tutors that visit schools and meet with groups of teachers to discuss best practices of techniques and curriculum.

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[104] Kenya Ministry of Education and Ministry of Higher Education, Science Technology. 2012. *A Policy Framework for Education and Training.* Sessional Paper, Nairobi: Republic of Kenya.
[105] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. http://data.uis.unesco.org.
[106] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. http://data.uis.unesco.org.
[107] Kenya National Union of Teachers. 2007. *Strategic Plan 2008-2013.* Strategic Planning Document, Nairobi: Katangi Printing Works Ltd.
[108] Lengoiboni, Gabriel K. 2014. "Teachers Mandatory Retirement on Attainment of Sixty Years of Age." Nairobi: Teachers Service Commission, July 1.

Gender, Religious, and Cultural Considerations

Kenya offers maternity and paternity leave—mothers receive 90 days off and fathers receive up to 10 days of leave. Female teachers make up 44% of the educators in primary schools and 41% in secondary schools.[109]

For a variety of reasons (e.g., early marriage, religious and cultural beliefs, early pregnancy, the preference to educate boys instead of girls), girls have more difficulty accessing educational opportunities at all levels than boys. This gender disparity is most prevalent in rural areas and urban slums.[110] This increased difficulty for girls to finish their education, especially in rural areas, makes it difficult to continually recruit qualified female teachers for those rural areas, and it can lead to a lack of teachers who can speak and teach in the mother tongue appropriate for those rural parts of Kenya.

Teaching in the Mother Tongue

Kenyan policy is that the mother tongue be used as the language of instruction in the lower primary grades. In rural areas, this includes languages such as Gikuyu and Dholuo, while in urban areas, the language of instruction is Kiswahili. While these languages may be taught past the lower primary grades, English is the designated language of instruction in the upper primary grades and higher. However, contrary to this policy, roughly 58% of lower primary grades are actually taught in English and not in the mother tongue.[111]

Mali

National Registration/Professional Guidelines

The *Institutes de Formation des Maitres* were established in each of the 17 regions of Mali in 2000 to provide a two- to four-year training program for primary school teaching certification. Candidates for these programs must have already obtained their baccalaureate. To teach at the secondary level, candidates must obtain a four-year degree from the University of Bamako.

Pre- / In-Service Training and Student Teaching

Generally speaking, the training level of teachers in Mali is low. Only 20% are civil service teachers who are officially certified; 30% of teachers are hired and supported by the local community, typically occurring in rural areas; and 50% are hired on contract, with no certification or training requirements.

Conditions of Service

In 2011, the student to teacher ratio was 48:1 for primary schools and 25:1 for secondary schools.

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[109] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. http://data.uis.unesco.org.

[110] Kenya Ministry of Education. 2008. *Strategic Plan 2008-2012.* Strategic Planning Document, Nairobi: Republic of Kenya.

[111] Piper, 2010b, op cit.

However, the ratio of students to trained teachers was 92:1.[112] Conflict in the north has meant that most schools have been closed in the region for the last few years.

Remuneration, Promotion, and Advancement

As of 2008, primary school, lower secondary school, and upper secondary school teachers were paid a salary equal to 4.2, 5.6, 6.6 times the per capita GDP, respectively. Teachers at community schools do not have a fixed salary and are paid by the community, but the government does contribute to each school, providing 25,000 CFA francs (approximately $55 USD) per year.[113]

Supervision, Feedback, and Support

Like other West African countries, Mali has a system of pedagogic counselors to provide support for schools. In order to improve the relationship between these education instructors, Mali has made changes to the system to ensure it is a support structure and not an assessment mechanism. The basic education inspectorates were changed to pedagogic advice centers. These centers are now designed to provide support, advice, and pedagogic training for schools as opposed to having a supervisory and assessment role. While this appears to be a good step, there is still a shortage of counselors and their visits can be very infrequent.

In rural areas with community-hired teachers, there is little to no supervision from the government, but studies have found that community teachers, when they are adequately trained, have better student achievement outcomes. This is believed to be true because these teachers are hired and supervised by the community, are usually local to the region, and, therefore, not treated as an outsider or ostracized, but instead receive more support. They may also feel more general connection to the community.

Gender, Religious, and Cultural Considerations

Teaching is considered a respected profession in Mali. However, there are a very limited number of qualified female candidates, leading to a shortage of teaching opportunities for women. In primary schools, women represent 28% of the teachers, but at the secondary level, it is even worse, with only 11% of the teachers being female.[114]

Teaching in the Mother Tongue

Mali's policy for the language of instruction is for schools to be bilingual, using one of the 13 national languages as the language of instruction along with French. However, a USAID study involving 949 schools in Mali found that only 24% percent were using a local language as the language of instruction.[115]

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[112] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. https://data.uis.unesco.org.

[113] Lugaz, Candy, and Anton De Grauwe. 2010. *Schooling and Decentralization: Patterns and Policy Implications in Francophone West Africa.* Paris: International Institute for Education Planning.

[114] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. http://data.uis.unesco.org.

[115] Rhodes, Rebecca. 2012. *Moving Towards Bilingual Education in Mali: Bridging Policy and Practice for Improved Reading Instruction.* PowerPoint Presentation, Washington DC: USAID.

Mozambique

National Registration/Professional Guidelines

In 2009, the Ministry of Education reported that 58.5% of all teachers in Mozambique were contract teachers. This is due in part to the fact that whether trained or untrained, all teachers in Mozambique, until they are registered, begin their service as contract teachers and not as civil service employees. To become a certified teacher in Mozambique, teachers must send their application through the district government where they are employed to be verified. The district government then nominates the teacher and forwards their application to the Administrative Court. Upon approval from the Administrative Court, teachers become civil service teachers for a probationary period of two years before becoming permanent civil servants. While the registration process should take a minimum of four to six months, many teachers remain on contract for an indefinite amount of time waiting to be certified. This delay is caused in part because the registration of a teacher is dependent upon having enough funding available to pay him or her compounded by the inefficiencies of the bureaucracy in Mozambique.[116]

Pre- / In-Service Training and Student Teaching

Minimum teacher qualifications have changed numerous times since Mozambique's independence, leading to a range of qualifications among currently practicing teachers with various program durations and prerequisites needed to attain them. In the past few years, in order to more quickly facilitate the growth in numbers of trained teachers, Mozambique shortened the length of teacher certification from two years to one year. Prior to attending teacher training, prospective primary school teachers must have completed the 10th grade and prospective secondary school teachers must have completed the 12th grade.

Mozambique abolished school fees for primary schools in 2005 leading to increased access and student enrollment. However, this jump in student enrollment was not matched with a large increase in funding, which created a lack of trained teachers and material resources. In the past decade, to keep up with the increasing number of students and to increase the percentage of trained teachers, the Ministry of Education worked to increase the number of newly trained teachers, which rose from 4,500 in 2006 to 8,000 in 2011. While this did decrease the percentage of teachers who were untrained, a large percentage of teachers in public schools are still untrained. In 2004, 44% of lower primary, 34% of upper primary, and 44% of lower secondary teachers were untrained. As of 2011, those percentages dropped to 21%, 17%, and 21%, respectively.[117]

In support of teachers' continuing professional development, throughout the school year, teachers are required to participate in pedagogical days in which they are provided additional instruction (especially in effectively teaching reading and writing) and where they can receive help from their peers and share experiences. Also, while short in-service training courses are

[116] Beutel, Monika. 2011. *Teachers Talking: Primary Teachers' Contributions to the Quality of Education in Mozambique.* Research Report, Kingston upon Thames: VSO International.
[117] Republic of Mozambique Ministry of Education. 2012. *Education Strategic Plan: 2012-2016.* Strategic Plan, Maputo: Republic of Mozambique.

available through the teacher training colleges, only an estimated 12.6% of primary school teachers actually participated in these courses in 2010. Longer continuing professional development programs that certify teachers or upgrade their qualifications are available, but the financial burdens and time constraint of these courses make it difficult for teachers to participate.[118]

Conditions of Service

Because of the increase in the number of teachers being trained mentioned above, the average primary school student to teacher ratios dropped from 75:1 to 63:1 from 2006 to 2011. The Ministry of Education projects that the average student to teacher ratios will continue to drop and average at 56:1 by 2016. The Ministry does, however, predict that teacher workloads will increase by 2016 with average hours per week workloads rising from 21 hours for upper primary, 21 hours for lower secondary, and 15 hours for upper secondary to 24, 24, and 20 hours, respectively.[119]

Remuneration, Promotion, and Advancement

In Mozambique, teachers' base salaries are determined by their teaching qualifications, level of leadership responsibility, and their years of teaching service. Teacher salaries can vary greatly depending upon the criteria mentioned above, but on average, lower primary, upper primary, lower secondary, and upper secondary school teachers earn 3.5, 7.4, 15.8, and 23.8 times the per capita GDP.[120] However, teacher salaries are frequently late, and the delivery of these payments is especially problematic for rural teachers, who like in many sub-Saharan African countries, must take time away from teaching in order to travel to collect their salary. Also, while urban teachers may find it easier to collect their salary, the cost of living for them is much higher. Contract teachers are paid according to the same salary scale as civil service employees but do not receive the same additional allowances, pension benefits, or opportunities for advancement.

Teachers working in remote areas receive a 25%–50% increase in their base salary depending on the district in which they work. As an additional incentive to work in remote parts of Mozambique, teachers who work in such areas are provided housing or a housing credit. After 35 years of service or upon reaching retirement age (60 for women and 65 for men), civil service teachers are entitled to a pension equal to their pre-retirement salary.

Supervision, Feedback, and Support

No information was found.

[118] Beutel, Monika. 2011. *Teachers Talking: Primary Teachers' Contributions to the Quality of Education in Mozambique.* Research Report, Kingston upon Thames: VSO International.
[119] Republic of Mozambique Ministry of Education. 2012. *Education Strategic Plan: 2012-2016.* Strategic Plan, Maputo: Republic of Mozambique.
[120] Doctors, Simone. n.d. *Listening to Teachers: The Motivation and Morale of Education Workers in Mozambique.* Research Report, Kinston upon Thames: VSO International.

Gender, Religious, and Cultural Considerations

The Mozambique Ministry of Education has made a concerted effort to close the gender parity gap in education, not only for female students, but for teachers as well. The ministry highlighted this gender issue in its previous two strategic plans and pushed for higher female enrollment in teacher training colleges. While female teachers are still in the minority, the gender gap has been closing. From 1998 to 2008, women consistently made up more than half of students in teacher training colleges.[121] This led to an increase in the proportion of teachers who are female, as the percentage of female early primary (Grades 1–5) teachers rose from 30% in 2004 to 44% in 2011. During that same timeframe, the percentage of female teachers in the upper primary (Grades 6 and 7) rose from 23% to 30% and for lower secondary (Grades 9 and 10) from 16% to 19%.[122] This also helped to increase the percentage of female teachers who are trained, as 80% of female lower primary teachers are now trained as opposed to only 70% of male teachers.

Teaching in the Mother Tongue

Portuguese has been used as the language of instruction in schools for most of Mozambique's history and urban schools continue to use Portuguese as their language of instruction. Rural schools, however, have begun using mother tongue languages as the language of instruction with Portuguese taught as a mandatory subject. But, these schools who use one of the Mozambican National Languages as the language of instruction often struggle with adequate teaching materials and proper teacher training.[123]

Niger

National Registration/Professional Guidelines

One problem in Niger is the stringent certification process and requirements, combined with the fact that very few colleges offer these education degrees. Seven *Ecoles Normales d'Instituteurs* (ENI) across Niger offer the *Certificat de Fin d'Etudes du Premier Degre*, a two-year program required to teach primary school. Only the University of Niamey has the *Ecole Normale Superieur*, which offers a four-year program for the *Brevet d'Etudes du Premier Cycle* to teach at the secondary level, and a three-year program for candidates who have attained their baccalaureate to obtain licensure to teach in secondary schools. Starting in 2010, all teaching candidates have been required to submit a written thesis in order to pass their certification. The goal is to ensure that teachers have verbal and written competency. These requirements have become so high, however, that a problem of teachers forging fake licensure has arisen. Protests by parents and students in 2012 sought to bring the issue of so-called "fake" teachers to the government's attention.

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[121] Beutel, Monika. 2011. *Teachers Talking: Primary Teachers' Contributions to the Quality of Education in Mozambique.* Research Report, Kingston upon Thames: VSO International.
[122] Republic of Mozambique Ministry of Education. 2012. *Education Strategic Plan: 2012-2016.* Strategic Plan, Maputo: Republic of Mozambique.
[123] Henriksen, Sarita Monjane. 2010. *Language Attitudes in a Primary School: A Bottom-Up Approach to Language Education Policy in Mozambique.* PhD Thesis, Roskilde: Roskilde University Department of Culture and Identity.

Pre- / In-Service Training and Student Teaching

The official requirement to receive certification is ten to eleven weeks of student teaching, which consists of five weeks of guided teaching and five to six weeks in charge of a class, but when surveyed, teachers were found to have had an average of less than twenty days of student teaching during their certification program. The ENI offers a 30–45 day training certificate program for teachers currently in the field. However, only 17% of secondary teachers in Niger have undergone training.

Conditions of Service

According to 2011 data, the student to teacher ratio was 39:1 for primary schools and 35:1 for secondary schools.[124] However, the discrepancy between the number of teachers in urban and rural areas is so large that there are regions of rural Niger with more than 100 students per teacher.

Remuneration, Promotion, and Advancement

While the average salary for civil service teachers is set at 13 U.S. dollars (USD) per day, almost 7 times the GDP per capita, the approximately 80% of teachers who are contract teachers earn half as much as their civil service counterparts. The Government of Niger promised raises to teachers with the ten-year education plan that began in 2003, but most have seen no increases and salaries are often paid months late. The 2003 plan encouraged teachers with over 30 years of experience to retire in order to free up funds for new teacher salaries.

Supervision, Feedback, and Support

Since 2010, the Niger Ministry of Education has required the ENI and ENS in order for personnel to conduct national and regional inspections of schools and operate training days for teachers. However, some schools in Niger reported having no inspections conducted at their school in the past year.[125] There is also ongoing training for directors, pedagogical supervisors, and inspectors on how to observe and give feedback to teachers.

Gender, Religious, and Cultural Considerations

Female teachers are reasonably represented in Niger's primary schools, making up 45% of the total educators, but they are still only a small percentage of secondary school teachers at 19% as of 2011.[126]

Teaching in the Mother Tongue

In Niger, national languages may be used as the language of instruction through the third grade. For the remainder of primary school and secondary school, French is the language of instruction.[127]

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[124] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. http://data.uis.unesco.org.

[125] Antonowicz, Laetitia, Frederic Lesne, Stephane Stassen, and John Wood. 2010. *Africa Education Watch: Good Governance Lessons for Primary Education.* Program Report, Berlin: Transparency International.

[126] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. http://data.uis.unesco.org.

[127] Albaugh, Ericka A. 2012. *Language Policies in African States.* Brunswick: Bowdoin College

Nigeria

National Registration/Professional Guidelines

Teaching certification programs Nigeria can be found at any of the state universities or at the National Teachers' Institute. The minimum certification for primary and junior secondary teachers is the Nigerian Certificate in Education (NCE), which generally takes three years to complete after secondary school. For senior secondary teachers, the required qualification is a bachelor's of education degree or a bachelor's degree in a subject field combined with a Postgraduate Diploma in Education (PGDE).

Pre- / In-Service Training and Student Teaching

The National Commission for Colleges of Education sets the minimum requirements for teacher certifications in Nigeria. In 2012, the commission updated the minimum requirement for the minimum teaching qualification, the NCE, and included guidelines for curriculum content at teacher education institutions. Student teaching, a requirement for the NCE, includes a minimum of 26 weeks practical experience, where the student teacher spends a minimum of 10 and maximum of 18 class periods per week in the classroom and receives a minimum of ten scored evaluations.[128]

The National Teachers' Institute of Nigeria provides distance learning courses in order to provide initial certifications, upgrade qualifications, and provide professional development opportunities for teachers. Through the main facility in Kaduna and study centers located throughout the country, the institute offers teacher certification programs for the NCE, the PGDE, and the Advanced Diploma in Education. Because the NCE takes three to four years to complete, the institute also offers a one year Pivotal Teachers' Training Program and Technical Teachers' Training Program in order to provide educators a basic level of training instruction prior to the completion of the NCE.[129] The National Teachers' Institute also provides continuing professional development workshops through distance learning, and very active teachers unions, such as the Nigerian Union of Teachers, seek to bring educators together for seminars and discussions. However, a 2012 survey of 15 schools found that 47 percent of teachers claimed to have never had the opportunity for in-service training.

Conditions of Service

The average student to teacher ratio in Nigeria was 38:1 in primary schools and 33:1 in secondary schools as of 2010.[130]

[128] National Commission for Colleges of Education. 2013. *NCCE Online.* Accessed November 24, 2014. www.ncceonline.edu.ng.
[129] National Teachers' Institute. 2014. *National Teachers' Institute.* Accessed November 24, 2014. http://www.nti-nigeria.org/index.html.
[130] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. https://data.uis.unesco.org.

Remuneration, Promotion, and Advancement

The average salary for civil service teachers is set at 32 USD per day when adjusted for purchasing power parity. In addition, teachers stationed in northeastern Nigeria, a rural zone that has been engulfed in violent conflict in recent years, are officially offered a 5%–10% increase in wages as hazard pay, but teachers report never receiving the promised bonus. Teacher pay is also notoriously late or withheld for lack of funds, and many teachers in Nigeria survive on gifts from parents and students.

Supervision, Feedback, and Support

No information was found.

Gender, Religious, and Cultural Considerations

In 2010, female teachers made up 48% of the total number of teachers in primary schools and 46% in secondary schools in Nigeria,[131] and these female teachers were generally seen as effective educators by their supervisors. A recent study of 2,400 female teachers in southern Nigeria found that 81.4% of female primary school teachers and 75.1% of female secondary teachers were designated as effective as evaluated using 20 criteria by their supervisor.[132]

Gender and religion both play a role in limiting educational programs in the north. Northern Nigeria is poorer and more rural than the south, and religious extremist groups have spread their ideology and violence throughout the region. In the north, only 2% of young women are literate, and overall, the rate of students who have not completed school is six times higher than in the south. The ubiquity and specific type of Qur'anic schools in the north also contributes to the low levels of English literacy, as students primarily focus on Arabic. A 2011 survey found that 77 percent of teachers in Kano State in Northern Nigeria did not have a sufficiently proficient level of knowledge to teach English at the primary level.[133]

Teaching in the Mother Tongue

Nigeria's language policy dictates that the mother tongue be used in pre-primary and early primary school as the language of instruction. English becomes the language of instruction in the upper primary grades. While English is the language of instruction in secondary school, every student must also learn Hausa, Igbo, or Yoruba, Nigeria's major national languages.

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[131] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. http://data.uis.unesco.org.

[132] Alao, Ireti Folasade. 2013. "Teacher Effectiveness among Female Teachers in Primary and Secondary Schools in Southwestern Nigeria." *Journal of Educational Leadership in Action.* Accessed December 17, 2014. http://www.lindenwood.edu/ela/issue02/alao.html.

[133] Education Sector Support Programme in Nigeria. 2011. *Teacher Development Needs Analysis.* Findings Report, Kano: Education Sector Support Programme in Nigeria.

South Africa

National Registration/Professional Guidelines

In South Africa, two paths to teaching accreditation exist. Potential teachers can obtain a bachelor's of education degree from an accredited university or a bachelor's degree in an approved subject area followed by a one-year education certification, the Advanced Diploma in Education. All educators at public institutions and foreign teachers in South Africa must register with the South African Council for Educators (SACE).

Pre- / In-Service Training and Student Teaching

Pre-service training in South Africa is available (full or part-time) through in-class and distance learning. Both pathways, the Bachelor of Education degree or another approved bachelor's degree with the Advanced Diploma in Education, require a total of 480 credit hours and take roughly four years to complete. The Bachelor's of Education includes a year of student teaching which can be conducted in numerous, shorter periods or in a smaller number of longer terms.[134]

In 2012, SACE approved the implementation plan for Continuing Professional Teacher Development (CPTD) programs, with registration for teachers ongoing and implementation for principals and deputy principals begun in January 2014. SACE now approves continuing education courses, programs, and activities offered by employers, nongovernmental organizations (NGO), and teachers' unions through the CPTD system. Educators are required to obtain a minimum number of professional development credits in each three-year cycle.[135]

Conditions of Service

South African primary schools in 2009 averaged a student to teacher ratio of 31:1, while secondary schools averaged 25:1.[136] Large class sizes and a lack of materials in many urban public schools have led some teachers to seek employment in private schools. South Africa's private school network, though not large when compared with public schools, includes a large percentage of religious-affiliated institutions. These are not required to abide by state policies and often pay teachers less than half of what their counterparts receive in public institutions. The combination of these factors may be the cause of a teacher attrition rate which averages 5%–6% yearly.

Remuneration, Promotion, and Advancement

South Africa's teachers' unions have negotiated benefits for teachers that mirror those seen in more developed countries, and in 2008, a collective agreement was signed, increasing teacher pay and creating a system of remuneration which strengthened the tie between teacher performance and teacher pay through the Quality Management System (QMS). Based upon their

[134] South Africa Department of Education. 2007. "The National Policy Framework for Teacher Education and Development in South Africa." *Government Gazette* 3-30.
[135] South African Council for Educators. 2014. *Continuing Professional Teacher Development Handbook.* Centurion: South African Council for Educators.
[136] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. http://data.uis.unesco.org.

rating, teachers' salaries are increased every two years by 3% for those teachers rated as "good"[137] and by 6% for those teachers rated as "outstanding"[138] in addition to salary increases for inflation. These ratings are based upon performance reviews[139] conducted semi-annually.[140] Starting with this agreement, teacher salaries varied from $57,638 for fully qualified first year teachers to $131,639 for the most senior teachers when adjusted for purchasing power parity. This put average teacher pay at 3.93 times the per capita GDP.[141] In addition to their government salary, in some schools, teachers' salaries are supplemented by school fees paid by parents.

In addition to increases in pay for performance, the South African education system allows for teachers to be promoted in accordance with their performance, years of experience, and desire to take on greater responsibility and leadership. Teachers can become heads of department after five years of teaching, deputy principals after two years as a head of department, and a principal after two years as a deputy principal.

Supervision, Feedback, and Support

The Ministry of Education established the National Education Evaluation and Development Unit (NEEDU) to organize and implement the regional, district, and school-level monitoring and evaluation systems. The NEEDU works independently of the school administration system to provide assessment reports of curriculum delivery and school management practices at the school, district, province, and Department of Basic Education levels.[142]

Gender, Religious, and Cultural Considerations

Unlike most African countries, a majority (roughly two-thirds) of teachers are female in South Africa, where by estimates in 2014, 79% of primary school teachers and 55% of secondary school teachers were women.[143]

[137] Good: Performance meets expectations, but some areas are still in need of development and support.
[138] Outstanding: Performance exceeds expectations. Although performance is outstanding, continuous self-development and improvement are advised.
[139] Teacher performance reviews are based upon the following metrics: creation of a positive learning environment; curriculum knowledge, lesson planning, and presentation; learner assessment and achievement; continuous professional development, human relations, and contribution to school development; and extramural and cocurricular participation. The QMS evaluation instrument provides criteria and descriptors for what constitutes each of the four possible ratings under each performance standard.
[140] South African Ministry of Basic Education. 2013. *Quality Management System (QMS) for School Based Educators.* Collective Agreement Annex, Pretoria: Ministry of Basic Education.
[141] Education Labour Relations Council. 2008. *Collective Agreement Number 1 of 2008: Annexure A.* Collective Agreement, Pretoria: Education Labour Relations Council.
[142] Department of Basic Education. 2014. *Language in Education Policy.* Government Policy, Pretoria: Republic of South Africa. Accessed November 20, 2014. http://www.education.gov.za/DocumentsLibrary/Policies/tabid/390/Default.aspx.
[143] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. http://data.uis.unesco.org.

Teaching in the Mother Tongue

Schools in South Africa are required to conduct instruction in one of the county's 11 official languages.[144] During Grades 1–2, instruction is conducted in one of these languages. Starting in Grade 3, students receive instruction in their language of learning and one additional official language.[145] However, allowing so many languages to be the language of instruction in schools is constrained and difficult to implement due to a shortage of adequately trained teachers and instructional material.[146]

Uganda

National Registration / Professional Guidelines

Ugandan teachers receive their certifications from Primary Teacher Colleges (primary school teachers), National Teachers' Colleges (secondary schools teachers), or from universities (primary and secondary school teachers). Programs vary between 2–3 years depending upon the teaching award granted, teaching certificate or degree in education, and whether the program is pre-service or in-service.[147]

As of 2006, pre-service primary school teacher training institutions trained 6,729 new teachers, which was 4.5% of the total number of primary school teachers in Uganda, but in that same year, the teacher attrition rate for primary school teachers was roughly 5%.[148] By 2011, Primary Teacher Colleges were graduating an average of 8,769 new primary school teachers per year, while in that same year only 6,616 left the profession. This seems like a very positive step, but the Ministry of Education estimates that by 2025, the country will need in between 15,925 and 22,999 new primary school teachers every year in order to keep up with a growing student population and teacher attrition. [149]

Pre- / In-Service Training and Student Teaching

During their second year of the pre-service training program, primary school teaching candidates are required to student teach twice, each time for a six week period, before becoming certified. There is no student teaching requirement for those seeking a diploma to teach secondary school or a bachelor's degree in education. In-service training is available for teachers to become

[144] South Africa's official languages include English, Afrikaans, isiNdebele, isiXhosa, isiZulu, Sepedi, Sesotho, Setswana, SiSwati, Tshivenda, and Xitsonga.
[145] Department of Basic Education Republic of South Africa. 2014. *National Education Evaluation & Development Unit.* Accessed November 20, 2014. http://www.education.gov.za/NEEDU/tabid/860/Default.aspx.
[146] Tshotsho, Dr. Baba P. 2013. "Mother Tongue Debate and Language Policy in South Africa." *International Journal of Humanities and Social Science* 39-44.
[147] Uganda Ministry of Education and Sports. 2013. *Teacher Issues in Uganda: A Diagnosis for a Shared Vision on Issues and the Designing of a Feasible, Indigenous and Effective Teachers' Policy.* Government Report, Kampala: Government of Uganda.
[148] Mulkeen, Aidan. 2010. *Teachers in Anglophone Africa: Issues in Teacher Supply, Training, and Management.* Washington, DC: The World Bank.
[149] Uganda Ministry of Education and Sports. 2013. *Teacher Issues in Uganda: A Diagnosis for a Shared Vision on Issues and the Designing of a Feasible, Indigenous and Effective Teachers' Policy.* Government Report, Kampala: Government of Uganda.

certified or to upgrade their qualifications from a teaching certificate to a diploma or bachelor's degree. While Uganda has been somewhat successful in certifying its public school teachers, part of this success is due to unqualified teachers moving to private institutions. For example, while the percentage of primary school teachers who are unqualified has dropped from 11.2% to 2.7% in public schools, that number has only dropped from 34.9% to 34.6% in private schools. A similar result is seen for secondary schools.[150]

Conditions of Service

Large classroom sizes and student to teacher ratios are a problem for primary schools in Uganda. While government policy limits classroom sizes to 53 students per teacher,[151] as of 2012, government schools averaged 54 students per teacher. The overall average was 48 students per teacher only because private schools averaged 25 students per teacher.[152] Secondary school classrooms have a much more manageable average number of students at 18. The average number of hours per week teachers are expected to spend with students also varies greatly between primary and secondary schools. While primary teachers are expected to spend 26 hours per week with students on average, lower secondary teachers only spend 14.65 hours per week and upper secondary teachers spend 12 hours per week on average with students. This is in contrast with the World Education Indicators Survey,[153] which found averages of 22.25, 21.75, and 22 hour per week for primary, lower secondary, and upper secondary teachers, respectively.[154]

Remuneration, Promotion, and Advancement

In order to promote teacher training, 100% of students seeking to become primary school teachers received free pre-service training, provided they agreed to work in public schools. The same is true for 80% of future secondary school teachers.[155] As of 2007, when adjusted for purchasing power parity, the average starting salary for qualified civil service teachers in Uganda was $4,005 for primary school teachers, $6,686 for lower secondary teachers, and $8,607 for upper secondary teachers. These salaries were 5.0, 8.2, and 10.6 times the per capita GDP,

[150] Uganda Ministry of Education and Sports. 2013. *Teacher Issues in Uganda: A Diagnosis for a Shared Vision on Issues and the Designing of a Feasible, Indigenous and Effective Teachers' Policy.* Government Report, Kampala: Government of Uganda.

[151] Ministry of Education and Sports. 2010. *Uganda Updated Education Sector Strategic Plan 2010-2015.* Strategic Plan, Kampala: Government of Uganda.

[152] Monitoring and Evaluation Section of Uganda MoES. 2012. *The Education and Sports Sector Annual Performance Report.* Annual Report, Kampala: Uganda Ministry of Education and Sports.

[153] The World Education Indicators Survey looked at education statistics from 17 countries, including Argentina, Brazil, Chile, Egypt, India, Indonesia, Jamaica, Malaysia, Paraguay, Peru, Philippines, Russia, Sri Lanka, Thailand, Tunisia, and Uruguay.

[154] Mulkeen, Aidan. 2010. *Teachers in Anglophone Africa: Issues in Teacher Supply, Training, and Management.* Washington, DC: The World Bank.

[155] Uganda Ministry of Education and Sports. 2013. *Teacher Issues in Uganda: A Diagnosis for a Shared Vision on Issues and the Designing of a Feasible, Indigenous and Effective Teachers' Policy.* Government Report, Kampala: Government of Uganda.

respectively. However, unqualified teachers make only 61% of the salary of their qualified counterparts on average.[156]

Supervision, Feedback, and Support

School supervision is a problem is Uganda. While the Ministry of Education does have inspectors to evaluate schools and teachers, as of 2009, there were only approximately 250 total inspectors. This leads to an average of 771 teachers and 70 schools per inspector.[157] It is therefore not surprising that most schools rarely see an inspector. Perhaps as a result of this lax supervision, Uganda has a high rate of teacher absenteeism. A 2006 study found that nearly one fifth of teachers were absent on any given day.[158]

Gender, Religious, and Cultural Considerations

Like most African countries, female teachers are in the minority in Ugandan schools, constituting 41% and 25% of teachers in primary and secondary schools, respectively, as of the last estimate.[159]

Teaching of the Mother Tongue

The Ugandan language of instruction policy is for the mother tongue to be used in Grades 1–3 and English being introduced and used as the language of instruction in Grade 4. However, local languages continue to be taught as subjects past Grade 3.[160]

Zambia

National Registration/Professional Guidelines

Zambia recently increased the length of time for teacher certification from the two-year Zambia Teachers Education Course, which entailed a year of pedagogy and theory and a year of teaching practical experience, to three-year programs. The Primary Teachers' Diploma and the Secondary Teachers' Diploma, offered starting in 2012 and 2014, respectively, are available through Zambia's 14 public teacher education colleges. These new programs also have options that enable untrained teachers currently in the field to become certified through distance learning. Zambia's teacher supply is moving in the right direction. In 2005, 503 more teachers were certified as primary teachers than left the profession in the previous year.[161]

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[156] Mulkeen, Aidan. 2010. *Teachers in Anglophone Africa: Issues in Teacher Supply, Training, and Management.* Washington, DC: The World Bank.
[157] Mulkeen, Aidan. 2010. Teachers in Anglophone Africa: Issues in Teacher Supply, Training, and Management. Washington, DC: The World Bank.
[158] Mulkeen, Aidan. 2010. *Teachers in Anglophone Africa: Issues in Teacher Supply, Training, and Management.* Washington, DC: The World Bank.
[159] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. http://data.uis.unesco.org.
[160] Ministry of Education and Sports. 2010. *Uganda Updated Education Sector Strategic Plan 2010-2015.* Strategic Plan, Kampala: Government of Uganda.
[161] Mulkeen, Aidan. 2010. *Teachers in Anglophone Africa: Issues in Teacher Supply, Training, and Management.* Washington, DC: The World Bank.

Pre- / In-Service Training and Student Teaching

Pre-service training at the education colleges requires one year of student teaching to attain a primary school certificate or diploma, one term for a secondary diploma, and five weeks for those working towards a bachelor's degree in education.[162] In-service training is offered in the form of seminars and workshops by some education colleges, but is not offered regularly or consistently and is difficult for teachers in rural areas to attend. With the aid of international donors, Zambian school districts have been engaged in projects to boost the use of technology for teacher training and development.

Conditions of Service

Teacher supply in Zambia still cannot keep up with demand, leading to an average student to teacher ratio of 49:1 for primary schools as of 2012.[163] These primary school teachers spend an average of 23 hours per week with students, but their secondary school counterparts spend only 16.5 hours per week with students.[164]

Remuneration, Promotion, and Advancement

In 2007, when adjusted for purchasing power parity, the starting salary for Zambian primary school teachers was $6,082. Lower secondary teachers started at $6,993 and upper secondary teachers started at $9,248. These numbers are 4.1, 4.7, and 6.2 times the per capita GDP. In addition to these base salary numbers, teachers are eligible for a $61–$65 per month subsistence allowance, a 20% double-shift allowance, and a 20% bonus for degree holders. Enough permanent housing is available for 25% of primary and 38% of secondary teachers.[165] Bonuses are also available for those teachers working in rural areas. However, Zambian teachers in rural areas often spend a large amount of their wages on transportation and accommodations to go collect wages from district offices that are often far from their schools. This results in teacher absenteeism and sometimes the closing of schools for up to a week each month. Also in support of its teachers, Zambia offers programs to provide treatment, allowances, loans, and counselling to HIV positive teachers.

Supervision, Feedback, and Support

Teachers receive very little supervision and support, especially in rural areas with little access to transportation. In 2009, Zambia had 326 school inspectors, but each inspector was responsible for 181 teachers on average. To assist with this problem, donor-funded programs have sought to

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Sinyolo, Dennis. 2007. *Teacher Supply, Recruitment and Retention in six Anglophone Sub-Saharan African Countries.* Survey Report, Brussels: Education International.

[162] Mulkeen, Aidan. 2010. *Teachers in Anglophone Africa: Issues in Teacher Supply, Training, and Management.* Washington, DC: The World Bank.

[163] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. http://data.uis.unesco.org.

[164] Mulkeen, Aidan. 2010. *Teachers in Anglophone Africa: Issues in Teacher Supply, Training, and Management.* Washington, DC: The World Bank.

[165] Mulkeen, Aidan. 2010. *Teachers in Anglophone Africa: Issues in Teacher Supply, Training, and Management.* Washington, DC: The World Bank.

introduce new technology as a means for teachers to communicate with supervisors and advisors on issues.

Gender, Religious, and Cultural Considerations

As of the last estimates, female teachers constitute 53% of teachers at the primary level and 51% at the secondary level in Zambia.[166]

Teaching in the Mother Tongue

The Zambian government is expanding the use of local languages as the language of instruction in primary schools from the current Grade 1 only to being used through Grade 4. However, while over 70 languages and dialects are in use in Zambia, only seven[167] will be used in schools. Starting in Grade 5, students will be taught in English.

Four Constraints to Getting More Quality Teaching in Sub-Saharan African Classrooms

The previous section outlined national education plans and policies related to teacher issues (particularly national registration and professional guidelines; pre- and in-service training; conditions of service; teacher remuneration, supervision, and feedback; teaching practice; teaching in mother tongue; and gender, religious, and cultural issues) in 11 sub-Saharan African countries. In some cases, policies and plans did not explicitly address certain key issues of interest. In others, official legislative and political documentation were ambiguous, did not commit to specific courses of action, or did not suggest workable accountability mechanisms for improving teaching practice and conditions of work. As such, it would seem a logical extension to argue for the adoption of *specific* policies to address the teacher issues featured in this report, as well as others which would encourage the development of higher quality teaching practices in classrooms in the sub-Saharan African countries of focus. Education policy, however, has historically not been sufficiently salient to the classroom practice of *teaching* to substantially impact upon teachers' beliefs and routines, as well as pedagogical "moves." Policies and plans, though they can accomplish much in educational systems, rarely address the instructional core of classrooms or enter into the subtleties of teaching and learning practices. Even when the perplexities of classroom instruction are breached, policy, and, just as importantly, practical knowledge on how to support teachers,[168] may not be sufficiently strong to influence teacher practices.[169] This section discusses why education plans and policies might represent important

[166] UNESCO Institute of Statistics. n.d. *UNESCO Institute of Statistics Data Centre.* Accessed December 16, 2014. http://data.uis.unesco.org.

[167] The seven languages used for instruction in Zambian schools are Nyanja, Bemba, Tonga, Lozi, Kaonde, Lunda, and Luvale.

[168] An example of this is the almost-magical and unquestioned faith in participatory learning which gets promoted more as a mantra than as a deeply understood practice. It is not always feasible in all contexts and all grade/subject combinations and, therefore, mostly gets ignored or badly implemented.

[169] Cuban, L. (2013). Inside the Black Box of Classroom Practice: Change Without Reform in American Education. Cambridge, MA: Harvard Education Press.

but blunt tools in the attempt to get more quality teaching into sub-Saharan African classrooms. Specifically, this section describes four constraints (finances, data, implementation, and system design) to enhancing teaching quality.

Fiscal Constraints

Fiscal constraint 1: Personnel remuneration as the majority of education spending

As was discussed earlier, salary expenditure constitutes more than 50% of total education spending, though this proportion can swell to more than 80% in developing countries.[170] This places significant limitations on other non-salary expenditures, such as professional development, particularly as school infrastructure in low-income countries is also often weak and in need of improvement.

It has already been shown that there is substantial variation in the size of education budgets relative to total government spending, as well as in the proportion of the education budget allocated to salaries (see ***Figure 5*** and ***Figure 6***). In terms of the former (e.g., total government spending), it is clear that education is prioritized, relative to other expenditure categories, in some countries more than others, though it must be noted that these data fluctuate on a yearly basis depending on needs in the education sector and spending patterns elsewhere. Regarding the latter (e.g., spending allocated to salaries), salary expenditure constitutes the great majority of education budget spending in many countries (see ***Figure 6***). Salary costs comprise more than 75% of education budgets in 10 sub-Saharan African countries and in more than half of the total number of countries represented in ***Figure 6*** (50 countries), more than 80% of spending in approximately one-third of sub-Saharan African countries with available data, and more than 90% in three sub-Saharan African countries. Salary allotments over 80% or 90% of total education spending indicate marginal fiscal space within education budgets and a crowding out of other current expenditures necessary to enhance the quality of classroom instruction.

Fiscal constraint 2: The high unit cost of teachers in post-primary phases

In ***Figure 1***, and to some extent in ***Figure 2***, it was shown that a greater proportion of primary teachers have met minimum training criteria in their respective nations compared to secondary teachers. This, as well as the international increase in demand for secondary education, would suggest that bridging the gap between current and desired levels of trained secondary teachers would be a priority for many sub-Saharan African countries.

However, lower and upper secondary teachers tend to earn significantly higher base wages than counterparts in pre-primary or primary phases (see ***Figure 7***). This wage structure constricts non-salary expenditure where the expansion of the education system is predominantly in post-basic phases, such as in sub-Saharan Africa. Matching teacher supply to the rising demand for secondary and further schooling in these contexts implies an even more inflated salary bill

[170] UNESCO. (2005). The quality imperative. EFA Global Monitoring Report 2005. Paris: UNESCO. See also: UIS. (2011). Global education digest 2011: Comparing education statistics around the world. Montreal: UNESCO-UIS.

relative to total education spending, further displacing non-salary investments. Alternatively, countries with limited fiscal space to shoulder an increasing teacher wage bill may opt to hire unqualified (and less expensive) contract teachers in lieu of traditional means of recruitment.[171] This may have negative implications for the overall quality and professionalism of the teaching workforce.

Fiscal constraint 3: The qualification-salary connection and the performance-salary disconnect

It has been well demonstrated that in order to attract highly competent candidates into teaching, remuneration must at least be on par with that of other professions requiring similar levels of qualification.[172] As such, teacher wage structures typically reflect the assumption that effectiveness and quality increase progressively with years of schooling, teaching certificates, and experience, and are therefore determined by rigid formulae of seniority, experience, and education level.[173]

There is increasing evidence, however, that this assumption may be specious. A large number of studies on teacher effects point to highly heterogeneous impacts on desired learning outcomes that are idiosyncratic to the usual quantitative measures of teacher quality.[174] In other words, teaching certificates, years of schooling, experience (beyond two years), and licensing exam scores have been found to be poor predictors of the classroom effectiveness of teachers. For example, Aslam and Kingdon, in their randomized sampling of 65 urban and rural schools in the Lahore district of Punjab, Pakistan, found that traditional teacher characteristics of teacher quality (e.g. certification or training) have no bearing on students' standardized exam scores.[175]

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[171] ILO. (2009). Impact of the global economic recession on education. SECTOR Notes. Geneva: ILO. See also: ILO. (2011). Update of sectoral aspects in the context of economic recovery: Education and research. Governing Body 310th Session. Geneva: ILO.

[172] See, for example: Psacharopoulos, G., J. Valenzuela, and M. Arends. (1996). Teacher salaries in Latin America: A review. *Economics of Education Review, 15*(4), 401–406. See also: López-Acevedo, G. (2002). *Teachers' incentives and professional development in schools in Mexico* (Policy Research Working Paper No. 2777). Washington, DC: The World Bank. See also: UNICEF. (2010). *Protecting salaries of frontline teachers and health workers*. Social and Economic Policy Working Briefs. New York: UNICEF.

[173] Vegas, E., & Umansky, I. (2005). Improving teaching and learning through effective incentives: Lessons from education reforms in Latin America. Incentives to Improve Teaching: Lessons from Latin America, Directions in Development (pp. 1–19). Washington, DC: The World Bank. See also: Ballou, D., & Podgursky, M. (1997). Teacher pay and teacher quality. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

[174] Goldhaber, D., & Brewer, D. (1997). Why don't schools and teachers seem to matter? The Journal of Human Resources, 32, 505–523. See also: Kane, T.J., Rockoff, J.E., & Staiger, D.O. (2005). Identifying effective teachers in New York City. Paper presented at the NBER Summer Institute. See also: Rivkin, S., Hanushek, E., & Kain, J. F. (2005). Teachers, schools and academic achievement. Econometrica, 73, 417–458. And: Podgursky, M., & Springer, M. (2007). Credentials versus performance: Review of the teacher performance pay research. Peabody Journal of Education, 82(4), 551–573.

[175] Aslam, M., & Kingdon, G. (2012). How teachers' pedagogic practice influences learner achievements: A study in the Punjab, Pakistan. In R.E. Moon (Ed.), *Teacher Education and the Challenge of Development: A Global Analysis* (Chapter 11). Routledge. See also: Harris, D.N. and T.R. Sass. (2007). *Teacher training, teacher quality, and student achievement*. CALDER Working Paper No. 3. Washington, DC: Urban Institute. See also: Hanushek, E.A. (1986). The economics of schooling: Production and efficiency in public schools. *Journal of Economic Literature*, September.

On the other hand, process variables (i.e., pedagogic classroom practices) substantially affect pupil learning but are harder to observe, monitor, and plan for.

This lack of systematic association between teacher qualifications and performance carries substantial implications for both education budgets and the quality of the teaching workforce. Ballou and Podgursky[176] estimated that the United States spent approximately US$24.4 billion per annum (or 17% of instruction expenditure) in the early 2000s on seniority pay despite the absence of evidence that teacher skills increase linearly with experience. Other authors highlight several potential human resource effects stemming from qualification-based salary structures. First, rigid salary scales that reward distinct categories of teachers homogeneously may cause educational inequalities. Wages based on qualifications cannot favorably compensate educators, for example, who teach in more challenging settings (e.g. rural, low-achieving, or low-income schools) and, therefore, provide perverse incentives for better teachers to avoid such schools.[177] Second, pay that is not responsive to actual teacher performance can also erode intrinsic motivation. Kremer and colleagues[178] found that rigid salary structures that did not differentiate between high- and low-performing teachers in India undermined job satisfaction and increased teacher absenteeism. Some educators in the study found that they could get by with little effort and were more likely to be absent, while hard-working colleagues were frustrated by the lack of professional recognition for their work. Third, the absence of formal recognition (monetary or otherwise) of excellence in teaching tends to discourage potential candidates who have the most to gain from performance-based incentive schemes (i.e., high-skilled, high-performing individuals) and instead encourage those who have the most to gain from qualification- and experience-based schemes (i.e., low-skill, low-performing individuals).[179]

Fiscal constraint 4: The necessity to undertake structural salary reforms to upgrade the teaching profession

Following on the previous constraint, current human resource policies and patterns of education investment do not systematically engender desired learning outcomes among students or incentivize desired pedagogical and professional behavior among teachers.[180] Indeed, human resource investments in most educational systems, by rewarding years of schooling or experience

[176] Ballou, D., & Podgursky, M. (1997). Teacher pay and teacher quality. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.
[177] Loeb, S., & Reininger, M. (2004). Public policy and teacher labor markets. East Lansing, MI: Education Policy Center at Michigan State University.
[178] Kremer, M., Muralidharan, K., Chaudhury, N., Rogers, H., & Hammer, J. (2005). Teacher absence in India: A snapshot. Journal of the European Economic Association, 3, 658–667. See also: Muralidharan, K., & Sundararaman, V. (2009). Teacher performance pay: experimental evidence from India (NBER Working Paper No. 15323). Cambridge, MA: National Bureau of Economic Research.
[179] Dolton, P., & Marcenaro-Gutierrez, O. (2008). If you pay peanuts do you get monkeys? A cross country analysis of teacher pay and pupil performance. London: London School of Economics. See also: Wößmann, L. (2010). Cross-country evidence on teacher performance pay (CESifo Working Paper No. 3151). Category 5: Economics of Education. Munich: Institute for Economic Research, University of Munich.
[180] Pritchett, L., & Filmer, D. (1997). What education production functions really show: A positive theory of education spending (Policy Research Working Paper No. 1795). Washington, DC: The World Bank. See also: Glewwe, P., Ilias, N., & Kremer, M. (2003). Teacher incentives (NBER Working Paper No. 9671). Cambridge, MA: National Bureau of Economic Research.

and teacher credentials, still reflect the pervasive emphasis on an "input" definition of school and educator quality. This is the case despite a wealth of research that indicates other aspects of teacher practices and characteristics matter just as much, if not more.[181]

In this vein, there have been many evaluations (mostly non-experimental) of performance pay schemes[182] based on principal-agent theory[183] that attempt to assess the extent to which incentives (monetary and non-monetary) can be employed to encourage specific teacher behaviors (e.g., participating in professional development) while limiting undesired side-effects.[184] Many of these studies distinguish between programs with teacher "incentive schemes" (which may or may not include pay-for-performance based on test scores) and "traditional" salary structures which are not deemed to be incentive schemes. While this dichotomous nomenclature is understandable, particularly in experimental settings, it is misleading. Rather, all salary structures, whether traditional qualifications-based or performance-based, are in actuality incentive schemes in that they incentivize and reward particular behaviors. Qualification-based systems evidently value and reward formal teacher credentials and experience. Performance-based schemes may also value these characteristics, but may additionally reward, for example, achievement gains in student test scores, completed professional development, or school leadership roles. Thus, the question posed to any given remuneration structure is not whether the introduction of incentives for teachers might be an appropriate policy intervention to elicit certain behaviors, but rather whether the behaviors desired are effectively incentivized and if undesired moral hazard is limited in the current structure.

In other words, national or subnational education systems cannot assume that incremental and linear pay raises for their teacher workforces, allocated according to seniority and educational level, will inherently reinforce the desired behaviors present in professionals and teachers of "good quality". Indeed, given the proportion of educational spending allotted to teacher salaries, low and lower-middle income countries, for which resource scarcity (and hence cost-effectiveness) is an important driver of policy, cannot afford to make this assumption on a straightforward or "non-problematic" manner. The literature discussed above suggests that the traditional determinants of teacher salaries (e.g., certification, years of schooling, and experience) do not systematically predict positive teacher impact on learning or professional

[181] Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. Education Policy Analysis Archives, 8(1). See also: Lazear, E. (2003). Teacher incentives. Swedish Economic Policy Review, 10, 197–213.

[182] The vast majority of these have been short-term programs (i.e., one to two years) which precludes the ability to monitor potential long-term benefits of performance pay schemes, which may be more significant than their immediate impact on teacher motivation.

[183] Ross, S. (1973). The economic theory of agency: The principal's problem. *American Economic Review*, *63*(2), 134–139. See also: Prendergast, C. (1999). The provision of incentives in firms. *Journal of Economic Literature*, 37, 7–63.

[184] Clotfelter, C., Ladd, H., Vigdor, J., & Aliaga Diaz, R. (2004). Do school accountability systems make it more difficult for low-performing schools to attract and retain high-quality teachers? *Journal of Policy Analysis and Management*, *23*(2), 251–271. See also: Figlio, D.N., & Winicki, J. (2002). Food for thought: The effects of school accountability plans on school nutrition (NBER Working Paper No. 9319). Cambridge, MA: National Bureau of Economic Research. See also: Lavy, V. (2002). Evaluating the effect of teachers' group performance incentives on pupil achievement. *Journal of Political Economy*, 110, 1286–1317. See also: Glewwe et al., 2003, op cit.

outcomes, which in turn implies that they also do not incentivize such outcomes. As such, sub-Saharan African countries literally cannot afford to be wasteful by adopting a human resource strategy that focusses solely on inputs that are not in themselves key determinants of desired human capital outcomes. While teacher education level, certification, and years of experience should not be completely eschewed as indicators of teacher quality, it is clear from the above discussion that a much more robust definition of (and thus indicators for) teacher quality is needed.

This is constraining for national educational systems because the definitional expansion of quality teaching beyond degrees, certification, and experience requires an altogether more complex system for collecting data on teaching practices. This is logistically out of reach for many countries, regardless of income status, and is financially impracticable for most sub-Saharan African countries. In contrast, teacher certification, tertiary degrees, and years of experience are straightforward and inexpensive to monitor, and are therefore logical choices to base remuneration schemes upon. Nevertheless, difficult and protracted policy adjustments will be necessary to change traditional and inefficient remuneration structures into those that effectively reward excellence in teaching, and hence incentivize and encourage professionalism among the workforce. This links to the need to begin experimenting more robustly with alternative ways to reward teachers that incorporate some aspects of rewards for good teaching.

Data Constraints

Data constraint 1: Systematic data on quality teaching currently are not widespread

As evidenced by the previous section that presented data from large, easily accessible international databases (e.g., the World Bank and UIS), most indicators relating to teachers tend to focus on either teachers' individual characteristics or the conditions in which they work.[185] That is, instead of identifying, collecting, and reporting on indicators that describe, for example, teachers' clinical practice in classrooms, their interactions with students and colleagues, their professional growth as teachers, or their use of the curriculum and supports, readily available data appear to position attributes of teachers, their background characteristics, or student outcomes as proxies of teacher quality. While teacher characteristics are certainly consequential for effective teaching, they do not shed much light on teaching practices. Further, as asserted above, teacher characteristics (however defined) cannot be taken to be synonymous with effective teaching, for the latter has at least four necessary components: good teaching, student effort, support of family and peers, and the opportunity to learn in school.[186] Teacher characteristics, however, make up only one subcomponent of quality teaching; much of which has already been discussed.

[185] Sanyal, B.C. (2013). *Quality assurance of teacher education in Africa*. Addis Ababa: UNESCO International Institute for Capacity Building in Africa.
[186] Cuban, 2013, op cit.

Still, relatively few large-scale databases or assessments collect and present data on aspects of quality teaching other than teacher characteristics. In addition to the datasets mined for the previous section, SACMEQ III also collects data on teacher characteristics (e.g., academic education, training, and experience) and their perceptions (e.g., whether they believe the training was effective).[187] While the assessment attempts to discern patterns of teaching practice by asking teachers how much time they spend on lesson preparation and marking, how frequently they give tests, and whether they meet or communicate with pupils' parents, it does not indicate precisely how and how well teachers perform these actions. That is, the questionnaire does not get into the actual process of these process variables. TIMSS and PIRLS, both conducted in dozens of largely middle- and high-income countries, collect slightly more process variables. Alongside questions relating to teacher training, education, experience, and attitudes, the survey also asked teachers to report the weekly instructional time devoted to reading (in the case of PIRLS) and mathematics (in the case of TIMSS), whether and how they collaborated with colleagues, and how often they used various instructional techniques to engage learners while teaching.[188] While these large-scale assessments fare better than most in collecting data on quality teaching practices, PIRLS and TIMSS are not often conducted in low-income countries, and all of the teaching process variables are self-reported by the teachers.

Recent efforts to measure quality teaching practices have been more promising. The Measure of Effective Teaching (MET) Project, funded by the Bill and Melinda Gates Foundation, was a three-year research program designed to understand how to best use multiple measures to assess and evaluate teachers in the United States.[189] The study was conducted on 3,000 teachers in six school districts and involved the actual observation of teaching in classrooms. Trained assessors observed and rated teaching performance according to several well-known observational protocols. Lessons were also recorded, and a second trained assessor observed and rated each. Importantly, the observational component of this study allowed the researchers to observe and collect data on actual teaching practices they saw in the classroom, and these data were combined with student outcomes and student surveys about their teachers.

While recent developments such as this, which emphasize the observation of teaching practice in classrooms, are to be commended, they are not common, particularly in low-income countries where the financial capacity to implement extensive and costly classroom observations is limited.[190] Indeed, though RTI International has recently conducted classroom observations of teaching and learning practices in reading and mathematics classrooms in low-income countries and these findings are openly available,[191] the breadth of coverage remains piecemeal.

[187] Miranda, H., L. Amadhila, R. Dengeinge, and S. Shikongo. (2011). The SACMEQ III project in Namibia: A study of the conditions of schooling and the quality of education. Paris: SACMEQ.
[188] See, for example: Mullis, I.V.S., M.O. Martin, P. Foy, and K.T. Drucker. (2012). *PIRLS 2011 international results in reading*. Chestnut Hill, MA: TIMSS and PIRLS International Study Center, Boston College.
[189] MET Project. (2013). *Ensuring fair and reliable measures of effective teaching: Culminating findings from the MET Project's three-year study*. Seattle, WA: Bill & Melinda Gates Foundation.
[190] The MET Project, for example, cost more than US$300 million and only covered a very small fraction of the country's teacher workforce.
[191] See https://www.eddataglobal.org/management/index.cfm.

Data constraint 2: Measures of quality teaching are not well-defined

One of the reasons that indicators of quality teaching practice are not as widespread as indicators of teacher characteristics is because the two concepts are often conflated by attributing the former to the latter. This fundamental "attribution error," which mistakes characteristics of quality teachers for evidence of quality teaching has often led to the overestimation of personal traits in the conceptualization of quality teaching. Larry Cuban,[192] when discussing this phenomenon in the U.S. context, writes:

> School reformers and policy makers generally recognize…that teachers are the single most important in-school factor to students' well-being and achievement. So the policy focus has been on recruiting, training, selecting, and supporting teachers with the requisite personal traits that get students to learn: their knowledge, caring, dedication, ability to engage others, and other features. This policy focus on the teacher's characteristics, not the situation in which teachers find themselves, has been a serious mistake.

Adegbile and Adeyemi also mention this issue in a 2008 journal article.[193] Their point, made with regard to teacher effectiveness, is a subtle and important one.

> There is the tendency to think that factors of teachers' effectiveness could be defined in terms of teacher characteristics, his/her experiences, his/her cognitive, and affective properties, the conditions to which he/she has to adjust and the characteristics of the school, classroom, and student. Although each of these characteristics may contribute to teachers' success, they are not the substance of effective teaching. A proper conceptualization of teaching and teacher's effectiveness as a yardstick for quality assurance is necessary for a better understanding of what makes a teacher to be effective.

Cuban, Adegbile, and Adeyemi's work suggests that there is much work to be done; first, in easing the focalization on measures of teacher characteristics and, second, defining robust alternative or complementary process measures of teaching practice. Doing so, however, is problematic as there are no established set of professional practices that have been proven to work independently of particular teachers and contexts.[194] However, it is not impossible. While there may be scant agreement on a codified list of teaching behaviors that are very easily observable and are "actionable" and "intelligible" to a bureaucratic process, one can certainly come up with teaching behavior characteristics that are intelligible via a more "human" or "communitarian" processes. For example, many principals and community leaders intuitively know who is which teachers are teaching effectively or could be helped via multi-attribute lists of effective teaching practices. The problem with such as solution, however, is that this can create problems of local capture and corruption and collusion between teachers, principals, and communities. Therefore, any solution should represent an artful mix of bureaucratic intelligibility and action and "human" or "communitarian" intelligibility and action.

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[192] Cuban, 2013, op cit, pp. 11–12.
[193] Adegbile. J.A. and B.A. Adeyemi. (2008). "Enhancing quality assurance through teachers' effectiveness." *Educational Research and Review*, *3*(2), 61–65.
[194] Labaree, D.F. (2010). Someone Has to Fail: The Zero-Sum Game of Public Schooling. Cambridge, MA: Harvard University Press.

Data constraint 3: The measurement of quality teaching is difficult

Following on from the previous constraint, measures of quality teaching are not well-defined, in part, because this process (i.e., defining measures of teaching practice) is conceptually and pragmatically difficult—especially if it has to be rendered intelligible and actionable based on bureaucratic rules and behavior. It proves conceptually difficult because the concept of quality teaching is contested. Numerous conceptualizations of quality teaching exist, and have been developed for certain contexts, content areas, and purposes. Differentiating between these conceptualizations and discerning which, if any, are applicable to the context of interest is not a straightforward exercise, nor is determining what teachers should actually do in the classroom, how to make use of and represent content in classroom instruction, or how to reach different students' needs.[195] This is not to say that these things are unknowable or that the teaching profession knows nothing about them, but rather that their specification (such that they represent specific and actionable competences, and are therefore bureaucratically actionable, instead of general and inaccessible concepts and ideas) is complex. While conceptualizations of quality teaching are embodied in an abundant number of distinct observation protocols, which are themselves replete with indicators of quality instruction to guide classroom observers, these indicators are often not atomistic enough to be considered actual processes.

For example, an indicator that appears on many observation protocols is whether teachers adjust lessons based on students' levels of understandings and the extent to which students need help (i.e., differentiation). The Framework for Teaching (FFT), a well-known and well-established protocol of classroom observation used frequently in the United States, asserts evidence (i.e., critical attributes) of differentiated instruction as "when improvising becomes necessary, the teacher makes adjustments to the lesson."[196] Though it may be argued that this evidence cited by the FFT is a general statement that describes an aspect of quality instruction, it cannot be deemed an instructional process; rather, it is an outcome. That is, the FFT does not describe what actions teachers actually undertake in order to differentiate instruction, some of which would presumably be undertaken during the observation (while others would occur outside of it). In short, this example serves to illustrate that observational protocols mostly prompt the observer to collect outcome data on classroom occurrences, which represent an interaction between (at the least) the context in which the teacher works, instructional processes, pupils' background knowledge, and pupils' reactions to instructional processes. As such, observational protocols do not uncover evidence of the processes of quality instruction in themselves.

The measurement of quality teaching is also pragmatically difficult because it is time-consuming, resource-consuming, and expensive. If one considers the previously discussed example of differentiating instruction to match the needs of pupils, what might count as evidence of the instructional process (and what would qualify as quality in that process) quickly mounts. Differentiating instruction involves, at least, background knowledge of student capabilities and strengths, frequent assessments and monitoring of student knowledge, the planning of instruction

[195] Forzani, F. (2013). *High-leverage practices for competent beginning teaching*. Presentation to the Connecticut Educator Preparation Advisory Committee. Hartford, CT: TeachingWorks.
[196] The Danielson Group. *Framework for Teaching: 2013 Edition*. Princeton, NJ: The Danielson Group.

based on data, the enactment of planned instruction, active monitoring (informal or formal) of student understanding and misconceptions during the enactment, the choice of pedagogical moves when improvisation is necessary, and a final assessment of lesson objectives (formal or informal). Defining quality in all the sub-processes of differentiating instruction and measuring against this definition would require extensive observation and numerous hard-to-obtain indicators of teacher action, especially if that information is to be bureaucratically actioned and, even more so, if it is to have serious consequences.

Implementation Constraints

Implementation constraint 1: Those with the "problem" are those who must also implement the solution

Enhancing the quality of instruction in sub-Saharan Africa, as elsewhere, inherently assumes that instructional quality is lacking in some regard and needs to be remedied. The natural remedy for low-quality and ineffective instruction is, of course, high-quality instruction, however defined. In the field of education, instructional reforms are implemented by individuals, often teachers, who enact the more ambitious instruction in classrooms. However, what is not often considered is that the individuals who are called upon to enact more ambitious instructional techniques (and to enhance the quality of their teaching) are usually the very same individuals who were not enacting quality instructional techniques in the past. In other words, the individuals with the problem (e.g., low-quality teaching) are those expected to implement the solution (e.g., high-quality or more ambitious instruction).[197]

While this constraint may appear at once necessary and immaterial to educational reformers, it is worth noting that enhancing instructional quality entails both devising ways for teachers to learn more ambitious pedagogical techniques and to unlearn more familiar practices that had hitherto defeated ambitious teaching. Further, there is much research to suggest that getting teachers to teach in unfamiliar, more challenging ways (i.e., enhancing the quality of instruction) is difficult at best and wishful thinking at worst, even in settings with a modicum of teacher professionalism.[198] Despite decades of attempts to enhance the quality of instruction in schools in the United States, only a very few models of school reform have proven to be successful in systematically altering and sustaining teachers' core practices towards more ambitious instruction.[199] This is not to argue that instructional reform cannot be done with fidelity in schools (an argument that garnered consensus among academics and educational reformers in the wake of the RAND Corporation's "change agent" studies published in the mid-1970s in the United States which described the overall lack of faithful implementation of federal programs in

[197] Cohen, D.K., D.J. Peurach, J.L. Glazer, K.E. Gates, and S. Goldin. (2014). Improvement by Design: The Promise of Better Schools. Chicago, IL: The University of Chicago Press.
[198] See, for example: Cohen, D.K. (2011). Teaching and its Predicaments. Cambridge, MA: Harvard University Press. Labaree, 2010, op cit.
[199] Peurach, D.J., J.L. Glazer, and K. Gates. (2004). *Supporting instructional improvement: Teacher learning in Comprehensive School Reform*. Consortium for Policy Research in Education Working Paper. Philadelphia, PA: CPRE.

local schools).[200] Rather, the main thrust of the argument is that instructional reform is both time-consuming, complex, and often proceeds with uneven success across schools.

Implementation constraint 2: Resistance to instructional change is common and natural

The assertion that implementation of instructional reform is inherently difficult because implementation is undertaken by human actors who have to overcome ingrained habits of less-than-satisfactory performance is not meant to imply that teachers are staunchly conservative agents who are obstinate at any sign of instructional reform. Rather, it is because instructional conservatism is a rational response to the rigors and requirements of the teaching profession (or, indeed, practice conservatism being a reasonably rational reaction of professionals to injunctions from above, often created by those who are not as familiar with their processes as are the professionals themselves), and it is an altogether natural response when facing conflicting choices that entail some degree of risk, and whose outcomes are uncertain.

Regarding the former point, the profession of teaching requires that teachers develop a trade and a persona that allows them to simultaneously establish relationships with their pupils and facilitate their learning. This is indeed a delicate balancing act for the teacher, for their success in developing an effective and successful teaching persona is bound up with the success of their students; a teacher is unlikely to be seen as successful in teaching if their students are unsuccessful in learning. Teachers, therefore, invest heavily in honing their trade as teachers and are unlikely to jettison their honed craft for a new and unfamiliar instructional reform. David Labaree[201] makes this point succinctly, stating:

> Once [teachers] have worked out a personal approach for managing the instruction of students within the walls of their classroom, they are likely to resist vigorously any effort by reformers or administrators or any other intruders to transform their approach to teaching. Teacher resistance to fundamental instructional reform is grounded in a deep personal investment in the way they teacher and a sense that tinkering with this approach could threaten their very ability to manage a class…Pedagogical change offers the teacher little apparent benefit and great apparent risk.

Research has borne these assertions out. Cuban has shown in his historical analysis of pedagogical progressivism in the United States that teachers tend to adopt a few marginal practices of reform movements, rather than alter their instructional approaches wholesale.[202] He finds that the habits and routines that comprise the core of most teachers' practice remains intact, as they are intrinsically related to teachers' fundamental beliefs of what good instruction "looks like" and what is familiar.

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[200] Berman, P. and McLaughlin M.W. (1975). *Federal programs supporting educational change: Volume 4. The findings in review*. Santa Monica, CA: RAND. See also: Rowan, B. and E. Camburn. (2004). Benefitting from Comprehension School Reform: A review of research on CSR implementation. In C.T. Cross (Ed.) Putting the Pieces Together: Lessons from Comprehensive School Reform Research. Washington, DC: NCCSR.
[201] Labaree, 2010, op cit, pp. 154–155.
[202] Cuban, 2013, op cit.

Regarding the latter point that instructional conservatism is natural when teachers are faced with risk and uncertainty, it has been shown that people tend to act in predictable patterns when faced with risk, uncertainty, and unknown probabilities of success.[203] All of these elements are at play when teachers are asked to adopt new, unfamiliar, and more ambitious methods of teaching. The adoption of new instructional models is risky for teachers because they are essentially being asked to embrace new techniques and approaches which they are unlikely to immediately master. As such, they are more likely to fail at enacting the new required techniques and approaches well and with integrity, than if they would simply stick with more familiar approaches. In their minds, the new approach is likely to be framed as a loss—specifically the loss of the ability to teach effectively—and is, therefore, a less attractive option. Teachers are also likely to react conservatively because the outcomes of the new instructional method are uncertain, whereas the outcomes of their previous approaches are, more or less, known. Thus, teachers are in essence being asked to trade a known outcome that they have previously experienced (i.e., current and previous levels of student success) for an uncertain outcome in the future that they have not yet experienced. A wealth of research suggests that individuals tend to bet on outcomes that are known and certain rather than those that are uncertain and unknown.[204] Risks and uncertainty, whether real or perceived, are likely to influence teachers to act in risk-averse ways when confronted with instructional change (i.e., resistance to change).

An example of this can be seen in a recent educational intervention and evaluation conducted in Jordan by RTI International on behalf of USAID. A 2012 National Survey revealed that students were not getting sufficient instruction in foundational reading and mathematics skills—in foundational skills that research indicates are predictive of future success in reading and mathematics. In response, RTI, in partnership with the Ministry of Education developed an intervention program that would be implemented on a daily basis during every reading and mathematics lessons. In short, each teacher would be required to use the first 15 minutes of every reading and mathematics lesson for "foundational" skills practice that took the form of various warm-up exercises. Teachers were trained to implement the program, given professional support, and provided with all necessary materials developed exclusively for the program. In the subsequent evaluation of the program, RTI found significant and positive impacts on both reading and mathematics achievement in treatment schools as compared to control schools.[205] Moreover, teachers interviewed during the evaluation expressed widespread agreement that the intervention led to enhanced student skills in reading and mathematics, improved teaching practices, and was enjoyable for students. Despite these overtly positive assessments of the intervention, when asked directly most teachers (82%) did not think the program should be continued. That is, though the teachers observed, firsthand, the positive impacts of the program on student achievement, and were given (through the intervention) enhanced instructional techniques that they themselves saw as superior to their previous practices, they were decidedly of the opinion that the program was not worth continuing. While the

[203] Kahneman, D. (2011). Thinking, Fast and Slow. New York, NY: FSG.
[204] See, for example: Kahneman, 2011, op cit. See also: Rabin, M. and R.H. Thaler. (2001). "Anomalies: Risk aversion." *Journal of Economic Perspectives*, 15: 219–232.
[205] Brombacher, A., J. Stern, L.E. Nordstrum, C. Cummiskey, and A. Mulcahy-Dunn. (2014). *Education Data for Decision-Making (EdData II): National early grade literacy and numeracy survey–Jordan.* Intervention Impact Analysis Report. RTP, NC: RTI International.

report did not specify precisely why teachers made this judgment, one may intuit that teachers perceived that the program's benefits did not warrant the extra work required and the pedagogical risk involved in changing their approach to teaching.

Implementation constraint 3: Implementation depends on interactions between schools, intervention designs, intervening organizations, and environments

The discussion of implementation thus far might suggest that the lion's share of the burden to implement instructional reforms with fidelity and integrity falls squarely on the shoulders of teachers and other actors in the classroom. This conclusion would be wrong-headed. While teachers are indeed central to the implementation of instructional change, they are not the sole arbiters of that change. Rather, instructional change, if it is to be supported and sustained, is more rightly seen as the convergence of schools, intervention designs, intervening organizations, and learning environments. In other words, the implementation of instructional change is not an individual task given to teachers, but a problem that must be addressed by an educational system. Instructional change, therefore, is in reality a system change.

Instructional reforms have traditionally entailed new teaching standards, curricula, and examination methods, with the underlying assumption that schools with low-quality instruction would raise themselves up to the new standards and expectations, and that these changes would be self-sustaining.[206] But instructional change, even in a relatively autonomous classroom, requires supporting mechanisms that only an educational system can provide. Educational infrastructure (e.g., professional education, designs for teaching and leadership, and supporting programs), both within and across schools, is necessary to support the work of teaching. To enhance instruction in classrooms, teachers need opportunities to focus on practice, work together, learn from one another, and learn from external expertise. These needs, in turn, require time during the school day (schedule flexibility), professional learning resources (a coherent system of instructional coaching), as well as peer review and problem-solving (instructional leadership and colleagueship).

Donald Peurach and colleagues, in a review of three Comprehensive School Reforms in the United States that saw sustained changes in teaching practices, found several common strategies that support instructional improvement: embedding learning opportunities in instructional materials; models of instructional practice; collegial learning opportunities; instructional leadership; local and national networks; and direct technical assistance.[207] Others have argued similarly for greater attention to be paid to the contexts and situations in which educational practitioners work (i.e., the instructional system) in order that instructional changes be developed, supported, and sustained.[208] The evaluations of reading improvement projects

[206] Cohen et al, 2014, op cit.
[207] Peurach et al, 2004, op cit.
[208] Myung, J., L.E. Nordstrum, and K. Martinez. (2013). *A human capital framework for a stronger teacher workforce*. Carnegie Foundation White Paper. Stanford, CA: Carnegie Foundation. See also: Patton, M.Q. (2011). Developmental Evaluation: Applying Complexity Concepts to Enhance Innovation and Use. New York, NY: The Guilford Press. See also: Cuban, 2013, op cit.

implemented by Save the Children, RTI International, Pratham, and others, seem to suggest similar conclusions.[209]

Structural/Design Constraints

Design constraint 1: Efforts to enhance the quality of teaching involve intensive work on a small scale

As argued before, instructional improvements are complex undertakings that require iterative combinations of design, development, and implementation.[210] They also interact with contexts in which teachers work: the ecology of classrooms, schools, and communities. The complexity inherent in instructional improvement necessarily precludes a sort of classical problem-solving, which moves from problem diagnosis to research to new knowledge to practice. In its place, instructional improvement requires iterative cycles of small-scale improvement work that are responsive to issues of complexity intrinsic to educational organizations.[211]

These concepts of iteration and of concurrent design, development, and implementation processes are difficult for educational reformers to support, as the field of education is used to more classical problem-solving methods that try to determine "what works". Developmental work, when it has been done, has tended to be limited to preparing educational organizations (i.e., schools or networks of schools) for summative evaluations, again in order to determine if interventions have "worked". However, working with small iterative cycles of improvement has been shown to be effective in other human improvement fields, such as health care.[212]

The scale of instructional improvement is also worth re-emphasizing. Small-scale design, development, and implementation cycles enable opportunities to design, learn from implementation, and redesign instructional improvements. They also allow for a great deal more context responsiveness on the part of designers and reformers than is the case with large-scale interventions and implementation efforts.

Design constraint 2: Changes in classroom practice require investments in functional educational systems

The third implementation constraint discussed above linked instructional change in schools to systems change in educational organizations and asserted that in order for the quality of teaching to be enhanced in a systematic and sustainable manner, educational systems supportive of

[209] See, for example: Save the Children. (2013). *Beyond school walls: A boost for readers*. Fairfield, CT: Save the Children. See also: Banerjee, A.V., S. Cole, E. Duflo, and L. Linden. (2007). Remedying education: Evidence from two randomized experiments in India. *Quarterly Journal of Economics*, *122*(3), 1235–1264. See also: Trudell, B., A.J. Dowd, B. Piper, C. Bloch. (2012). *Early grade literacy in African classrooms: Lessons learned and future directions*. Unpublished manuscript. ADEA Triennale on Education and Training in Africa. Ouagadougou, Burkina Faso: ADEA.

[210] Cohen et al, 2014, op cit.

[211] Park, S., P. Carver, L.E. Nordstrum, and S. Hironaka. (2013). *Continuous improvement in education*. Carnegie Foundation White Paper. Stanford, CA: Carnegie Foundation. See also: Patton, 2011, op cit.

[212] Bryk, A.S., L. Gomez, and A. Grunow. (2011). *Getting ideas into action: Building networked improvement communities in education*. Carnegie Foundation White Paper. Stanford, CA: Carnegie Foundation. See also: Park et al, 2013, op cit.

teachers and the practice of teaching were necessary. This, of course, requires that these systems are coherent and aligned with the goals of the educational organization, and that significant resources (including, but not limited to, financial resources) are devoted to making them so. Thus, changes in teachers' instructional classroom approaches become less about altering and enhancing individual behavior, and more about simultaneously removing barriers so that teachers are capable of meeting the new instructional standards and designing system components that support them in doing so.

Perhaps the first step toward and the greatest challenge to investing in educational systems is beginning to see educational interventions related to behavior change (i.e., instructional improvement) not in terms of a linear logic model of change, wherein teachers make autonomous, rational decisions in their own self-interest, but as operating in complex and non-linear systems. In such systems, actions that appear small, highly improbable, unpredictable, and unexpected can have extensive impacts.[213] In keeping with instructional improvement, this implies that the influences on teachers' classroom practices are not linear and are not limited to the curriculum, pre- or in-service training, or accountability mechanisms; rather, they extend to teachers' relationships, experiences, and perceptions (about themselves, their students, the content matter, and the context in which they work).

Returning to Cohen and colleagues' review of Comprehensive School Reform movements in the United States which were successful in improving instructional practices, the authors contend that the greatest factor of success was the building of educational systems:[214]

> The three interventions' most distinctive contribution was to build educational systems. They aimed to improve students' learning by making instruction more engaging and coherent, and they did so by working systemically. They rebuilt schools' culture to assure that they were animated by the same purpose–more engaging and effective teaching and learning–and they revised management and organization to support the purpose. They also provided the educational tools to achieve that purpose, including curriculum to guide instruction, professional education to help school staffs change practice, materials to support both activities, and much more. In these ways and others, the three organizations built educational infrastructure.

While it is encouraging that educational systems can be built, it is also daunting for instructional improvement. Systems building is much more painstaking, intensive, and slower than is designing, delivering, and evaluating a new curriculum and accompanying professional development.

Design constraint 3: Quality teaching needs time and space to flourish

Having established instructional change as a complex undertaking involving the building of instructional support systems, it follows that teaching quality will not fundamentally change from low to high immediately. Further, the process is unlikely to be linear and direct. Rather,

[213] Patton, 2011, op cit. See also: Taleb, N.N. (2007). The Black Swan: The Impact of the Highly Improbable. New York, NY: Random House.
[214] Cohen et al, 2014, op cit, p. 169.

instructional change needs both time and space in which to flourish. It needs time as teachers must simultaneously unlearn their previous ineffective manner of teaching and learn another that is both unfamiliar and more ambitious. Moreover, teachers are called to take personal and professional risks in following unfamiliar pedagogic patterns and techniques, requests that, it has been argued, are likely to produce risk aversive behavior. All of these take time to overcome, as does professional competence in any field.

Quality teaching also requires space to flourish because risk averse behavior and pedagogical conservatism are unlikely to be overcome under high-stakes conditions. Instead, teachers should be given opportunities to practice new teaching techniques, and to learn from their peers and instructional leaders (i.e., coaches) in a safe and familiar environment.

While this may appear logical and relatively innocuous, providing teachers time and space to master unfamiliar, more ambitious teaching methods is not a common occurrence in educational organizations. New programs are consistently put under pressure to deliver expected results in short periods of time, which both induces pedagogical conservatism (i.e., teachers are less likely to adopt changes that they believe will be soon phased out) and discourages the mastery of more ambitious teaching methods, which takes more time than the program is afforded or funded. Educational organizations are also not likely to allow space for new practices to develop by, for example, substantially altering accountability mechanisms or assessment processes. School calendars and timetables, which often represent political compromises with competing agencies, such as teachers' unions and departments of education, are unlikely to be changed so that teachers can collaborate regularly or have more time for lesson preparation. These constraints on time and space hinder efforts to enhance the quality of classroom teaching.

Conclusions and Policy Recommendations

This report has presented evidence on the state of effective teaching in sub-Saharan Africa, as well as reviewed educational plans and policies in 11 sub-Saharan African countries. It has found that effective teaching is often conflated with effective *teachers* and *successful* teaching for both logistical and conceptual reasons, and that this conflation has resulted in a focalization on teacher characteristics and student outcomes instead of teaching practice per se. This was borne by a review of data obtained from international databases and assessment: readily available data do not often breach the "black box" of classroom instruction, but tend rather to concentrate on teacher characteristics, school inputs, and learning outcomes (achievement). The review of educational policies and plans in sub-Saharan African countries also revealed that themes commonly found therein refer mostly to teacher characteristics, training, working conditions, and some aspects of teaching (e.g., language of instruction).

Research conducted for this report, which involved the review of international, regional, and national datasets, was also informed, on the one hand, by proliferation of evidence relating to teachers and school resources and, on the other hand, by the relative dearth of data germane to classroom practice. With regard to teaching credentials, the proportion of teachers who met the national criteria to considered "qualified" was found to range widely between countries.

However, in 15 of 38 sub-Saharan African countries with available recent data, more than one in three teachers were not considered "qualified" according to national standards. More positive was the finding that a much higher proportion of recent recruits to the teaching profession met these standards; indeed, in 15 of 24 countries with available data, this proportion was at or near 100%. Of course, meeting national criteria for a "qualified" teacher varies too by context (and over time), and does not guarantee that teachers have content-specific knowledge or training. Rather, research undertaken for this study found the opposite—training on content-specific instructional techniques is rare among teachers in sub-Saharan Africa, as is in-service training in general. Evidence reviewed for this paper found that teachers' content-specific knowledge (e.g., in mathematics or reading) was predictive of student outcomes on certain assessments in certain countries, but very little (i.e., approximately 17%) of the total variation in student achievement was explained by these statistical models.

In terms of the conditions of teaching and learning, it was found that average primary pupil–teacher ratios (PTRs) varied widely between countries, from 20:1 in Mauritius to extremely high values of 80:1 in the Central African Republic (CAR). Two-thirds of sub-Saharan African countries with available recent data had official primary PTRs over 40:1. The ratio in the secondary phase tended to be lower (i.e. most countries with available data had ratios lower than 30:1), and this is in part was due to the fact that the number of secondary teachers increased dramatically (i.e., 115%) from 2000 to 2011 in sub-Saharan Africa as a whole. These average values, however, hide intra-country variation, and substantially higher PTRs were found in numerous recent studies conducted by RTI International. Twenty-one of 33 sub-Saharan African countries reviewed for this report were found to lack adequate teaching and learning materials, particularly textbooks. Indeed, in 11 of 33 countries with available recent data, students were required to share materials with at least one of their peers. This was corroborated by regional assessments that found that less than half of students have access to their own textbook. RTI International, too, has found that most schools in sub-Saharan African countries do not begin the year with the appropriate number of books for leaners, and most of these schools have to wait at least three months before receiving them. Of course, access to textbooks cannot be taken to imply that teachers routinely use them effectively, or that the books are of sufficient quality to warrant their use. Rather, research presented here suggests the opposite is oftentimes the case.

This report found that teachers, particularly at the secondary level, tend to be paid well, at least in relative terms when compared to GDP per capita. This is surely due in part to the fact that teachers tend to have higher academic qualifications than the general population. It also means, however, that teachers are an "expensive" investment (relatively speaking), for most countries in sub-Saharan Africa. The eventual outcome of this is that the majority of expenditure in educational budgets is often consumed by personnel remuneration: in 17 of 26 countries with available recent data, salary expenditure amounted to a higher than ideal proportion of total spending (i.e. more than 66%).

Teacher absenteeism was found to be high (i.e., as high as 30%) in numerous contexts reviewed for this study. Though attrition rates were not uniformly high across countries studied here, in nine countries with recent data available, attrition rates were higher than the rate at which new

recruits graduated from teacher training programs. In other words, more teachers were leaving the profession in these countries than were entering it.

While data on teachers' classroom practices was not widespread, this report also reviewed observational data of teachers' pedagogic moves. In general, time spent on task tended to be low. For example, the proportion of time spent reading in class during a reading lesson was dramatically low. Oftentimes this was due to teachers' overuse of teacher talk and explanation to deliver lesson content. Teachers also tended not to employ active and constructive pedagogical moves that reinforced students' attempts at and desire for learning. For example, teachers were apt to punish students for incorrect responses, or did not use assessment for anything but determining grades. Nevertheless, some pockets of good practice exist in this regard, with teachers reporting more sophisticated instructional practices despite low levels of experience and training.

Research conducted for this report did not uncover significant regional (or other) variations in data on teacher characteristics, classroom contexts, or teaching practices. Rather, the aforementioned patterns and those presented in the main body of this report can be assumed (unless expressly stated otherwise) to be more or less indicative of sub-Saharan Africa countries in general. This finding, it should be noted, is not intended to assert homogeneity either across or within sub-Saharan African countries. On the contrary, substantial variation exists on the indicators reported herein. However, regionally specific patterns were not discovered during the research conducted for this report, which implies that no sub-region or set of countries within sub-Saharan Africa can reasonably claim to exhibit "best practices" with regard to effective teaching. Equally, though, the opposite is also true: the lack of regionally specific patterns suggests that no subset of countries can be pegged as "worst performing" vis-à-vis effective teaching, either.

What is clear, however, is that there remains much work to be done, both at the policy and school level, in order to ease the focus on teacher characteristics and supplement this with a systematic study of classroom instructional practices. However, the report has also described a significant number of constraints to this work: finance, measurement, implementation, and design challenges all militate against the systematic collection of data on teaching practices and the formulation of policies for classroom teaching.

In light of these findings, this report concludes by highlighting five policy recommendations that could address some of the constraints discussed above and therefore facilitate the enhancement of teaching practice in sub-Saharan African classrooms. It is the perspective of the authors that the actions articulated in the five policy recommendations are both complementary and inter-related. Therefore, they should not be viewed as a menu of options from which ministries of education or other educational stakeholder can pick. Rather, they represent a concatenation of singular movements at various levels of the educational system that, together, embody a concerted shift towards more effective teaching in sub-Saharan African classrooms. Nevertheless, resource-constrained ministries of education may wish to concentrate their action, in the first instance, on the first two recommendations.

Policy Recommendation 1: Establish Baseline Practices of Quality Teaching and Desired Instructional Behavior

Much of the preceding discussion has shown how, firstly, educational policies and plans that attempt to influence teachers' behavior tend to focus on levers that are in fact far from typical classroom practices and, secondly, that instructional behavior is difficult to change even when policy explicitly treats it. As such, it would be tempting to specify heavily prescriptive policies that either prescribe desired instructional behaviors or proscribe undesired ones, and to subsequently hold teachers accountable for enacting the new instructional norms. However, such behavioral prescriptiveness would be a mistake and would likely prove to be a fruitless endeavor. After all, policies are useful for setting boundaries within which professional activity can be conducted and rather less useful for articulating specific instructional rules that all educators must abide by. For the latter approach would attempt to specify instructional behaviors that "work" in terms of enhancing student learning, as well as to hold all teachers accountable for enacting these. Nevertheless, such an approach could never be as responsive to the contexts in which teachers work as high-quality instructional behavior needs to be.

Instead, policies should be used to establish baseline practices for classroom teaching which are non-negotiable, but which also leave room for professional judgment, improvisation, and flexibility. This approach to policy acknowledges that there are some basic hallmarks of classroom teaching that all teachers should be expected to exhibit in their practice, but that these professional norms are merely baselines of professional practice and therefore establish the structure that enables professional learning among teachers about their practice (with some variation depending upon subject and grade).

As an example, a significant amount is known about how to teach young children to read fluently and with comprehension. Yet, national educational systems routinely fail to put this professional knowledge into practice: many children in sub-Saharan African countries have not learned to read. Reading instruction, therefore, would be a viable candidate for the establishment of baseline norms of practice; instructional techniques that all teachers would be expected to adhere to and empowered to enact. At the same time, a national education policy could also facilitate the systematic improvement of reading instruction at the school and classroom level. A policy could, for example, stipulate that all teachers work together in grade-level teams to enact and report on iterative cycles of professional learning about reading instruction. These grade level teams could be asked to identify commonly held concrete outcomes to collectively work towards, devise small tests of instructional change that might impact the outcomes, define ways to measure progress, enact the tests and collect evidence, and consolidate what they have learned through the testing cycles which would, in turn, inform the subsequent testing cycle. The policy, of course, would not precise what the teachers should test (i.e., instructional changes), nor would it specify the metrics by which they might measure progress. Yet, an educational policy, ratified at the country level, could, in this example, provide the facilitating conditions for small-scale tests of instructional change, and provide the baseline from which sophisticated professional norms could develop.

The aspects of this recommendation that relate to the establishment of normative baseline teaching practices and setting policy are best conducted at the national level by the ministry of education in collaboration with any active professional organizations representing teachers (e.g., unions). The actual work of monitoring and improving upon these standard practices, however, would best be organized at the district and school levels, as close as possible to instructional contexts in which teachers work (but also allowing for learning to occur between schools). While such a policy need not be uniform across sub-Saharan African countries in order to be effective, it could help to have regional support from pan-African organizations (e.g., Association for the Development of Education in Africa).

Policy Recommendation 2: Devise Measures of and Start Collecting Data on the Processes of Teaching

While this report has attempted to present evidence of teachers' classroom practices in sub-Saharan African countries, it is worth noting that all of this evidence originates for non-governmental sources. Though the projects and evaluations which elicited data on teacher practices and pedagogical moves were of course undertaken in partnership with Ministries of Education, it is remarkable that no education ministries in sub-Saharan African countries routinely collect data on and report on what happens within classrooms. Instead, annual statistics reviews published by ministries tend to consist of enrollment, attendance, number of teachers, teacher training, pupil-teacher ratios, and financial figures.

Ministries of Education, however, are not inherently confined to reporting evidence that is, at best, at the margins of classroom teaching practices. Further, most ministries are well-enough equipped to systematically gather data on classroom instruction via their inspection offices and data collection systems. Ministries of education could instigate this process by having inspectors travel to schools, talk with teachers, observe lessons, gather data on specific teaching and learning processes in classrooms, and report back to the ministry (though while keeping data anonymous). This collection of anonymous instructional data would not have to start at the national level (i.e., in all regions of a given country), nor would it necessarily have to involve all teachers in all grades. Further, it would not have to start in a lot of countries simultaneously. Rather, this new approach of observing lessons for specific indicators could be piloted at a regional level, or only within one or two grade levels; nationally representative samples would not be inherently necessary. Regardless, starting to collect data on specific instructional practices through classroom observation would establish a bank of evidence that would at once provide insight into teachers' classroom instruction, signal to all educational stakeholders that the quality of classroom instruction matters greatly, and would provide examples of good practice that other countries could begin to adopt.[215]

[215] At the same time, if one starts with grade and subject combinations that are more amenable to relatively more standardized practice, one would have to take care when generalizing to more complex grade and subject scenarios.

Policy Recommendation 3: Reconfigure the School Day to Allow Time and Space for Teachers to Work Differently

It was stated earlier that more effective teaching requires both time and space within the school day to flourish and develop. This is for the relatively straightforward reason that teachers, if they are expected to exhibit higher quality instructional practices than they have previously, must simultaneously unlearn more familiar, less effective practices and learn new, more ambitious instruction. This professional learning must take place as close as possible to the contexts in which teachers work; in other words, it must take place in their schools and classrooms. But if teachers are expected to work in a different manner than was the case previously, they must be given both time and space in which to so work. It is not realistic to assume teachers' instructional behaviors will be substantially altered if their daily schedules and work profiles remain unchanged.

Time can be allotted to teachers by altering any of the following: instructional time (starting or ending times and breaks within the day), class composition (sizes or organization), or teaching responsibilities (job descriptions). All of these are changeable through policies that would be legislated at the national level, but enacted and enforced at the district or local level. Ministries of education could adopt policies that require schools to adjust instructional time (or class composition or teaching responsibilities) in such a way as to allot a minimum daily amount of time for collaboration (e.g., 45 minutes). Schools, however, would ultimately be responsible for determining how this policy would be enacted (and how teachers would be allotted the minimal required collaboration time), under supervision from the district education office. Space can be afforded to teachers learning new instructional techniques by providing them opportunities to practice in classrooms and to obtain structured feedback from peers. Teachers could also be given space in which to work by relieving, at least partially, extant expectations or requirements of instructional sequences (e.g., by temporarily suspending curricular sequences).

Policy Recommendation 4: Allow Experimentation with Alternative Remuneration Schemes

Two of the fiscal constraints to getting more effective teaching in sub-Saharan African classrooms related to traditional teacher remuneration schemes and the societal values they reflect. In most sub-Saharan African countries, teachers' salaries are based upon some combination of years of service, degrees held, and school phase (i.e. primary or secondary), with perhaps some financial incentives offered for hard-to-staff regions (e.g., remote areas) or content areas (e.g., mathematics). The few instances where "performance pay" has been employed to incentivize certain behavior (or outcomes), the additional remuneration or bonus have tended to be linked only with student achievement and programs have tended to be short-term (i.e., lasting only one or two years). It has been argued that "traditional" pay schemes signal to teachers (and all educational stakeholders) that qualifications and years of service are valued and therefore compensated, even though these have shown little relationship with teaching practice or student outcomes. It has also been shown that evidence surrounding typical performance pay schemes

(i.e., paying for successful teaching) is mixed at best, does not transfer to non-scheme related behavior, and may even induce undesirable practices.

Instead of such schemes, teachers' salaries could be linked to the role they are expected to fulfill in classrooms and schools, which in turn could be made to reflect what a given society values in teaching and its outcomes. Teachers in sub-Saharan African countries, as elsewhere, engage in much more activity in the classroom than simply assessing their pupils. Assessment, though it is indeed an important element of the teaching profession, is not its only component, and therefore to tie salary bonuses only to achievement performance is rather simplistic and reductionist. Rather, remuneration could be based on what a society values in its teaching profession, the responsibilities, professional actions, and functions, as well as the extent to which an individual teacher fulfills that role. For instance, a society may value professional learning and increases in skill exhibited by teachers. Traditional remuneration schemes would assume that both of these valued commodities increase over time and with training, though it has been argued that this is not necessarily the case. Instead, an alternative remuneration scheme could compensate teachers who provide evidence of their professional learning (not just courses taken) and increases in skill, much like the National Board for Professional Teaching Standards in the United States. Though the Board does not remunerate teachers who obtain board certified status, it does require them to provide evidence of professional learning and advancement.

As discussed in the previous recommendations, the policy environment to allow experimentation in teacher remuneration could be set at the national level, with the national government, the ministry of education, and teacher unions devising the framework through which schools could test various remuneration schemes. There is no inherent reason why alternative remuneration schemes, rooted in values and expectations for the teaching profession and which go beyond simplistic "performance pay" schemes, could not be established by ministries of education, though technical assistance and investment from national and international organizations would probably be required.

Policy Recommendation 5: Encourage Risk-taking Behavior Among Teaching Staff

It has been argued that instructional change essentially requires teachers to take risks in their professional careers, but that those risks are often undefined and the probabilities of success are unknown. As such, teachers, when contemplating making changes to their instructional routines, are likely to view instructional changes as a loss in professional ability (i.e., they are less likely to be proficient in enacting new, more demanding instructional techniques) and they are likely to view uncertain outcomes as a loss of predictability and control (i.e. the value of uncertain future outcomes tend to be discounted compared with certain, immediate ones). A very human response to these perceptions is pedagogical conservatism, in which teachers make minor changes on the fringes of their practice but resist making more fundamental alterations.

It is obvious, then, that requiring teachers to make instructional changes from less effective instructional practices to more effective ones entails risk, both real and perceived. Therefore, if

ministries of education wish teachers to overcome their natural risk-aversion and adopt new, more ambitious teaching techniques, they will have to explicitly encourage teachers to do so. This encouragement could take many forms and is not limited to financial incentives. For example, ministries will probably have to ensure teachers (and prove to them) that there are no professional stakes tied to their immediate performance when practicing more ambitious instructional techniques (i.e., teachers are allotted time and space to practice and develop without preoccupation over the implications the new techniques have on their evaluations). Ministries can also take steps to decrease the uncertainty surrounding new, more ambitious instructional practices by documenting how the practice of early adopters evolves over time (i.e. collecting peer testimonies). These represent only two examples of encouragement for teachers, but ministries of education will certainly have to experiment with ways of minimizing the risks, both perceived and real, associated with instructional change.

Appendix 1: Review of national education plans conducted for UNESCO EFA Global Monitoring Report (2013)

The 2013/14 EFA Global Monitoring Report focuses on teaching, learning, and educational quality. For this volume, the Global Monitoring Report team commissioned a review of national education policies and plans in low- and middle-income countries that were relevant to teaching and learning. While Francis Hunt (the author of the review) included countries located outside of sub-Saharan Africa, 21 of the 40 countries reviewed were sub-Saharan African nations.[216] This appendix describes Hunt's findings that are explicitly related to teacher policies and plans.

Hunt found 22 policy documents that posited a direct link between teacher quality and learning outcomes. All of these mentioned teacher education and training, indicating a strong perceived link between teacher education (both in-service and pre-service) and teacher quality. Almost 80% of these plans (17 policy documents) specified a strategy (or set of strategies) to enhance teacher education. Several innovative ideas emerged from Hunt's findings: in Kenya, Namibia, and Sudan, school cluster-based, in-service training was emphasized over traditional approaches, and Rwanda was purportedly aiming to employ mentors in every school to facilitate the development of teacher practical expertise. According to Hunt, fewer national plans (11 of 40) tended to focus on the education and training of non-formal teachers. Uganda, however, was working with NGO providers to expand primary school access to rural and disadvantaged areas which trained teachers in these schools and paid their salaries out of the government payroll.[217]

Several plans were noteworthy in explicitly linking teacher recruitment, development, and management to learner outcomes. With regard to recruitment, South Africa explicitly targeted the recruitment of "young, motivated, and appropriately trained teachers" to achieve desired learning outcomes.[218] With regard to development, the government of Guinea-Bissau asserted that pupil evaluation will yield indicators to improve the performance of teachers. In addition, Kenya collected student performance data to determine whether teachers raise student performance after receiving in-service training. Teacher management was mentioned by the Department for Basic and Secondary Education in the Gambia as a means to improve learning outcomes. Policy documents in Mauritius also suggested capacity building for school leaders in order to manage schools effectively and enhance student outcomes.

While accountability was a common theme in most education plans (approximately 80% of reviewed plans discussed accountability at one level or another), it was not always defined. Indeed, 18% of the reviewed documents had a call to increase accountability, but its terms were left ill-defined. When accountability is defined, it tended to centralize at the school level: 43% of plans suggested schools should be held accountable for learning outcomes (and, in some cases, the quality of education). Teacher (35%) and Head Teacher (10%) accountability was less often

[216] Hunt, F. (2013). *Review of national policies and learning and teaching. Background paper prepared for the EFA Global Monitoring Report 2013/14*. Paris: UNESCO.
[217] See also: UNESCO, 2014, op cit.
[218] Department of Basic Educations (2010). Strategic Plan 2010–2013. Pretoria: DBE.

cited by policy documents. Even when accountability is called for and the level of accountability is specified, precise mechanisms through which schools or teachers are to be held accountable are uncommon. Hunt found that most policy documents, when discussing accountability, outlined a system of teacher or school inspections charged with reviewing performance. Another mechanism for accountability, mentioned by over 50% of plans, was a performance management system and teacher competency framework. Only four plans mentioned performance pay for teachers, and two plans (one of which is South Africa's) discussed possible repercussions for poorly-performing educators. Overall, Hunt finds a rather powerful rhetoric surrounding accountability for teachers and schools, but does not find much evidence to suggest that these conceptions have been formulated into concrete metrics and actionable systems.

Hunt also considered whether national policy documents referenced verifiable indicators of student learning and teacher quality. On average, most plans did provide specific measures, though 28% did not. When presenting indicators of student learning (43% of policies did this), policy documents tended to emphasize the proportion of students who achieved particular cut points in national assessments. With regard to teacher quality (53% of policies mentioned indicators for this), policy documents tended to emphasize the ratio and raw numbers of trained teachers. Much less common was any discussion of indicators for quality teaching practice: only 8% of plans mentioned the collection of data on either competencies or teaching methods. Rwanda, however, did present indicators for teacher competencies and teaching practice which could be collected during inspections.

Incentives and career paths respectively featured in 10 and 18 of the 40 plans reviewed. In Tanzania, increasing the rates of pay for teachers was made a high priority. Further, many incentives were earmarked for encouraging the deployment of teachers to hard-to-staff areas. More than 70% of the plans reviewed put forth measures to encourage teacher redeployment, and most (79%) of these discussed financial or other incentives (e.g., housing allowances) for doing so. Nigeria, for example, introduced an attendance and promotion incentive for teachers teaching in disadvantaged regions in order to promote greater equity in deployment.