Background Paper

Secondary Education in Sub-Saharan Africa
Teacher Preparation and Support

Literature Review

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Secondary Education in Africa:

**PREPARING YOUTH
FOR THE FUTURE
OF WORK**

LITERATURE REVIEW

SECONDARY EDUCATION IN SUB-SAHARAN AFRICA

Teacher Preparation and Support

LITERATURE REVIEW

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SECONDARY LEVEL TEACHER EDUCATION IN SUB-SAHARAN AFRICA: LITERATURE REVIEW

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LIST OF ACRONYMS AND ABBREVIATIONS

A levels Advanced levels

ADEA   Association for the Development of Education in Africa

AERA   American Educational Research Association

AU   African Union

B Ed   Bachelor of Education

BPM   best practice model

CED   Center for Education and Development

CERES   Centres d'Éducation et de Renforcement Scolaire

CESAG   Centre africain d'etudes superieures en gestion

CPD   continuous professional development

DBE   Department of Basic Education and Training

DESS   Diplome d'etudes superieures specialises

DHET   Department of Higher Education and training

DRC   Democratic Republic of the Congo

EAC   East African Community

ECOWAS   Economic Community of West African States

EFA   Education for All

ENSET   Ecoles normales superieures

EPMS   Enhanced Performance Management System

GAPS   Gender and Primary Schooling

GCE   General Certificate of Education

GCSE   General Certificate of Secondary Education

GDP   gross domestic product

HOD   Head of department

IEMS   Inspecteur de l'Enseignement moyen secondaire

IQMS   Integrated Quality Management System

ITE   initial teacher education

JCE   Junior Certificate of Education

KUPPET Kenya Union of Post Primary Education Teachers

MSCE   Malawi Secondary Certificate Education

MDGs   millennium development goals

MIITEP Malawi Integrated In-service Teacher Education Programme

MOE   Ministry of Education

NELS   National Educational Longitudinal Study

NGO   non-governmental organisation

NIE   National Institute of Education

NTCs   national teacher colleges

NTP   national teacher policy

O levels Ordinary levels

OBE   Outcomes Based Education

OECD   Organisation for Economic Co-operation and Development

PASEC   Programme for the Analysis of Education Systems

PBSD   problem-based school development

PCK   pedagogic content knowledge

RO   Reporting officer

RSA   Republic of South Africa

SACE   South African A Council for Educators

SACMEQ The Southern and Eastern Africa Consortium for Monitoring Educational Quality

SEA   Secondary Education in Africa

SEAI   Secondary education and training

SEAMAO South East Asia Ministers of Education Organization

SK   subject knowledge

SMASSE Strengthening of Mathematics and Science in Secondary Education

SNED   Sistema Nacional de Evaluación del Desempeño de los Establecimientos Educacionales Subvencionados

SSA   sub-Saharan Africa

TALIS   Teaching and Learning International Survey

TESSA   Teacher Education in Sub-Saharan Africa

TIET   Teacher Instructor Education and Training

TMIS   Teacher Management Information System

TSC   Teachers' Service Commission

UIS   UNESCO Institute for Statistics

UN   United Nations

UNESCO United Nations Educational, Scientific and Cultural Organization

UNITE   Uganda National Institute for Teacher Education

UPE   universal primary education

USE   universal secondary education

VSO   Voluntary Service Overseas

WEF   World Economic Forum

BACKGROUND

Commissioned by the Varkey Foundation, this Literature Review is one component of a wide-ranging study on the education of secondary school teachers in sub-Saharan Africa (SSA). It provides the theoretical background for the larger study, which culminates in an Overview Report. The full set of research products produced is given in Appendix 1. The Overview Report is one of 13 background papers which contribute to a comprehensive study of secondary education in Africa (SEA) coordinated by the Mastercard Foundation and supported by a range of key players in the continent's education sector.

The paper focuses on two related issues: pre-service training undertaken by people becoming teachers for the first time, and in-service training for existing teachers working within the sub-Saharan African (SSA) secondary education system. In doing so, the Literature Review uses existing published research to explore a number of principal topics and related issues:

- secondary education teacher preparation

- professional development, and

- career progression.

INTRODUCTION

Secondary education and training, particularly in sub-Saharan Africa, has been subject to intense scrutiny in the past decade because it is deemed to be one of the key factors for increased economic growth and social development. Recent developments in Asia and Latin America have shown these trends convincingly. Increasingly, governments around the world are offering free secondary education; SSA examples include Kenya, Uganda and Ghana.

However, in response to the changing workplace needs, there has been a shift away from an emphasis on vocational training – instead, the focus has been on general junior and senior secondary education (World Bank, 2000). Secondary education and training graduates enter labour markets that demand modern knowledge and skills, a readiness to take initiative and the ability to solve problems and to innovate products and processes. These developments reflect a realisation that not only is general secondary education less expensive than vocational, but that so-called 21st-century skills are dependent on high levels of academic literacy and numeracy. Secondary education and training are considered indispensable in order for young people to become productive citizens who lead healthy lives and who constitute the next generation of trainers and educators.

As the Education for All (EFA) goals are slowly met and record numbers of African youth attend secondary school, there have been concerns regarding the quality of the education students receive.

A 2007 regional assessment of 15 countries conducted by the Southern African Consortium for Measuring Educational Quality (SACMEQ) suggests that only 57% of primary school students attain basic literacy levels, while a mere 25% of them attain basic numeracy skills (SACMEQ 2010). Many studies document students who have attended school for up to four years without achieving basic literacy or mathematical competencies. This problem is widespread, to the extent that the Brookings Institution estimates that, across Sub-Saharan Africa, one in two children will reach adolescence without basic skills in reading and mathematics (IICBA, 2016).

In the face of these challenges, there is a growing recognition of the need to address issues of quality as well as access, and that a focus on pedagogy and its training implications needs to be at the heart of the commitment to improve student retention, progression and learning outcomes (Aslam, 2007; Stuart, 2009; Mulkeen, 2010). Although school attendance carries wider socialisation and other benefits, from a purely learning outcome perspective, these students are little better off than those who did not have the opportunity to attend school. This presents a particular challenge because secondary education subsystems are unlikely to be infused with large amounts of additional funding in the near future. Improving the quality of secondary education, therefore, must include policies that use current resources creatively and more effectively.

While infrastructure and curriculum undoubtedly play a role in these disappointing learning outcomes, the global and regional literature points to the paramount importance of teacher quality in assisting students to learn (UNESCO, 2006; Barber and Mourshed, 2007; IICBA, 2016). New and more effective approaches to the preparation, deployment, utilisation, compensation, and conditions of service for teachers, accompanied by more effective school leadership, are therefore needed to achieve higher standards of secondary education in SSA. This implies an education system that attracts, and retains, a well-trained, motivated, effective and gender-balanced teaching staff. It also implies a system that supports teachers in the classroom as well as in their continued professional development.

As a result of the growth of secondary education, there is an increased demand for high-quality secondary teachers and principals. Projected demand in many countries exceeds projected supply. This, combined with severe budgetary constraints, puts pressure on governments to seek effective and efficient approaches to recruiting, preparing, supporting and retaining qualified secondary school teachers and principals. UNESCO estimates that the proportion of trained primary and lower-secondary teachers has declined to the point where, by 2030, less than half of Africa's primary and lower-secondary teachers will have the training they need to do their job (UNESCO, 2018a).

In this literature review, we seek to offer guidance on how to achieve a high-quality education system in SSA. The international literature suggests that there have been few, if any, interventions to improve the recruitment, retention and re-training of secondary teachers that have yielded dramatic, positive results. In short, there are no magic bullets. The quality of secondary teachers and teaching is influenced by many factors and, because of the scale of the problem, improving quality is a long-term project that requires consistency of purpose and commitment over decades (NDP, 2011). The complexity of the situation has two consequences which are reflected in the literature:

1) developing consensus about how to improve teacher quality and performance is difficult, and

2) different stakeholders support different approaches with regard to improving education – each advocating the efficacy of their favoured approach. In the absence of clear, evidence-based direction, ideologies set in.

Much of the research relating to teachers in sub-Saharan Africa has focused on the primary level, leaving relatively sparse literature on secondary education teachers. Research on the primary level provides valuable data, but policies and operational issues in the recruitment, training, deployment, supervision and retention of secondary teachers differ from those associated with primary teachers.

Secondary teachers, unlike primary teachers, tend to specialise in particular subject areas. They thus often require a higher level of content training and qualification, and their deployment is more complex. The need for a secondary school to have a full complement of teachers to cover the required subject areas (even in locations with limited numbers of students) can result in low student-teacher ratios, as well as a low number of teaching hours per teacher. Furthermore, since the required educational preparation of secondary teachers is more substantial, they have more career mobility than primary teachers do. One consequence of this is that retention of secondary teachers, particularly in science and mathematics, tends to be more difficult.

The significant differences between primary and secondary level teacher education make it all the more concerning that secondary level teacher education has been largely ignored by the SSA literature, and serves to further emphasise the importance of this review.

Theories of teacher education

How one theorises teacher education has a significant impact on how it is provided and evaluated. Theorising about teacher education often comes down to debating questions such as whether the capacity to teach is learnt or innate, whether teacher education should be taught at university or experienced in the classroom, whether teachers require 'education' or 'training' and whether it is the job of an education system to find or create good teachers.

This section will outline three broad schools of thought when it comes to teacher education, weighing the merits of each, and elaborating on their implications for teacher education generally, teacher education in sub-Saharan Africa specifically, and the ways in which teacher education is evaluated. The schools of thought we refer to are "teaching as a craft," "teaching as a profession" and "teaching as script". It is important to note that most often a national education system will draw on aspects of all three.

Teaching as craft

There is a substantial body of literature which advocates that teaching should not be considered a profession but rather a creative exercise that comes naturally to some and not to others, and that

good teachers are not academically trained but 'found'. Seen in this light, the main value of initial teacher education (ITE) programmes is the selection of teachers rather than their education. Advocates of this approach reference a controversial body of literature which show that teacher training is not always effective at improving the quality of teachers, and that students can achieve the same learning outcomes when taught by teachers with experience but no qualifications. They also point to the disincentivising effects of lengthy ITE programmes on highly educated potential teacher candidates who want to enter the workforce rather than dedicate more time to study.

Since teaching is a craft, teacher education is an apprenticeship facilitated by a master while in the field. Rather than engaging with a theoretical body of knowledge, teaching becomes a 'habitus' – a way of being and responding to the needs of learners. This position is perhaps best articulated by former UK Minister of Education, Michael Gove:

> *"… we will reform teacher training to shift trainee teachers out of college and into the classroom. We will end the arbitrary bureaucratic rule which limits how many teachers can be trained in schools, shift resources so that more heads can train teachers in their own schools … Teaching is a craft and it is best learnt as an apprentice observing a master craftsman or woman. Watching others, and being rigorously observed yourself as you develop, is the best route to acquiring mastery in the classroom."* (Gove, 2010 in Rogers, 2016).

Today, more than half of Britain's teachers are trained under this system as teacher education increasingly moves out of universities. There is merit to this approach for three reasons:

- Training teachers in a school environment is more cost-effective than funding teacher education departments in universities (an important consideration in SSA where financial restraints can create bottlenecks in teacher provision, and this is particularly true as teacher trainees can help to offset the workload of their more qualified mentors).

- It creates a place for a 'master teacher' who takes on the role of training and mentoring student teachers. This position in the lifecycle of a teacher is important because it offers an avenue for promotion and the status associated with that. Rather than university teacher educators holding the status associated with teacher training, that status moves into the schools and the classrooms.

- It incentivises highly educated applicants, perhaps even those with postgraduate qualifications, to enter the teaching force, since it no longer requires a high barrier to entry and candidates can begin earning a salary immediately.

A system of teacher education that advocates "teaching as craft" would place a stronger focus on recruiting teachers or 'finding' teachers, rather than training them. The recruitment would emphasise the innate ability of the candidate to teach, as opposed to more formalised academic entry requirements. The training would likely be short, and almost entirely in the classroom working alongside experienced teachers. Evaluations of teacher training programmes that advocated this

approach would focus less on what teachers theoretically know, and more on their tacit knowledge developed from time spent in the classroom. The quality of the mentor relationship would be prioritised over the quality of the teacher trainers.

Teaching as profession

The 'teaching as profession' approach is driven by the conviction that teaching is a profession in which practice is guided by a professional and growing knowledge base developed in the universities, schools and classrooms by means of a combination of theoretical and empirical research (Darling-Hammond and Hyler, 2013; Taylor, 2014). In order to prepare them for this, teachers undergo a long, rigorous education in subject and pedagogical knowledge and research methods, in parallel with plenty of time in classrooms working with expert teachers (Sahlberg, 2012).

This approach draws upon three features common to professions: they are morally committed to the welfare of those they serve, they share a common body of knowledge and skills they use to advance the best interests of their clients and they define, transmit, and enforce standards of professional practice (Abbott, 1988).

This understanding implies that the formulation of a common body of knowledge and skill is a prerequisite for advancing the best interests of the clients (the students in this instance). This supports a knowledge-centric view of professionalism: at the heart of any profession lies a shared theoretical and empirical knowledge base from which protocols of professional practice are derived, continually tested and improved.

This knowledge affords professional autonomy: "… the notion of autonomy is indelibly linked to control of the knowledge base on which a profession's claim to autonomy rests" (Gamble, 2010). A well-defined knowledge base gives the profession an opportunity to play a stronger part in key decisions regarding the quality of their service, and to build their own professional learning systems. Without a demonstrated capacity to define and apply evidence-based standards of what one should know, a profession is defenceless against policies that may run counter to quality practice and conditions that enable practitioners to do their best.

We refer to this as an endogenous view of a profession (Taylor, 2014). According to the endogenous model, society grants professional autonomy over the standards that regulate the procedures and ethics of practice to a defined group of practitioners because the group possesses a knowledge base that is a more reliable guide to practice than that of any contending formulations. The authority of knowledge is central to professionalism.

In many countries, occupations such as medicine, law, accounting and engineering all have common professional standards to which practitioners and teacher educators must comply. They are characterised by a well-defined and agreed upon knowledge base which grant these professions a certain amount of autonomy. Some question why the teaching profession should not have the same.

In the absence of professional standards and a collegium of practitioners to regulate the teaching profession, teaching is instead regulated by the bureaucracy. Where an occupational field neglects its own knowledge base, governments tend to reach for the regulatory stick. What this looks like in practice are strong dictates from government concerning what teachers should do in the classroom, accompanied by continual assessment of teachers, and often leading to a patronising or defensive relationship between the two. We may understand the development of strong and defensive teacher unions as emerging from an antagonism between teachers and governments which a strong and respected professional teacher identity might have mitigated (CDE, 2017). The tension between teacher unions and government within South Africa illustrates this well.

Evaluations which subscribe to this theory of teaching emphasise a shared knowledge of practice among the teaching community, as well as a sense of collegiality. They are interested in what teachers know, and how confident they are making independent decisions by drawing on their own expertise. While the willingness to promote teaching as a profession in SSA exists (often with teacher education modules that focus on collegial knowledge), barriers such as the low status of teaching, the poor subject knowledge of teachers, and below living-wage salaries make it difficult to develop those professional standards or garner respect (Ministry of Education and Sports, 2017).

Teaching as a script

This view of teaching is best reflected in the two McKinsey reports (Barber and Mourshed, 2007; Mourshed et al, 2010) which postulate a continuum (poor → fair → good → great) between low-performing systems characterised by strong bureaucratic control and prescriptive materials on one hand, and high performing systems where teachers are more knowledgeable, have a higher degree of autonomy and are supported by knowledgeable leaders on the other. While neither McKinsey nor its successors would put it like this, such perspectives take implicit inspiration from a Beeby-type (1962, 1966; see Hugo, 2009) staged approach which is gaining ground in South Africa (Piper, 2009; Fleisch, 2012; Fleisch, Schöer, Roberts & Thornton, 2016; Taylor, Cilliers, Prinsloo, Fleisch, & Reddy, 2017) and other low- performing countries in sub-Saharan Africa (Piper, Zuilkowski & Mugenda, 2014). These approaches provide teachers with scripted lesson plans and on-site coaching and are beginning to show some success, registering significant gains in reading scores among learners from poor homes. Indeed, with the support of USAID in south and east Africa, this approach is fast gaining popularity.

Indeed, the approach often goes hand-in-hand with a student curriculum that is similarly 'script-based', requiring little from teachers as regards lesson-plan innovation or design. South Africa, with its Curriculum and Assessment Policy Statements (CAPS) curriculum, is a perfect example. Outcomes Based Education (OBE) was an ambitious and progressive curriculum that gave teachers the freedom to develop lesson plans that were context-specific, but with the aim of achieving the same set of national outcomes (Hoadley, 2018). However, the reality was that the teaching force within South Africa was not confident or qualified enough to work with a curriculum that demanded so much from them (Taylor & Vinjevold, 1999). Only two years after its introduction, OBE was replaced with

CAPS (which is criticised for its rigid structure), but a recent independent evaluation found it to be appropriately pitched, if somewhat long (DPME/DBE, 2017).

A more contemporary example are Bridge Academies, a network of over 500 schools which operate in India, Kenya, Nigeria, Liberia and Uganda (Bridge, 2018). Bridge's approach uses a central team of education experts to prepare content and monitor student progress. It then equips teachers with a tablet onto which they download daily lesson plans and teacher guides. The teacher guides set out the content and structure for each lesson. Bridge argues that this can free up time, allowing teachers to expend less energy on class preparation and focus on engaging with students. By providing teachers with a script, Bridge can compensate for teacher weaknesses regarding pedagogy or content knowledge.

The approach to teaching as a script requires a different skill set to those required of teaching as a craft or profession and for this reason is not without controversy (Ross, 2014; Wolf, 2014; CDE 2016). In effect, the teacher becomes an administrator of the lesson plan rather than a professional with expertise. While this approach has achieved a degree of success in a number of SSA countries, in both private- (Bridge, 2018) and public-sector (Piper et al, 2014; Fleisch et al 2016) interventions, whether it offers a sustainable model for providing quality schooling to poor children in SSA remains to be seen.

An overview of the state of teacher education in sub-Saharan Africa

When discussing the state of teachers in SSA it is important to distinguish between teachers, trained teachers and quality teachers. Not all teachers who work in schools are trained or qualified as teachers, and not all teachers who are trained or qualified as teachers have the skills, knowledge or aptitude to effectively help students learn. Indeed, in some countries the number of teachers who are formally trained, or who have demonstrated capacity to teach, are a minority of those who are actually teaching. In referring to 'teachers' we are mean people employed to teach, regardless of the qualifications or competency, unless otherwise stipulated.

The main problem sub-Saharan Africa faces when it comes to teachers is that there are not enough of them. The UNESCO Institute for Statistics (UIS) notes that nearly 7 in 10 African countries face an acute shortage of teachers as governments struggle to cope with the rising demand from growing school-age populations. It has estimated that globally (and based on current pupil numbers), 25,8 million extra teachers will need to be recruited by 2030 in order to meet EFA targets (to put that in context, this is the equivalent to the population of Ghana) (UNESCO, 2015). Of these, 3,2 million would be filling new posts and 22,6 million would be replacing retiring teachers or those leaving the profession.

If we factor in a potential increase in pupil numbers, the situation is even more dire. There were 59 million children out of school in 2015. To have them all in school would require recruiting 2,7 million

teachers if pupil-teacher ratios are not to exceed 40:1. According to the Institute's forecasts, without such recruitment, 33 countries will not have enough teachers to achieve universal primary education by 2030. Furthermore, where teachers are employed, they are not necessarily adequately educated: in a report based on UNESCO figures and issued by the Atlantis Group it is predicted that, if the current rate of decline in the proportion of qualified teachers continues, by 2030 more than half of both primary and secondary school teachers will either be untrained or inadequately trained (Varkey Foundation, 2018).

When it comes to rising pupil numbers Sub-Saharan Africa faces the greatest challenge of any major world region in this respect. For every 100 children beginning school in 2015, there will be 142 in 2030 and the figure is projected to continue growing at this rate through the middle years of the century (UNESCO, 2015). Already, of the 3,2 million posts to be filled worldwide, SSA's need accounts for over two-thirds of the required new posts. Sub-Saharan Africa will need 2,2 million teachers to deal with this growth and, at a conservative estimate, 3,9 million teachers will be required to replace those leaving the profession. In a third of countries, fewer than 75 % of teachers hold the national standard qualification. Furthermore, as a result of attempting to keep apace with the massification of secondary education, the percentage of unqualified or underqualified teachers is growing in the majority of Sub-Saharan African countries.

Why does sub-Saharan Africa have a teacher shortage problem? There are four main reasons, which will be examined in turn based on the available evidence.

- There are too few qualified students applying to become teachers.

- Teaching is not seen as a desirable profession.

- The rate of population growth in sub-Saharan Africa increases the number of teachers required.

- There is not enough enrolment capacity in training colleges to train the number of teachers required.

Too few qualified students

The challenges of teacher supply are usually greater at senior secondary level, because the material taught is more specialised and there may be fewer appropriately qualified teachers available: there are simply not enough qualified graduates entering the system each year to furnish need (USAID, 2008). In Lesotho, the number of suitable graduates from secondary schools limits teaching force numbers. Only about 2 000 students achieve marks on the Cambridge examination that would qualify them for preservice teacher education annually, and up to half of these would need to opt for teacher preparation in order to satisfy the demand (Lewin, 2002).

This is particularly true in subject areas such as science and mathematics. Most recently in Uganda, where mathematics and science education have become a political priority, the government will begin paying science teachers a monthly top-up to incentivise them to stay in the profession (Daily

Monitor, 2018). To justify this decision, the President argued that science teachers, unlike their Arts teacher counterparts, are difficult to replace if they move overseas for better remuneration. The lack of teachers in certain disciplines sometimes results in subjects not being taught, or being taught by non-subject specialists (Caillods, 2001). Recent reporting from South Africa suggests that there is a severe shortage of mathematics teachers in the Eastern Cape, with some schools not employing a single mathematics teacher (Galili, 2018), while in 2010 unpublished Parliamentary reports indicated that there are major regional disparities in the proportion of qualified science teachers available, with Western Cape Province seeing a rate of nearly 9% against Free State Province at 39% (Silva, 2010).

In Ghana, teachers for junior secondary school are trained with primary teachers, while senior secondary teachers are trained separately. In Uganda, a network of national teacher colleges prepares teachers for junior secondary teaching, but further college study is required to upgrade students to graduate status to meet senior secondary teaching requirements (Mulkeen et al, 2007). Rapidly increasing demands for teachers at both junior and senior secondary levels lead to a higher rate of teachers not formally qualified for the level they are teaching.

Teaching seen as undesirable

There is increasing evidence that some people may choose to teach because of the lack of other employment options. This is especially true in the case of those who did not succeed in gaining access to tertiary-level education yet aspire to white-collar employment in the public service. Fiscal constraints in many countries mean that teaching is one of the few areas of white-collar work in the state sector available to non-graduates. Research from Tanzania shows that many students enter teacher education for reasons not connected with a passion for teaching or a real desire to teach – rather, they plan to leave teaching as soon as they find another job. In a study of student teachers, only 10 % of men and 15 % of women said that teaching was their first career choice, and 37 % had been unable to follow their first choice because their grades were too low (Towse, 2002).

In sub-Saharan Africa, poor career prospects, poor remuneration, and the low social status accorded to the profession and the harsh working conditions mean that young people are not joining the teaching profession quickly enough. University graduates are looking to other sectors for better salaries and more stable employment. For example, in Eritrea it has been reported that the best students admitted to the Eritrea Institute of Technology do not select teacher education courses, so these courses are filled with students with relatively low scores for whom teacher education was not their first preference (Mulkeen, 2009). In South Africa, students applying to education faculties score significantly lower on the national benchmark tests (NBTs) than those applying to any other faculty, except for allied healthcare and nursing, the student profile of which is similar (Prince, 2018).

Education systems have also struggled to retain teachers, particularly more highly qualified ones. Teacher's salaries have not kept up with the rise in the cost of living over the past two decades, exacerbating day-to-day worries surrounding housing, transport, daily expenses and medical bills. In a global comparative study of teacher status around the world, teacher pay in the African countries

surveyed (Ghana and Uganda) were found to be at the bottom of global pay scales, with the public perception of salaries being much lower than in other countries such as India (Dolton et al, 2018). This has no doubt contributed to high attrition rates from the profession, which are believed to have ranged between 5 and 30% in different SSA countries over the last three decades. Malawi reported an 8% attrition rate in 1996, while greater economic freedom in Liberia contributed to attrition rates in the region of 20 to 30% (Mulkeen et al, 2007).

Population growth

Many countries have put policies in place to increase the supply of teachers. However, in most countries the growth rate of this supply will only just catch up with population needs by the latter part of the 2015-2030 period (UNESCO, 2015). Zambia, for example, has been increasing teacher recruitment by an average of 4 % per year, but to achieve universal primary education (UPE), that figure would need to be 10 % per year (UNESCO, 2015). The current recruitment levels would mean that the country will not have enough teachers in schools until 2029. In other countries, the problems are even more challenging. Tanzania will continue to face a shortage of teachers even after 2030 if current trends continue. To achieve UPE by 2030, the country would have to recruit 4 % more teachers each year compared to the current average growth rate of 3 % (UNESCO, 2015). South Africa is somewhat exceptional in this regard: in 2008 just under 6 000 graduates were exiting education faculties annually, whereas over 20 000 teachers graduated by 2015. This increase in teacher graduation rates follows the introduction of a generous bursary programme for students of teacher education (DHET, 2018).

Inadequate teacher education capacity

A major factor inhibiting countries from meeting the rapidly growing needs of the teacher supply is inadequate training capacity. In Ghana, for example, the teacher education system is the limiting factor of teacher supply: teachers' colleges are oversubscribed, and more teachers could be trained if spaces were available (Mulkeen et al, 2007). A similar situation exists in Zambia, where the output from training colleges can barely match teacher deaths from HIV/AIDS, let alone coping with increasing learner numbers (ibid).

Support is given to these conclusions by the EQUIP2 study (USAID, 2008), a comprehensive body of research which provides strong insights on the ITE – albeit over ten years ago. Following case studies of initial teacher education in six countries (Ghana, Uganda, Malawi, Kenya, Senegal and Zambia), all of which were engaged in expanding secondary schooling, the study concluded that limited capacity of teacher training colleges represents but one factor inhibiting the production of new teachers at secondary level. In Ghana factors contributing to this problem include the shortage of residential slots, the number of qualified faculty available to teach at the teacher training colleges, and the limitations on the number of supervised placements that can be managed. Similarly, major inefficiencies were identified in the Uganda Primary Teacher Colleges (PTCs) include inadequate staffing, lack of funding and high failure rate of students, averaging around 40 %.

This situation may be further compounded where links between schools at teachers' colleges are weak: for example, in countries such as Namibia, Tanzania and Zimbabwe, different ministries are responsible for teacher education and for the administration of public schools (Gaynor, 1998), making coordination between supply and demand difficult.

Taking stock of these four factors contributing to teacher shortages (too few students eligible to enter ITE, the low status of teaching and its unattractiveness to school leavers, rapid growth in the school population, and inadequate ITE capacity), the EQUIP2 study concluded that the shortfall in teacher numbers is partly the result of inefficiencies in the school system, where poor quality teaching and learning slows the progress of learners and reduces the numbers of quality school leavers available for teacher education, and partly the result of existing approaches to teacher development and in particular the length of ITE programmes.

In response to these conclusions, EQUIP2 discusses two alternate approaches to addressing teacher shortages in developing countries: accelerate pre-service teacher training, or permit the recruitment of unemployed graduates with no formal teacher training. Accelerating the pre-service program shortens the amount of time required to get a teacher into the classroom and reduces the per student costs. However, in some cases, this approach has negatively impacted the quality of education (World Bank 2005). Similar concerns about quality have been raised when using contract teachers, or teachers with no formal training.

In contrast to these negative findings, a nine case study analysis on alternative models for the provision of primary school teachers in SSA countries, which relied on less educated and minimally compensated teachers who were provided with ongoing supervision and support in schools, concluded that the resources which programs saved through reduced teacher education and compensation allowed them to fund the provision of an extensive on-the-ground network of teacher and school support and supervision (USAID, 2008). Supervisors were better able to provide on-the-spot feedback, direct instructional support, and professional development to teachers (DeStefano et al, 2006). Such approaches reflect what we have referred to above as the 'teaching as craft' approach, a topic to which we return below.

What is teacher education?

Teacher preparation, and support – in terms of both initial teacher education (ITE) and continuous professional development (CPD) – consists of more than the time spent in training classrooms. It should instead be located within a broader framework of the cycle of schooling, during which successive cohorts of learners progress through school, enter university or college as student teachers, and graduate as teachers into the world of work where they nurture the next cohort, while progressing through successive stages of induction, licensing, performance management, CPD and promotion before retiring (CDE, 2017). This broad conception of teacher education emphasises that the end of school is the beginning of higher education. We cannot divorce the quality of a nation's

teachers from the quality of learners exiting schools. This is particularly true in sub-Saharan Africa where teacher education is often limited by the number of qualified candidates it can draw upon (USAID, 2008).

Vicious and virtual cycles of teacher education

The conception of teacher education as a cycle was developed for the purposes of this research and presented below is not dissimilar to the IICBA's Nine Dimensions of Teacher Policy[1] (IICBA, 2016), with some important differences. While the Nine Dimensions are focused mainly on the teacher's working life (where, for example, teacher education is equated with CPD), the cyclical concept developed here links the teacher's school education, with her ITE experiences, CPD and workplace progression.

Within this understanding, the literature review focused its efforts in eight areas relating to the life cycle of a teacher: the institutions which deliver ITE; the nature and content of ITE programmes; selection into ITE; induction of newly qualified teachers into the profession; teachers and performance management; continuous professional development; career paths; and the promotion of teachers. A set of research questions was developed which drove the work in all subsequent components of the study (Appendix 2). The aim was to apply

At various stages of this cycle, teachers, pre-service teachers, or those who wish to become teachers, are held to a set of standards and selection criteria. For example, high school graduates must reach certain selection criteria to enter into an ITE programme, pre-service teachers must reach a certain standard to graduate as certified teachers, and teachers are often held to certain standards in order to retain their teaching certification or to enjoy progress and promotion throughout their careers. In some countries these standards and criteria are consistent across ITE programmes, but in most of sub-Saharan Africa they are not. A lack of consistency contributes to the inconsistencies in terms of educational quality within an education system.

The cycle of schools described above does not necessarily remain static. The decisions made along the way by government and other key actors can contribute towards a vicious or virtuous cycle, one in which education quality and teacher morale either rises or falls. The direction of the cycle depends at least in part on the standards the system expects and can afford to expect from its teachers.

A virtuous schooling cycle is characterised by high standards of entry into ITE, which enables a rigorous and challenging ITE programme, and a strong and supportive system of continuous development for teachers (**Figure 1**). However, in order to make high standards of entry into ITE feasible, there needs to be a large pool of high-quality school graduates who wish to become

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[1] The Nine Dimensions are: Recruitment and Retention, Education (CPD), Deployment , Career Structure/ Path, Employment and working conditions, Reward and Remuneration, Teacher Standards, Accountability , School Governance.

teachers, something that is lacking across Sub-Saharan Africa. High quality graduates are preconditioned on high quality basic education, and their teaching aspirations are dependent on the perceived status of teachers in the eyes of secondary school graduates. A country with competitive and challenging ITE programmes will not only contribute to a higher quality of school graduate, but will be perceived as higher status. It will, therefore, be more desirable to the top graduates and in turn enable a more rigorous ITE programme.

Figure 1: Features of virtuous cycle school systems
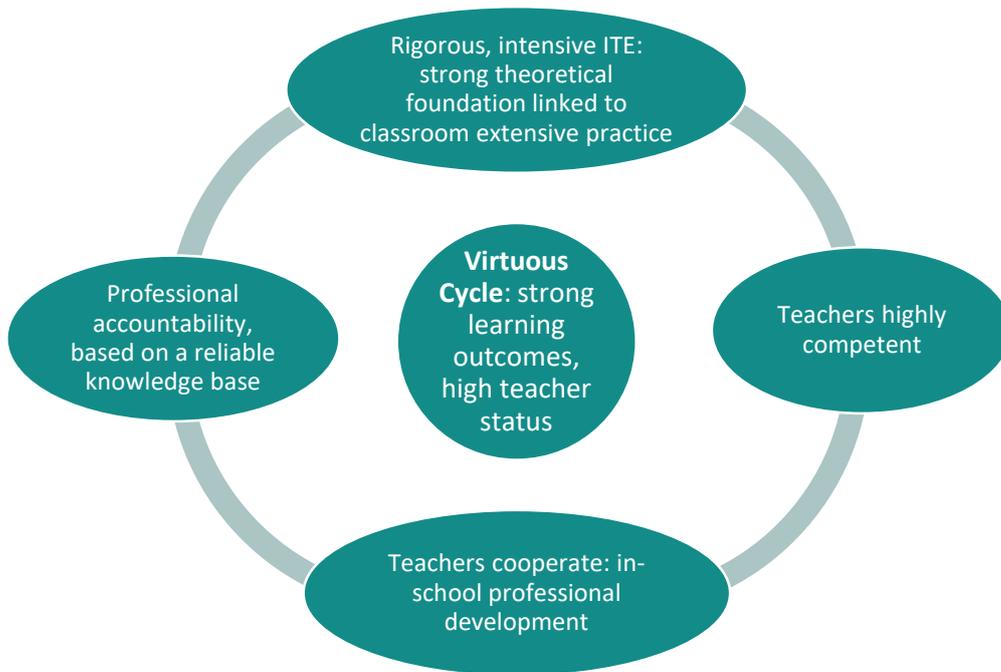
There are four common concomitants of school systems which exhibit a vicious cycle (Figure 2). The idea of a vicious cycle of schooling was first mooted in relation to the role of teacher professional standards and their function in improving school quality (CDE, 2016), and is elaborated below.

Figure 2: Features of vicious school systems
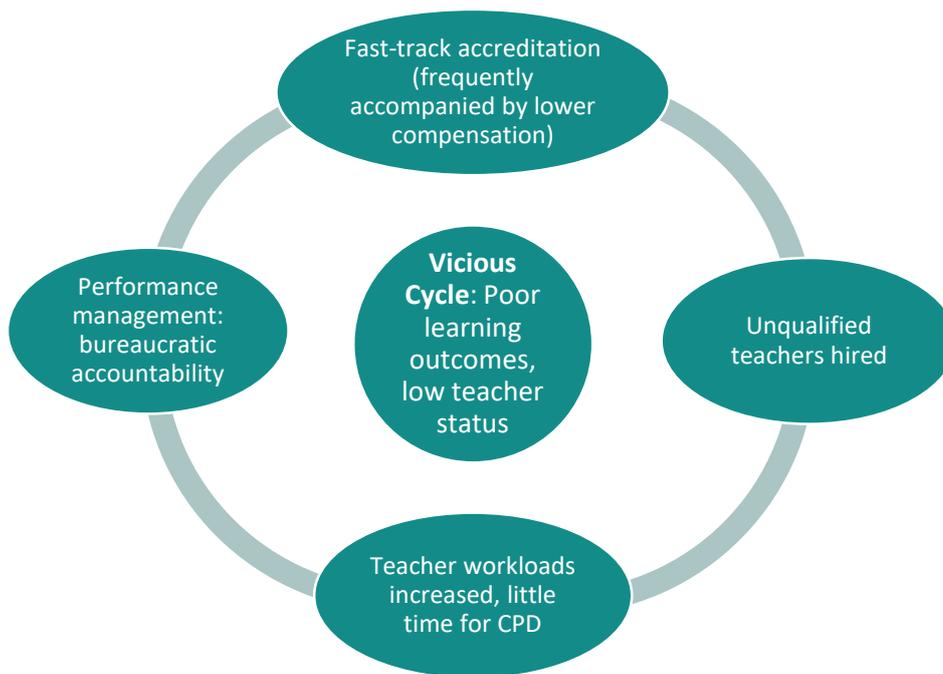
The first commonly encountered element of vicious cycle school systems is the **emergence of alternative teacher accreditation schemes** which purport to fast-track students through an ITE programme and to offer teacher certification without the lengthy three to five-year course some systems require (USAID, 2008). In many parts of the world, particularly in developing countries, there has been a proliferation of emergency programmes since the 1990s. Alternative accreditation courses serve to address both a teacher shortfall, and the alienation of high-quality candidates who are put off by what is perceived to be an over-burdensome training in relation to a low-status career. According to Moon (2007), teachers are in the process of disappearing and being replaced by largely untrained para-professionals. Alternative accreditation programmes, however, serve to reinforce the belief that teaching is 'easy' and does not require rigorous training. Teaching is relegated to a low-skilled profession or apprenticeship. This is the self-fulfilling prophecy precipitated by the view of teaching as a craft, and which does not ground teaching in a professional body of knowledge.

The second common feature of vicious cycle systems is that unqualified teachers are hired in order to fill the demand. According to Mulkeen (2010), the pattern of recruiting unqualified teachers locally and then providing opportunities for upgrading to qualified status through in-service training, has become a second path into the profession in much of sub-Saharan Africa (USAID, 2008). According to UNESCO (2015), less than half of the teachers in Angola, Benin, Equatorial Guinea, Guinea-Bissau, Madagascar, Niger, Senegal and South Sudan are trained. Once again, the opportunity to become a teacher without qualification reduces the appeal of qualifying.

The third feature of vicious cycle systems is the need for **tighter regulation and 'standardisation'** at the school level. Since ITE programmes are in a weaker position to ensure that their graduates are high quality teachers, governments often take it upon themselves to hold teachers accountable, at times through chastising teachers whose students do not perform well. Ironically, performance management schemes of the kind embodied in the now-discredited 'No Child Left Behind' programme promoted in the USA from 2001 are doomed to failure since they do not take account of the possibility that teachers may be failing to achieve performance goals not because they *will not*, but because the poor quality of their education did not equip them to and, in fact, they are not achieving the goals because they are *unable to* (NEEDU, 2013). As Richard Elmore notes, teachers cannot be held accountable for performing tasks they were not trained to do (Elmore, 2004).

The fourth feature of many vicious cycle systems (most

Figure 3: Vicious and virtual cycles in action: Finland versus the United States

Finland – along with a number of other jurisdictions including Singapore, Shanghai, Ontario, Japan and South Korea – is a good example of a **virtuous schooling cycle** (Figure 1). With one of the best schooling systems in the world (Darling-Hammond, 2012), it follows the professional model outlined and its school system is characterised by low levels of inequality, careful selection of student teachers from the top 10 percentile of school graduates, and rigorous and lengthy theoretical and practical training and intensive mentoring in early professional life. Selection of students into ITE programmes is a rigorous process involving a national entrance examination based on selected teaching and education articles, followed by a consideration of the candidate's graduating scores and out-of-school accomplishments (Sahlberg, 2012). The education of candidate teachers is similarly thoroughgoing, and culminates in a Master's degree with a strong research focus, equipping teachers with the ability to assess the effects of their own practice – thus improving their pedagogical impact.

Finland scores highly consistently on international comparative tests, even though it has no national or regional testing systems except at the end of the final school year (Sahlberg, 2010). The teaching profession is ranked by graduates as one of the most desirable career paths, which in turn provides for the selection of the most promising prospective teachers from able and motivated school leavers.

The virtuous cycle can be contrasted to a vicious cycle as embodied by the USA, where ITE programmes are unable to attract high quality graduates due to the low status of teaching in the public eye, forcing these programmes to recruit a lower quality of pre-service teacher. This in turn requires a reduction in the rigour of their training. A poorer quality teacher is then deployed into schools, contributing both to the overall reduction in the quality of school graduates, but also decreasing the perceived status of teaching as a career. The cycle reproduces itself in the low status of teachers (Varkey Foundation, 2018) and the inability to recruit quality pre-service teacher according to a major quality review published in 2014 (National Council on Teacher Quality, 2014). Furthermore, the same review noted that many teachers in the USA work without sufficient professional support, or opportunities to develop subject expertise.

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notably seen in sub-Saharan Africa) is that **teacher workloads are increased** in order to compensate for the lack of teachers. The demand for teachers can be reduced and brought into line with available supply by increasing the workloads of employed teaches. This can be achieved both by increasing class sizes and by increasing the average number of classes assigned to teachers. Both approaches increase the pupil-teacher ratio which in turn reduces the teacher effectiveness, and the ability of teachers to develop personal relationships with their students. Teacher job satisfaction

falls, morale is lowered, and teaching becomes a less attractive career, further entrenching the vicious cycle.

These issues play out globally, with clear evidence of very differing systems amongst developed economies (Figure 3). The sub-Saharan African context holds its own contextual challenges relating to the primary problem of attracting and retaining talented individuals in the teaching profession. This is particularly true in contexts where the profession's image has been adversely affected by a set of interconnected factors including, among others, deteriorating working and living conditions due to years of economic hardship and structural adjustment, widespread dissatisfaction with the current situation of schooling and the creation of a second class of teachers in several countries. Redressing this image is key to converting a vicious cycle into a virtuous one. Unsurprisingly, enhancing the status, morale and professionalism of teachers was adopted as one of the 12 main strategies for achieving the objectives set by the Dakar Summit (UNESCO, 2000), but this is more easily said than implemented. According to Moon (2007) millions of teachers, particularly in Africa and parts of Asia, continue to live and work in conditions of poverty, a fact supported by recent research by the Varkey Foundation in Ghana and Uganda (Varkey Foundation, 2018).

In countries that have achieved a virtuous schooling cycle – where teaching is a prestigious and attractive profession which recruits the brightest and most motivated school graduates who feel challenged by rigorous and scientifically-evidenced ITE programmes – the continual monitoring of teachers is less necessary. Instead, ITE programmes have equipped teachers with an internalised template of the knowledge and practice standards to be achieved at successive grade levels, and teachers are trusted to offer a high-quality service. Teachers in these contexts may be compared to lawyers and accountants, who are also trusted to offer a high-quality service without government intervention or regular monitoring.

What happens in teacher education?

In its narrowest sense, teacher education may be viewed as consisting of a period of ITE followed by employment during which periodic episodes of in-service training (or CPD) are provided, while the management and promotion of educators are considered to be separate issues. In contrast, the theoretical framework outlined above encourages us to look at schooling in its entirety and be wary of the idea that examining one element of such a vastly complex set of cyclical processes can be undertaken in isolation. From this perspective, CPD follows on from ITE and, in high performing school systems, is integral to the daily work of educator peer networks in schools, and to the licensing, deployment, assessment and promotion of educators throughout their careers.

In the remainder of this section we explore the range of practices in each of these key nodes in the life cycle of secondary school teachers, as reflected in the international literature. This is followed by a summary of best practices as reflected in countries which maintain virtuous cycle school systems. These conclusions, in turn, provide the framework for examining practices in SSA countries, as summarised in our Market Scan Report and four Case Study Reports (see Appendix 1). Finally, the

Overview Report takes stock of the evidence outlined in the preceding reports and concludes with a set of recommendations for improving teacher education, and hence of school performance, across the continent.

Institutions and the types and nature of ITE qualifications

Lewin (1999) has devised a typology of pre-service teacher programmes according to a simple ideal-typical schema that identifies four main pathways to becoming a teacher, which takes into consideration their duration, entry requirements, curriculum, teaching practice, teaching styles and certification requirements (Figure 3).

Figure 4: Four routes into teaching
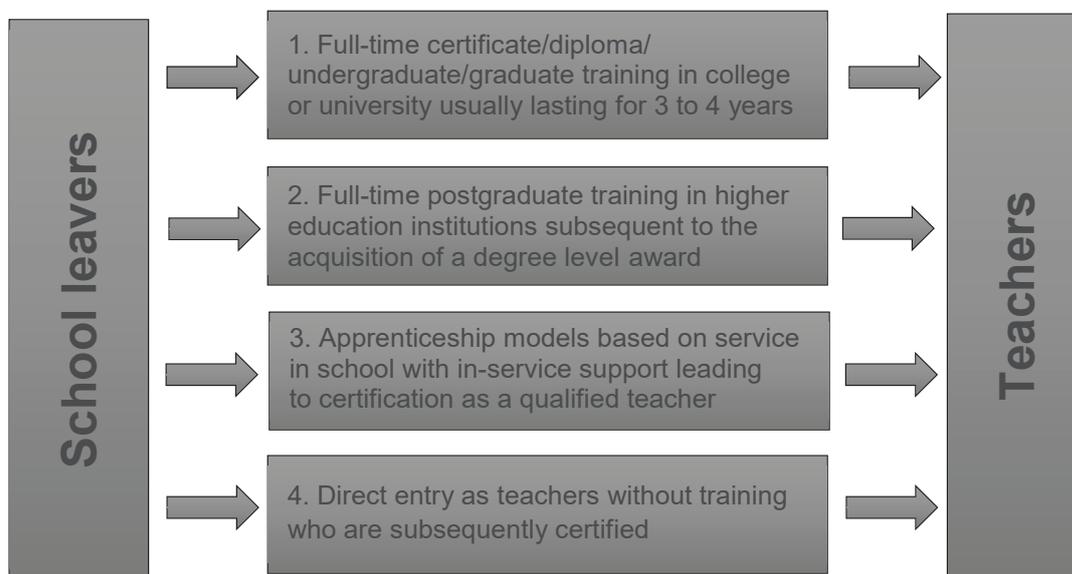
Source: Adapted from Lewin, 1999

Types 1 and 2 are pre-career, full-time and residential programmes where teacher training institutions tend to be isolated from schools for the majority of the programme. More specifically, Type 1 includes full-time certificate/diploma/undergraduate college or university-based training in purpose-built institutions (e.g. teacher training colleges) lasting for one to four years (with or without subsequent internships or probationary years). Type 2 includes full-time postgraduate training in higher education institutions subsequent to degree level award. Type 3 encompasses in-service/on-the-job teacher training systems with varied amounts of time spent on-site in teacher training institutions. Type 4 includes direct entry into teaching without formal training, often with some form of subsequent certification related to experience and course attendance, which eventually can provide them with the minimum qualification to teach. A large part of the reason for

the existence of the large numbers of unqualified teachers found in many SSA countries is the tendency to adopt Type 4, in order to cater for the increased demand for teachers under the pressure of expanded primary and secondary schooling across the continent. Cost considerations are also motivating experiments with Type 3. At the same time, a number of countries are starting to pay attention to issues of quality, opting for Types 1 and 2. These approaches are discussed in more detail below.

Selection into Initial Teacher Education (ITE)

Selection into ITE is arguably the most important part of the teacher cycle. Teacher status and working conditions are inextricably linked with their recruitment, training, salaries and management. They are themselves an outcome of evolving contexts and broader financial issues.

There are two aspects to selecting trainee teachers. The first relates to selecting the right number of teacher trainees, which involves forecasting the needs of the country, taking into consideration the increase or decrease in student numbers, teacher attrition and specific subject needs. If a country trains too few teachers, then they either have to increase the workload of current teachers, or begin to hire unqualified teachers. If a country trains too many teachers, not only are educational resources wasted, but qualified teachers will find it difficult to find employment. In either scenario, the status of teaching is jeopardised.

In Singapore, the Ministry of Education (MOE) assumes sole responsibility for the recruitment, preparation, certification, appointment and deployment of teachers. This is not done in isolation, but rather by partnering with the National Institute of Education (NIE) (the only teacher training institution in the country), schools and other stakeholders (teachers, parents, other government ministries, universities and the private sector). However, engagements like these go beyond those related to licensing standards. Every year, the MOE receives feedback from schools and uses its own data to make strategic forecasting on recruitment, planning for new schools, initiatives and programmes. In sub-Saharan Africa, where teacher attrition rates as well as population growth are high, it can be difficult to forecast how many teachers will be needed.

The second issue in the admission of students into ITE relates to selecting the right type of candidate. This is important as the candidates selected will in part determine the quality and level of the content of the ITE. Countries have used different criteria, methods and general approaches to selecting potential candidates into teaching, and it is possible to identify commonalities in 'high performing systems' with regard to selecting the most suitable candidates for ITE programmes.

The McKinsey report on the world's best performing school systems (Barber and Mourshed, 2007) found that the most effective mechanisms for selecting candidates for ITE acknowledge that, for a person to become an effective teacher, they need to possess a certain set of characteristics that can be identified before they enter teaching: a high overall level of literacy and numeracy, strong interpersonal and communication skills, a willingness to learn and the motivation to teach. Studies in Denmark and Norway show that students' grade-point average at the time of admission is of major

importance for success in completing the studies (Rasmussen, 2010). Harris's (2010) findings point to the significance of cognitive ability and experience (rather than personality and experience) as a predictor of subsequent effectiveness in professional practice in complex occupations and professions similar to teaching, and suggest that there is merit in pursuing this approach.

The best education systems are characterised by rigorous entrance requirements for teacher training programmes. In Finland and Singapore, ITE entry standards are some of the highest of any profession and this contributes to a virtuous schooling cycle. The competitive nature of ITE entrance increases its status and results in the opportunity to have more rigorous teacher training. In South Africa, ITE entry standards vary across institutions and are among the lowest of any profession – generally attracting school leavers with the lowest grade of degree-entry passes in the National Senior Certificate (NSC) (Deacon, 2016a; Prince, 2018), and this seems to be a general problem in many SSA countries (USAID, 2008). These low standards contribute to a vicious cycle where mediocre school performance is reflected in low public regard for teachers.

Some countries, such as France, employ a system of competitive screening during the ITE programme to determine which candidates are allowed to continue with their training after they have demonstrated work samples and practice teaching (Hobson, 2010). This method controls the number of candidates with access to public employment as a teacher. It also ensures that control over the quality of teachers remains in the hands of expert teacher trainers, rather than head teachers and school officials. This method of screening – which occurs during training – might be considered preferable to overly stringent screening procedures employed at the entry to ITE stage, since those undertaking the screening are likely to have more evidence of trainees' potential to be effective teachers part-way through the ITE programme than at entry to ITE stage. On the other hand, reducing the pool of prospective teachers at the earlier stage may be more cost-effective and would avoid the cost to rejected candidates who have committed time and resources to their training in human terms (Hobson, 2010). According to Sahlberg (2010), Finland screens prospective teachers, both at entry into ITE and during their training.

In Singapore, the MOE recruits teachers from the top third of each graduating class's cohort (only those who qualify for tertiary education), and only one of eight applicants interviewed is accepted (Tan, 2018). Apart from satisfying basic academic standards, aspiring teachers also must have an aptitude for, and interest in, teaching. This is ascertained in the interviews held by MOE officers and experienced principals and teachers. Throughout the year, MOE organises several recruitment seminars about 'Teaching as a Career' for interested applicants, as well as an opportunity for them to ask questions. Prospective students can apply to either a graduate or non-graduate teacher education programme depending on their academic qualifications. The Ministry also invests heavily in the branding of the teaching career as one intricately linked with the important mission of nation building. For example, a bus advertisement had the following tagline: "Shaping the future of the nation: One student at a time." To be eligible to be a graduate teacher, students must possess a university degree (bachelors, undergraduate or college), and must have done coursework in the requisite teaching subjects. If the desired programme involves teaching a major subject in school, the individual must have studied at undergraduate level to qualify to teach such a subject.

One of the problems in SSA with only selecting teachers based on academic merit rather than also selecting based on interest in teaching or willingness to teach in a specific location, is that teachers selected solely according to these criteria may resist working in rural locations. Candidates are less likely to see teaching as their long-term career goal, or be willing to accept a post in a remote rural school. A focus on academic qualifications furthermore biases the selection towards students from more urban and better off backgrounds, who are more likely to have better academic results but less likely to want to work outside of the cities. Survey data from Tanzania – albeit over 15 years old - shows that nearly 2,000 out of 9,000 newly qualified teachers refused to be posted to assigned rural schools (UNESCO, 2015). This pattern is born out across the continent. A recent review of rural teaching in Africa conducted by the ILO sheds light on many of these issues, highlighting that producing more teachers will not increase the availably of teachers in rural areas, nor transform the quality of teaching and learning in rural schools. The report advocates a policy regime to fundamentally reform the working conditions of teachers as part of an integrated rural development agenda (ILO, 2016).

Academic performance, interviews and broader criteria offer an opportunity to draw more candidates who want a career in education into teaching, more of those who are willing to work in rural areas as well as candidates from linguistic and ethnic minorities who are deterred by strict selection criteria and under-represented in teaching.

In attempting to quickly respond to teacher shortages in constrained financial environments, many countries have turned to employing unqualified teachers on a contract or volunteer basis. In Zimbabwe in 1992, about half of the 24 900 secondary teachers were unqualified: they typically had five O levels but no teacher preparation course (Mulkeen et al, 2007). Liang (2001) has reported that in Uganda 15 % of secondary teachers (four-fifths of whom are male) are unqualified, while only 28 % have the desired qualification of a degree. In response to an insufficient number of teachers, inefficient deployment practices, or scarcity of funds, contract teachers are often hired for secondary teaching and paid through school or community fees. Contract teachers have a less stable source of remuneration, creating issues of absenteeism and retention that the schools must address. Employing contract teachers as part of the civil service teaching force may stabilise the teaching corps and provide better quality teachers in schools that have difficulty retraining teachers, or in retaining teachers in certain subjects (Mulkeen et al, 2007).

In Malawi, the low status of the teaching profession among the general public and school leavers in particular has negatively impacted recruitment standards for both primary and secondary school teaching. For the majority of secondary school leavers, teaching remains a last resort. The failure of teacher training programmes to attract better students at both primary and secondary school levels has been blamed on the poor conditions of service in the teaching profession. Until recently, the minimum entry qualification to become a primary school teacher was the Junior Certificate of Education (JCE), which is taken at the end of Form 2 (Kadzamira, 2006). Although preference has been given to Form 4 school leavers who had passed the Malawi Secondary Certificate Education (MSCE), few have been attracted to the teaching profession. Thus, most of the teachers who were recruited en-masse following the introduction of free primary education in 1994 only have the JCE

qualification. The tracer survey of secondary school leavers conducted in 2001 found primary school teaching to be one of the most popular training courses among JCE school leavers. Though recruitment to teacher training colleges for secondary education requires a minimum of an MSCE, secondary school leavers with better MSCE grades have tended to opt for other types of training courses (Chimwenje, 2003).

There is some evidence that, as the economic situation and employment prospects have continued to worsen, significantly more MSCE school leavers are opting for teacher teaching (Kadzamira, 2006). Most only do so in order to increase their chances of obtaining a place at university and, therefore, have little or no commitment to becoming a teacher. This situation is compounded by long delays in recruiting graduate teachers. Teacher attrition rates are high among both primary and secondary teachers (Kadzamira, 2001; Tudor-Craig, 2002; Moleni, 2004). It is estimated that at current levels in Malawi, over 4 000 replacement teachers will need to be recruited each year for the primary sector alone to replace those lost through attrition (retirement, death, resignations or transfer to non-teaching posts). There was a broad consensus among all stakeholder respondents that teachers are underpaid and this is the main factor affecting their motivation and morale. Both MOE and teacher union officials believe that teacher pay is not adequate, does not match with the demands of the job, nor does it meet their basic needs. Some officials observed that the pay is adequate for higher grades, but for lower grades the pay is too low to meet the minimum requirements for basic needs. In particular, starting salaries are low for unqualified teachers.

In Francophone Africa, governments have tried to lower the status of *fonctionnaire* (civil servant) teachers and less well qualified 'contract' teachers working on a separate pay scale to remedy teacher shortages (Fyfe, 2007). Some see this as part of a wider trend towards the de-professionalisation of teaching. More generally, the development of a two-tier pay system with segmentation between two groups of teachers has obvious consequences for teacher morale and status, and has resulted in tensions within the teaching force. In Benin, the use of contract teachers was seen as undermining one of the basic elements of teacher identity: that of being a respected civil servant with a decent steady salary, job security and high social status (African Union, 2017).

Research and policy findings indicate that understanding teacher supply and demand issues and the factors that drive individuals to pursue teaching as a career, and to remaining in teaching are critical when designing effective teacher recruitment policies. In many countries, a decline in prestige, poorer working conditions and relatively low salaries has not helped attract the best candidates into the profession (OECD, 2015). Schleicher (2012) calls for two types of policy responses to improve recruitment policies. The first concerns the nature of the teaching profession itself, as well as teachers' work environment. These policies seek to improve the profession's general status and competitive position in the job market. The second involves more targeted responses and incentives for particular types of teacher shortage. It recognises that there is not a single labour market for teachers, but rather a set of them, distinguished by school type and characteristics such as subject specialisation.

Given the difficulty many SSA countries have with recruiting, it is surprising that few countries have strong policies, strategies, and programmes for recruiting able secondary leavers to secondary teaching. Recruitment is frequently neither systematic nor energetic, and does not draw a sufficient number of potential teachers to the profession either from the pool of secondary leavers or from older people with relevant academic backgrounds. A World Bank study revealed little attention is given to the initial recruitment of qualified candidates into the field of education (Mulkeen et al, 2007). Only Ethiopia reported that it has a central system of recruiting potential teachers to pursue teacher education, while Ghana and South Africa encourage students to enter teacher education by paying for their initial pre-service education.

The content of ITE programmes

The content of ITE programmes typically comprises three elements: disciplinary (subject) knowledge, pedagogical content knowledge (PCK) and a practicum component in which teacher trainees gain experience in the classroom. In both pre-service and in-service programmes there are inevitable tensions over the allocation of time and activity to these components. The central issue is how these elements should be integrated in the curriculum. There are two analytically distinct, though interwoven, tensions. One is the subject-pedagogy tension: there is little disputing that teachers need to know the subject matter they are teaching and, moreover, that they need to know how to present this clearly. The issue is how to integrate further learning of the subject with learning about how students in school acquire subject knowledge. A second (and interrelated) tension is the theory—practice tension: this revolves around how to combine learning about teaching through a distancing process (theory) with learning through immersion in experience (practice). Another way of expressing this tension is to ask whether the focus of teacher education programmes needs to be on the principles of teaching and learning, or on direct experience in classrooms. This tension applies both to the subject-focussed components and the pedagogy-focused components of teacher education. It is reflected in the ideological distinction between "teaching as craft" and "teaching as profession".

The content of ITE programmes can differ vastly within these three categories. For example, an education system that draws upon a "teaching as craft" theoretical model is more likely to prioritise time spent in the classroom working with a more experienced teacher, whereas an education system that follows a "teaching as profession" model is likely to focus on the theoretical body of literature that unites teachers in a common understanding of best practice. The world's best systems tend toward the latter while balancing extensive classroom experience with academic knowledge concerning the disciplines and research findings about PCK.

Resources are another reason the content of ITE programmes may differ. Lecturing to large classes of teacher trainees may be a more cost-effective approach to qualifying teachers than sending them to schools where they will need to be mentored and supervised. In countries where there are ample teacher training resources, the content of ITE programmes may span up to four years or more, enabling in-depth focus on all three components.

Finally, the competencies of the students recruited into ITE programmes will influence their content: the more highly educated students are on entry, the higher the level of content they will be able to engage with during ITE. If ITE programmes are constrained to select weaker candidates, a greater amount of time will need to be spent on the basic content they are expected to teach in order to improve their mathematical and literacy capabilities, for example. This is often the case in SSA and is one reason why the "teaching as script" approach has gained popularity.

Before discussing the content of ITE programmes in more detail, it is worth noting that, while much of what follows reflects international best practice, the issues facing ITE in SSA countries are of a more fundamental nature than those which occupy policy makers and practitioners in countries like Singapore and Finland. Thus, in the majority of SSA countries students enter ITE with moderate foundation competencies in language and mathematics and under these circumstances ITE programmes are constrained to spend more time addressing these shortcomings. However, in addition to providing examples of practices in SSA countries below, we describe international best practice in some detail below on the grounds that, if countries in the developing world are to make the transition from vicious cycle to virtuous cycle situations, they need to know what the latter entail and set up long term plans for moving from the former to the latter.

Disciplinary knowledge

Disciplinary knowledge refers to teachers' knowledge about their subject matter – not only the content of specific topics but also an understanding of how the topics relate both horizontally within a grade and vertically across the grades. The best systems provide students with a philosophical perspective of the discipline and its epistemological foundations. A lack of disciplinary knowledge has been identified by a number of authors as being a barrier to effective teaching, particularly in mathematics (Baumert J. K., 2010) (Hill H. R., 2005) (Akyeampong, 2003) (Bhattacharjea, 2011). For example, Campbell (2014) reported that a study of early-career teachers identified a significant relationship between upper-elementary teachers' mathematical content knowledge and their students' mathematical achievement after controlling for student and teacher-level characteristics.

While it may seem obvious that teachers with weak subject content knowledge would struggle to convey that knowledge to their students, research suggests that the situation is more complex. PCK originated with Shulman's 1985 presidential address to the American Educational Research Association (AERA). PCK has been conceptualised as an amalgam between content and pedagogy, and identified it as being of particular interest as it represented an understanding of how particular topics, problems or issues are organised, represented and adapted to the diverse interests and abilities of learners, and presented for instruction (Shulman, 1987) According to Shulman, "[t]he teacher need not only understand that something is so, the teacher must further understand why it is so" (Shulman, 1986, p. 9). The literature on PCK identifies two core facets: knowledge of students' subject-specific conceptions and misconceptions, as well as knowledge of subject-specific teaching strategies and representations (Ball D. L., 2008) (Borko, 1996) (Park, 2008). Consequently, teachers' content knowledge differs from the academic research knowledge generated at institutes of higher education as well as from everyday knowledge that adults retain after leaving school (Krauss, 2008).

A considerable body of qualitative studies on the structure and effects of teacher knowledge has developed in the last 20 years (Ball D. L., 2001) (Leinhardt, 2001) (Stodolsky, 1995). One of the major findings of qualitative studies on mathematical instruction is that the repertoire of teaching strategies and the pool of alternative mathematical representations and explanations available to teachers in the classroom are largely dependent on the breadth and depth of their conceptual understanding of the subject. Studies in which teachers were presented with examples of critical classroom events revealed that an insufficient understanding of mathematical content limits teachers' capacity to explain and represent that content to students in a way that makes sense. Teachers' subject knowledge affect classroom practice and are modified and influenced by practice (Turner-Bisset, 1999).

Liping Ma's (Ma, 1999) comparative study of Chinese and American teachers' knowledge of 'fundamental' mathematics found that while American teachers had limited (and sometimes faulty) understandings of dividing fractions, Chinese teachers were able to do the calculation, provide examples of the concept in context and discuss concepts underpinning the understanding of division. The Chinese teachers were also able to articulate salient mathematical structural properties in other topics (e.g. distributivity to justify the standard procedure for 'long multiplication'). Ma concludes that no amount of general pedagogical knowledge could make up for ignorance of particular mathematical concepts.

A number of authors have argued that since teacher subject content knowledge is so impactful on student learning outcomes, prerequisites for becoming a teacher should include higher degrees of subject-specific academic qualifications. However, in light of an understanding of the different types of content knowledge, Hallett (1987) argues against this. He proposes that subject study in the B Ed should be different from that in a BA/BSc programme because it has a different function. It should "illustrate the essence of the discipline, building confidence in awareness of its concepts, logic, and scope, and give a thorough grounding in aspects which children will be handling at a foundation level." The emphasis then is away from students taking academic subjects for the intellectual stimulus of pursuing that subject in its own right at degree level, towards a more professional view of subject studies. Such studies would focus on subject knowledge in ways which would enhance its conversion into subject expertise appropriate to primary school.

This view was supported by a review on initial teacher training commissioned by the United Kingdom's Secretary of State for Education (Munday, 2016), which advised that ITE must systematically address gaps and misinformation in core subject knowledge. It is also acknowledged that a degree in the relevant subject-area is no guarantee that a trainee teacher will have the breadth of subject knowledge necessary to teach the curriculum. The review advocated for ITE programmes that address subject-specific issues, including phases of progression within the subject, linkages between subjects and common misconceptions and how to address them. Discussions with trainees and former trainees highlighted the concern regarding the practical issues relating to teaching their subjects: for example, experiments in science and the use of equipment in Design and Technology.

SECONDARY LEVEL TEACHER EDUCATION IN SUB-SAHARAN AFRICA: LITERATURE REVIEW

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In Finland, subject-content knowledge forms part of a rigorous teacher training programme during which all upper grade teacher trainees are required to major in the subject area they will later teach, as well as take courses consisting of pedagogical content knowledge specific to that subject. What is notable about the Finnish system is the collaboration between the Department of Teacher Education and other departments. Generally, the Department of Teacher Education organises courses in pedagogical studies in collaboration with subject-matter programmes offered by certain faculties which also are responsible for teacher education of their own students (Linda Darling-Hammond, 2013). Academic subject faculties, who also have an important role in teacher education in Finland, issue Master's degrees for subject teachers. Students who apply to the Department of Teacher Education after completing a Master's degree are required to spend one academic year focusing on pedagogical studies, which are specific to their subject-orientated teaching strategies. Unlike the UK, subject content knowledge is integrated into ITE.

Singapore's approach to teaching subject-content knowledge offers an alternative model from Finland. For those completing a BA/BSc in education, subject knowledge modules are an essential requirement. However, the subject knowledge modules are essentially curriculum content specific and focused on ideas relating to, but extending beyond, the curriculum. For trainee mathematics teachers, for example, the emphasis is on understanding the philosophy and framework of Singapore's school mathematics curriculum, learning theories that guide the teaching strategies for the learning of mathematics, conceptual understanding of the primary school mathematics topics and modes of assessment of mathematics. The course also introduces the trainees to the prevailing Ministry of Education's initiatives, such as National Education, Information Technology and The Thinking Programme, through the infusion of these 'in-classroom' initiatives for the teaching of particular topics in the mathematics curriculum.

In many sub-Saharan African countries, the situation is quite different. Taylor and Vinjevold (1999) posit that the most critical challenge to teacher education in South Africa is the limited "conceptual knowledge base" of many teachers. Students in colleges of education may have poor knowledge of the subjects they are expected to teach, especially where the status of teaching is low and the educational standards of entrants to teacher preparation courses are poor (Gaynor, 1994). In some cases, subject content takes up to 80 % of the teacher preparation time (Lewin, 2000). Even where trainees had completed senior secondary school, studies have found that the curriculum they were faced with in the colleges involved repeating most aspects of the secondary school curriculum in an attempt to improve their subject knowledge base. This leaves little time for considering how to teach the concepts and skills needed by early learners in mathematics and reading, or in the intensive and extensive engagement with children and how they learn what this would require.

Furthermore, in contexts with great language diversity, teaching is often conducted in a medium of instruction that is not a mother tongue of the students. Many problems of learning in different subjects may be associated with lack of language fluency. Student teachers may require additional language training to enable them to function effectively in the language of instruction (Lewin, 2000), or may need to relearn the curriculum content in the language they will teach in.

One of the problems faced by ITE programmes in sub-Saharan Africa, is that the teaching of the content knowledge is not always aligned to the contents of the school curriculum. This is because many teacher training colleges and university-based teacher education programmes are not provided with (or do not seek out) the school curriculum and textbooks their graduates will use. Curriculum change in ITE lags behind much of school curriculum reform. The approaches and content of ITE are focused on older curricula that other parts of the system are working hard to replace. According to a study conducted by Pryor et al. (Pryor, 2012) this creates a mismatch between the ITE language and mathematics curriculum and the primary school curriculum. Even in Ghana where teacher education has been reformed more recently, there was no consistent study of the school curriculum or access to teacher and pupil materials. New teachers therefore enter classrooms with limited knowledge of the pedagogical approaches appropriate for the often new primary school curriculum in use. Nor are they familiar with expectations for pupil attainment that each primary curriculum makes explicit. These expectations include knowing how to teach reading and basic mathematics for the youngest children in their home or familiar language.

Pedagogical content knowledge

While pedagogy may be defined as what teachers do to help students learn, pedagogical content knowledge refers to teachers' understanding of how children learn. It is knowledge about the processes and practices, or methods, of teaching and learning and how it encompasses (among other things) overall educational purposes, values and aims. A teacher with pedagogical knowledge understands how students construct knowledge, acquire skills, and develop habits of mind and positive dispositions towards learning. As such, pedagogical content knowledge requires an understanding of cognitive, social and developmental theories of learning and how they apply to students in their classroom (Koehler, 2011). Making good pedagogical decisions thus hinges on the quality of the pedagogical content knowledge held by the teacher. While the evidence base is still weak, studies into the relationship between teacher pedagogical knowledge and student achievement are beginning to show positive correlations (Hill H. C., 2005) (Baumert J. K., 2010) (Voss, 2011).

Studies of teaching practices have identified a range of different pedagogies, which vary from teacher-centred approaches to student-centred approaches. Teacher-centred teaching is described as a way of teaching in which students are considered to be more or less passive recipients of information which is transmitted from the teachers to the students. It is argued that the learning occurs through the teacher's construction of factual knowledge which students memorise. At the other end of the pedagogy spectrum is student-centred teaching, described as a way of teaching which sees the teacher as facilitating students' learning processes. Transmission of knowledge and course contents may be a component, but the aim is to promote students' own knowledge production processes (see for example (Trigwell, 1996).

Viewing pedagogy as a simple distinction between learner-centred (good) and teacher-centred (bad) can be misleading, though, since learning can occur in either mode, both can be used to develop conceptual understanding and both can be reduced to rote memorisation. In this regard, Bernstein's

(1996) notion of a pedagogical palette, in which the two are blended into a learning-centred approach is helpful. One of the ways of promoting learning-centred pedagogy is to train teachers as researchers of their own practice. Finland offers an example of teacher training programmes characterised by a strong emphasis on research-based approaches to improving pedagogy. Finland characterises the objective of teacher education as educating pedagogically-thinking teachers able to think reflectively over their teaching methods (Sahlberg, 2010). In addition to subject knowledge, pedagogical training is composed of three content areas: pedagogical content knowledge or subject didactics, the theory of education, and practice. Although the study programmes have changed several times over the past 30 years, the orientation towards research-based teacher education has remained consistent.

A number of authors (Clarke, 2003) have noted that considerations of cultural appropriateness may pose barriers to success for student-centred pedagogies in sub-Saharan Africa, which are perceived as a culturally insensitive Western import. For instance, Tabulawa's (1997) study in Botswana explains the difficulty concerning teachers' assumptions about the nature of knowledge and how it ought to be transmitted, their perceptions of students and their aims of schooling. These assumptions, Tabulawa argues, are incongruent with the basic tenets of student-centred pedagogy, and taking these tenets for granted when trying to change classroom practices can lead to disappointing results. Rowell (1995) conducted research during a workshop with Namibian educators and his findings were similar to Tabulawa's. Although the workshop participants were generally educated to a degree level, they experienced significant difficulties in attempting to adopt a constructivist view of knowledge. They tended to view knowledge as fixed, objective and detached from the learner and believed that it was the teachers' function to transmit this knowledge to the children, usually through rote learning techniques.

When teachers are required to engage in student-centred pedagogies within a culture that does not support its most basic principles, they tend to perform the outward mechanisms of the practice without engaging with the underlying principles (Westbrook J, 2013). For example, when Clarke (2003) explored the impact of an in-service teacher training programme designed to promote a more active, student-centred pedagogy in Karnataka, India, she found that the role of hierarchy was difficult to overcome. While questions were asked, only teachers asked them, and responded to students' answers by telling them whether it was correct or incorrect. The interaction implied the importance of teachers' authority and command over all valid knowledge. In Ethiopia, Barrows (2007) noted that even in some classrooms where students were seated in groups and where some group work occurred, students were still often only interacting with the teacher, or what the teacher had written on the chalk board.

This poses a problem for ITE programmes since student teachers' own learning may have been heavily centred on rote learning, leaving them with only one model of teaching and an insufficient understanding of the conceptual underpinnings or practice of new paradigms of teaching and learning. Studies have shown that the greatest predictor of how a teacher will teach is the way they were taught. This pattern of repeating their own experience is exacerbated in situations where the student teachers have a low level of education, making it difficult for them to come to grips with the

real problems of teaching and learning (Condy, 1998). The problem is then compounded by the reality of many classrooms in sub-Saharan Africa, where large class sizes and few resources make student-centred approaches unfeasible. A stronger focus is needed on practical, rights-based and context-relevant classroom skills in contexts influenced by poverty. Teacher training should model the desired teaching practice in the classroom during the period of training to provide practical examples for student teachers.

Practical classroom experience

The opportunity for prospective teachers to gain practical teaching experience in a classroom is a critical component of any ITE programme. Such hands-on experience not only prepares prospective teachers for the classroom, but also enables them to apply the content and pedagogical elements of their training to the reality of the school environment (Ronfeldt, 2012). For instance, Darling-Hammond's (2014) review reveals that teaching practice with coursework is helpful for teacher candidates to understand the knowledge and apply concepts they are learning in the course. Ronfeldt (2012) demonstrated that the student teaching has a significant positive impact on teacher candidates' preparedness, efficacy, and interest in working with students.

Liu et al (2017: 175) describe Singapore's approach to practicum in the following way:

"the practicum… is conceptualised as the spine of the teacher education programmes. It provides shape and support to the programmes and helps frame the courses. Just like the arms, legs, chest, and head are attached to the spine, the courses are "joined" to practicum. Practicum affects and is affected by every decision made in the courses. It is an integrated component in a systematic and coherent programme, and not just seen as an experience culminating at the end of the teacher preparation programme. No change in practicum can be isolated from how the rest of the courses function, and vice versa. This interdependence of field experience and courses is fundamental to NIE's mission of developing autonomous thinking teachers by helping them "learn for practice" and "learn from practice"."

One of the perennial complaints about initial teacher training in SSA is the over-reliance on theoretical contents and the under-appreciation of strengthening teacher competencies. Courses are generally disconnected with the realities of classroom teaching practice, including the skills needed to work with learning groups such marginalised ethnic or language groups and children with special learning needs. Despite large class sizes and the widespread use of multi-grade teaching, initial teacher training does not prepare teachers to teach in multi-grade situations, or to foster the skills of working with children with diverse learning abilities and styles in the same classroom.

Evidence from interviews and focus groups conducted by Deacon (2016a) reveals that trainee teachers experience the practicum as short in comparison to the overall length of the training, as well as disengaged from teaching realities, particularly the administration associated with teaching and time pressures teachers face.

Akyeampong et al (2013) found that trainee teachers in a number of east and central African countries might be visited once or twice during their practicum by college staff but often this was jeopardised through lack of funds or the distance from the college. Ghana was exceptional in that there is a formal mentoring system to enrich trainee knowledge and skills (Akyeampong & Asante, 2005). In no other country did tutors draw on the practicum as a learning opportunity back at the college. Indeed, tutors in Mali and Tanzania noted that trainees on the practicum revert to the way they were taught to read rather than adopting the new practices they learnt at college. Furthermore, the structure of a number of programmes placed the practicum at the end of the training year followed by a long vacation before the next term. In Mali and Ghana, the one-year practicum comes at the end of the course, so it is too late for trainees to use the experience to ground the college work in reality. In Mali, tutors do not even visit trainees during this practicum. Even when time and distance is not a factor, trainees carry out single or double lesson practice only on an infrequent and erratic basis rather than this being a central mode of their learning (Akyeampong K. L., 2003). Without specific guidance from experienced teachers or consistent supervision from tutors, problems encountered by trainees in class (such as whether their pupils learn what was intended or not and how to understand and interpret the school curriculum), remain unsolved or are not experienced as being problematic by trainees.

This is strikingly different to Singapore's approach where teachers learn to teach during the practicum with the help of purposeful mentoring known as *Planned and Structured Reflection,* and *Focused Professional Conversations* (Tan, 2018). Supporting this approach, Ball and Cohen (1999) insist that learning to teach happens not only in the school classroom in real time but also takes place for pre-service teachers during coursework through the gathering and incorporation of authentic classroom materials of students' works, video recordings of school lessons and problem-based scenarios of issues that occur in classrooms. It happens with the purposeful interweaving of coursework with clinical experiences, as well as an emphasis on reflection, school-based inquiry projects and pedagogical tools that 'bring' the classroom into the university. Being placed in a school does not automatically make a pre-service teacher competent. The clinical practice has to be carefully structured and managed, and the pre-service teachers must be guided and mentored in order for them to make sense and learn from their experience (Darling-Hammond, 2005).

Although experience in schools is generally agreed to be an important feature of teacher education there is variation in the nature of the partnerships which exist between teacher education providers and school partners. Singapore and some US states have highly developed partnerships in which school-based mentors are responsible for the learning of teacher education students in schools and assessment is undertaken jointly between school and university staff at boards chaired by principals/head teachers.

A note on vocational education

While on the topic of the content of ITE programmes, it is as well to mention a subject which frequently arises in relation to curricula for both schools and teacher education: vocational education. This refers to education that focuses on non-academic skills and crafts, and which is

usually more directly associated with the world of work than an academic path. Vocational education is frequently coupled with technical education in the phrase technical and vocational education and training (TVET), and the boundaries between these terms are difficult to draw. Thus, technical education, as offered to prospective plumbers and electricians, is closely related to the academic subjects of mathematics and the sciences, while vocational education offered to future or current office clerks of various kinds is closely associated with academic subjects such as accountancy. Since we do not intend to enter these discussions in any detail, we will use the term TVET to refer broadly to education which prepares students for specific vocations and which excludes the traditional academic subjects.

In the 1990s, TVET received little attention in sub-Saharan Africa. The Dakar commitment to basic education, and the fact that TVET was considered to be becoming obsolete and not sufficiently cost-effective explains this disdain. More recently, however, companies operating in Africa repeatedly cite insufficiently skilled labour as a prohibitive growth, and by improving the knowledge and skills of workers through TVET, it is felt that local economies can build a skilled workforce to increase the production of goods and services and contribute to economic growth.

There is also a fresh awareness among sub-Saharan African policy makers and the international donor community of the critical role TVET can play in national development. The interest that African governments have begun to show in TVET is reflected in the various poverty reduction strategy papers governments have developed in collaboration with The World Bank and the Regional TVET Centers of Excellence Initiative (World Bank, 2018). One of the most important features of TVET is its orientation to the world of work and the emphasis of the curriculum on the acquisition of employable skills. TVET delivery systems are, therefore, well-placed to train the skilled and entrepreneurial workforce that Africa needs to create wealth. In its Plan of Action for the Second Decade of Education (2006 – 2015), the AU recognises the importance of TVET as a means of empowering individuals to take control of their lives and recommends the integration of vocational training into the general education system. The AU also recognises the fact that vast numbers of young people are outside the formal school system, and consequently recommends the integration of non-formal learning methodologies and literacy programmes into national TVET programmes.

These are important debates and it is essential that the public and private sectors collaborate in ensuring that schooling and post-education prepare young people for the workplace. However, a number of complex issues are involved in this very large terrain, which we cannot do justice to in the present study. Besides, there are several prior questions which need answers before curricula for the preparation of teachers for secondary schooling can engage meaningfully with the topic of TVET. These include:

- To what extent should vocational education exist alongside the academic curriculum in secondary schools, and to what extent should the former be offered in specialist vocational schools or colleges?

- What should be the specific content of vocational subjects if they are to be offered alongside academic subjects?

Related to but quite distinct from the topic of vocational education is the discussion on teacher education for 21st century skills. The recent focus on "21st century skills" reflects an understanding that, in the knowledge economy, the memorisation of facts and procedures is not enough for success. Educated workers need a conceptual understanding of complex concepts, and the ability to work with them creatively to generate new ideas, new theories, new products and new knowledge. They need to be able to critically evaluate what they read, be able to express themselves clearly both verbally and in writing and understand scientific and mathematical thinking. They need to integrate and use knowledge, rather than learn sets of compartmentalised and de-contextualised facts. They need to be able to take responsibility for their own continuous, life-long learning (OECD/CERI, 2008).

This is an emerging idea and there are few examples which illustrate what it could mean for schools. An exception to this rule is that, in order to prepare teachers to educate for 21st century global citizenship, the Canadian federal government sponsored a nationwide three-year Global Classroom Initiative (2009-2012), entitled 'Strengthening Global Education in Canadian Faculties of Education'. The goal of this project was to increase the number of Canadian teachers and students practising global education and to enhance teachers' abilities to integrate curriculum-mandated teaching and learning for human rights, peace, social justice, cultural competency, environmental awareness and global citizenship in their classrooms. While the Canadian Global Education initiative provides one particular angle on the notion of 21st century skills, it has the advantage of providing a concrete example of the way some educators are thinking about this topic.

Finally, the most important aspect of vocational education is that, like all of post-school education, is that its successful acquisition depends on basic competencies in mathematics and literacy. Indeed, it can be argued that the absence of these foundation skills is the greatest barrier to youth employment in sub-Saharan Africa. For example, the summary report (Uwezo, 2012) states that only two out of 10 pupils (20%) in the third year of primary school can read and do basic mathematics at Standard 2 level. By the time they reach the last year of primary school, one out of four East African children (24%) still have not acquired these skills. Even in Kenya, the best performing country in the SACMEQ group, only 64 % of the learners assessed (aged between 10 and 16) have mastered age appropriate literacy and numeracy skills. In Tanzania, the figure was 48 %, and 36 % in Uganda (UNESCO, 2016). Without basic mathematics and literacy, youth will be barred from opportunities to pursue further studies and careers in the professional world, including civil service. This is even more the case for the mastery of the sophisticated competencies which underlie 21st century skills.

Induction

According to Maciejewski (2007), a decade ago the dominant trend in education as relates to the socialization of new teachers remained one of a sink or swim mentality, where new teachers assume the complete duties of a veteran teacher (including the instruction and management of a full

contingent of students). However, the Organisation for Economic Co-operation and Development (OECD) Teaching and Learning International Survey (TALIS) (OECD, 2008) found that, in developed countries, there is a growing trend towards the development of teacher mentoring and induction programmes as a way to support new teachers. Teacher induction is a professional development programme that incorporates mentoring and is designed to offer support, guidance and orientation for new teachers during the transition into their first teaching jobs. These programmes help teachers through their first year of teaching by supporting ongoing dialogue and collaboration among teachers.

Three quarters of new teachers surveyed in the TALIS study work in schools with mentoring and/or induction programmes. However, the survey found that the quality of these programmes varies considerably: some are administrative introductions while others are year-long partnership programmes. This finding confirms the conclusions of earlier studies (Scherff, 2008) (Williams, 2001) (Greenlee, 2002). Surprisingly, the TALIS study could not find a relationship between the presence of these programmes and new teachers receiving feedback on their teaching. More than half of new teachers in schools with induction or mentoring programmes reported only receiving feedback once a year or less. Schools claimed to be providing support for new teachers in the form of mentoring and induction programmes, but nearly a third of new teachers reported a high level of need for professional development around student discipline and behaviour problems. In addition, on average 22% of new teachers reported that they had a high need for professional development to improve their classroom management skills, compared to 13% of teachers with more experience.

Joiner (2008) found that the retention of new teachers at the outset of their career is influenced by the level and quality of support they receive. The benefits of mentoring for novice teachers include: increased retention rates, substantial professional development, improved self-reflection and problem-solving abilities, adoption of the instructional strategies and practice of the mentor, greater levels of confidence and self-esteem, reduced feelings of isolation and increased positive attitudes (Bush, 1996) (Darling-Hammond L. , 2003) (McIntyre, 1996). There is evidence, predominantly through the self-report of novice teachers, that one-to-one mentoring provides the support new teachers require (Wei, 2009), increases teacher retention (Ingersoll R. a., 2004) and reduces their sense of isolation (Darling-Hammond, 1998) (Dedeugd, 2002) (Main, 2007).

Gold (1996) outlines a framework to examine how induction programmes support novice teachers' professional practice and personal concerns. Gold proposes that to effectively support the new teacher, induction programmes must meet both teachers' professional needs and their personal needs. Professional needs for successful teaching included knowledge, skills, and strategies in content, pedagogy, and personal reflection (McCann, 2005).

Wang and Odell (2002) examined personal and professional needs in their review of the mentoring literature through three perspectives: humanistic, apprenticeship, and critical. Personal needs are the focus of the humanistic perspective. Perceived technical or professional needs are the focus of the apprenticeship perspective. The critical perspective focuses on having new teachers reflect on social injustices in the school through collaboration. Wang and Odell (2002) suggest that focusing

strictly on personal needs does not heighten teacher knowledge or practices. They also suggest that concentrating on new teachers' perceived professional needs may provide support with management skills, but does not broaden their practices beyond those that reproduce the existing technical skills. Wang and Odell (2002) advocate for further examination of how new teachers' personal and professional needs are met through each component of the induction process and the possible interaction of these components in the support of new teachers (Bickmore, 2005)(Feiman-Nemser, 2001) (Fulton Y. L., 2005) (Kralik, 2004).

Recent research suggests that school climate is foundational to the effectiveness of induction programmes, regardless of the components of the process (Greenlee, 2002) (Scherff, 2008). As Brock and Grady (2001: 61) argue, "Healthy schools have the best chance of creating successful induction programs. Grafting an induction program onto an unhealthy school culture yields limited success". A healthy school climate and culture, characterised by alignment of actions with goals, collaboration and collegiality, positive work conditions such as administrative support, resources for teaching, and teacher input into decision-making, may be necessary if an induction programme is to be effective. Increasingly, the educational literature suggests a healthy school climate is also characterised by continuous collaborative professional learning that leads to positive student outcomes (Marzano, 2005) (Wei D.-H. A., 2009) There is also evidence that administrative support may be a key element in the new teacher's perception of a healthy school climate (Guarino, 2004) (Scherff, 2008).

In the same vein, Williams (2001) argues that the effects of lesson observation and lesson-based discussions with mentors on new teachers learning to teach and teaching are shaped by the kinds of school cultures in which they teach. The individualist culture prevalent in many schools limits the effects of structured induction components on these teachers, whereas a collaborative culture further extends such influences. Thus, in a collaborative school environment, when new teachers share visions for teaching with their mentors and other more experienced colleagues, their job sharing provides opportunities for them to grow. Together, the teachers explore teaching by reflecting, observing, modelling, and supporting one another's teaching, which is otherwise difficult to sustain (Eick and Reed, 2002).

In an experimental field study with 46 pairs of new teachers and mentor teachers from 12 schools in two school districts, Evertson and Smithey (2000) compared the influence of 23 mentors who received training in three-day workshops focusing on mentoring techniques and skills with 23 mentors who received no training on classroom practices of their mentees. The study found that mentors who received the training developed better skills of conferencing with mentees and were more likely to share their teaching experiences. The mentees with prepared mentors were able to organise and manage instruction more effectively, and could establish more workable classroom routines than teachers who had mentors without training. The study suggests that the presence of mentors in induction alone is not sufficient and that mentors' knowledge and skills of mentoring were crucial for mentors to support new teachers' learning. It is important to provide mentors with proper training for the role they are expected to play in teacher induction.

In summary, the specific conditions for optimising the success of teacher induction programmes appear to be:

- A strong and supportive instructional leader.

- Evidence-based instruction aligned with the vision and goals of the programme.

- A positive instructional community climate and culture.

- Instructional staff committed to continuously improving their instruction and student outcomes.

- A high degree of professional collaboration among teachers, and focused around sharing and improving instructional practices.

- An expectation of participating in professional learning.

- Use of data and evidence for programme improvement and instruction.

- The presence of experienced teachers interested in serving as mentors.

- Release time and other incentives for teachers for professional learning, planning, mentoring, conferencing and classroom observation.

- Leadership at the organisational level that provides a systemic and comprehensive support structure for ongoing professional learning for teachers (LINCS, 2015).

There is little evidence of the presence of induction programmes in SSA countries. School leadership support and mentorship initiatives in Kenyan schools have certainly demonstrated a positive impact on teacher motivation (Musungu, 2008). In South Africa, the South African Council for Educators (SACE) – a statutory body tasked with quality assuring the preparation and continuous development of teachers – is proposing to institute a compulsory one-year induction for new education graduates, and successful induction would be a prerequisite for certification (license to teach) (SACE, 2018). However, while research on the incorporation of an induction component into the preparation of new teachers has shown very positive benefits, the conditions for achieving such impact are conditional on the existence of important school-level factors. Most important of these are a positive school climate and the presence of expert teachers who have both the skill and time to induct novices into the profession.

Performance management of teachers

Teacher performance management is a continuous process for identifying, evaluating and developing the work performance of teachers, so that the goals and objectives of the school are more effectively achieved, while at the same time benefiting teachers in terms of recognition of performance, professional development and career guidance. The objectives of implementing teacher performance management systems fall into three categories: accountability, staff motivation, and teacher professional development. It is considered best practice to have a formal appraisal and performance management system in place to aid in transparency and establish clear

expectations for teachers and their managers, particularly as regards the standards that teachers must comply with, and who enforces those standards.

Like any other profession in Singapore, the performance of teachers is appraised annually to enhance their effectiveness and ensure that the highest performing teachers have incentives to stay in the profession (Tan et al, 2017). Instituted in 2005 as part of larger structural and cultural reforms throughout the educational system, the Enhanced Performance Management System (EPMS) provides a standardised framework of performance standards by which teachers, school leaders and administrators are routinely evaluated. EPMS encompasses the contribution of individual teachers to the academic and character development of their students, their collaboration with parents and community groups and their contribution to their colleagues and the whole school. EPMS oversees the reward of promotions, tenure, salary increases and performance bonuses, and underscores the importance of reflective practice among teachers. Central to this system is the work review form: a standardised protocol that documents and evaluates the work of educators. The work review form enables reporting officers (ROs), heads of department, principals and ministry officials to 'track' the performances of teachers throughout their professional careers.

Teacher absenteeism, late-coming and leaving early, and being frequently 'missing' from classes even when at school are common problems in SSA countries (DPME/DBE, 2017). Reports from a body of research (Boimanda, 2004) (Anangisye, 2005) (Anangisye W. A., 2010) (Oziambo, 2010) and mass media indicate that incidents of teachers' malpractices are widespread. A key issue is that teachers are frequently engaged in secondary employment activities to supplement their incomes. A number of studies report that teacher absenteeism in Malawi is on the increase and that low staff morale is one of the contributing reasons (Kadzamira E. N.-B., 2001) (Moleni, 2004). This is partly attributed to the poor preparation of teachers following the introduction of the fast track Malawi Integrated In-service Teacher Education Programme (MIITEP), which pays relatively little attention to professional ethics. More generally, unprofessional behaviour such as excessive drinking and sexual relations with students are seen as symptomatic of low morale and poor motivation. Bonga attributes this partly to weaknesses in management and inspectorate systems, and low teacher morale resulting from heavy workloads and poor incentive structures (Bonga, 2005).

Teachers are usually not sanctioned by school leaders or school inspectors for not being on duty. In fact, inspectors rarely visit schools in the rural areas of some African countries where inspector-teacher ratios can be as high as 1:700 (Mulkeen, 2010). Those who do visit, seldom use centralised or standardised systems to report weaknesses in schools or individual teachers. As Akyeampong and Asante (2005) have stated that school visits often focus on factors like the number of books and quality of facilities, not pedagogical issues. Consequently, vices such as lateness, absenteeism, drunkenness etc. abound. Circuit supervisors do relatively little – just check staff numbers and enrolments rather than offer professional advice and support to teachers.

In South Africa, poor timekeeping among teachers has been noted as an endemic problem (Taylor, 2009; NEEDU, 2013). Yet, despite the presence of an elaborate performance management system, the Integrated Quality Management System (IQMS), school- and district-level leaders seem

powerless to intervene. For example, of the total 422 965 educators rated in 2012, 70% scored at least 70% ('Good' or 'Outstanding'). However, its efficacy in incentivising genuine behaviour change is doubtful.

A ministerial committee (Department of Education, 2009) examined the anomaly between poor school performance and high teacher ratings on IQMS and came to three conclusions. First, most teachers, together with members of the development support groups set up within schools to assist in the process do not know how to conduct an effective analysis of teacher performance. Neither do they know how to prioritise teacher development needs. Second, the criteria for evaluating teacher performance do not include measures identified in the research literature as constituting effective teaching, such as time on task, appropriate use of textbooks and materials, good communication, motivation and the importance of positive feedback, nor does it capture the most important core function of schooling – namely, the level of learning achieved by learners. The committee speculated that educators are likely to become solely interested in the sanctions or rewards attached to the performance appraisal component instead of identifying their weaknesses and developmental needs, and thus, the intentions of using IQMS to identify and remediate gaps in teachers' knowledge and skills are not met.

It is now understood that teacher motivation is affected by policies which transfer trust and responsibility to teachers, strengthen their capacities to achieve meaningful tasks and responsibilities, be recognised and rewarded for those achievements, and which help them to grow in knowledge and skills (Abbott, 2008). Herzberg's theoretical work on motivation suggests that attention to intrinsic satisfiers is needed to fulfil teachers' psychological and professional growth needs. Indeed, proponents of intrinsic motivation emphasise that high levels of support, voice, empowerment and collaboration can lead to higher levels of self-esteem and job motivation (Bennell and Akyeampong, 2007).

Many of the conclusions regarding performance appraisal reached by the South African ministerial committee were replicated by a study commissioned by the African Union (AU). This study looked at whether school teachers are appraised or evaluated on a regular basis, how information is gathered to assess teachers' performance and what the results of teacher performance evaluations are used for. The study found that assessment of teachers is not a common or transparent practice in SSA, and where it is carried out, little sensitisation is offered to the teachers as to how they will be appraised or what indicators will be used to determine performance. In some countries, appraisal is not carried out for pedagogic feedback or support purposes, but mainly for purposes of administration or discipline (African Union, 2017). This means that teachers' performance is separated from rewards and career opportunities as well as their own personal growth, and teachers work without a clear plan or goals to achieve. This finding follows on a 2010 report synthesising the results of case studies of eight African countries: The Gambia, Lesotho, Malawi, Uganda, Zambia, Zanzibar, Liberia and Eritrea, where Mulkeen (2010) reports that a majority of head teachers are untrained and schools rarely monitored by government.

However, there are signs that performance appraisals are beginning to be constructed more adequately. In Tanzania and Kenya, for example, the streamlining of performance monitoring and appraisal in schools by the Center for Education and Development (CED) and School Management Committees is having a positive impact on teacher motivation (Huma, 2014) (Kemunto, 2015) (Onjoro, 2015) (Zablon, 2016) (Leah, 2014).

Continuous professional development (CPD)

The idea of teacher education as a continuum, and the focus on career-long teacher education has now become one of the key policy themes internationally in efforts to improve quality (McMahon et al, 2015). In this regard, the common trend is to provide and ensure access to professional learning opportunities at the various phases of a teacher's career.

According to de Vries et al (2013), continual professional development activities can be classified according to three categories: updating knowledge and skills, reflection, and collaboration with colleagues. Regarding the effectiveness of CPD activities to improve teacher quality and teaching practice, research indicates that all three are effective (Cheetham & Chivers, 2001; Timperley et al., 2007). What seems essential to improving teacher quality is that teachers participate in diverse CPD activities (Bolhuis, 2009; Schraw, 1998; Timperley et al., 2007), with a focus on lesson-related content such as subject matter, general pedagogical knowledge and pedagogical content knowledge (van Veen, Zwart, Meirink, & Verloop, 2010).

Before discussing these three categories of CPD in more detail two important general points need to be borne in mind. First is the broad distinction made most explicitly by Musset (2010) that ITE provides teachers with a solid base of the knowledge and the skills that they will need for their task, while CPD allows them to update their knowledge and skills, and to adapt these to changes in the teaching environment. This is a fundamental distinction and failure take sufficient account of it enables policy makers to adopt Lewin's Type 4 approach to teacher preparation (Figure 3) where teachers are employed in schools with little or no training, on the assumption that their competence will be built through CPD activities. If we are to take Musset's distinction seriously then this approach should be recognised as a false hope: CPD cannot make up for weak skills in literacy and/or mathematics resulting from 12 years of poor schooling.

The point is emphasised by research findings regarding the efficacy of CPD, which conclude that professional development in the form of short workshops has little effect on teaching practice, and that an effective programme should last at least for several days, must be subject-matter specific, and its content and emphasis must take into account the instructional goals and the challenges faced by the school in which the teacher is working (McCutchen et al, 2002). While not questioning the importance of CPD in strengthening teacher knowledge, and in particular building pedagogic competence, taken together the points made by Musset and McCutcheon reveal Type 4 approaches to teacher education as short sighted in the extreme.

Pertaining to the CPD category 'updating knowledge', teachers have the opportunity develop a practical and a theoretical knowledge base (Knight, 2002; Verloop, van Driel, & Meijer, 2001). After initial teacher education, practical knowledge, which often remains implicit and undeveloped (Zanting, Verloop, & Vermunt, 2001), expands through experience during teaching practice. However, the theoretical knowledge base requires constant, intentional updates to respond to continuing societal and educational developments and innovations as well as to help teachers make connections between their theoretical knowledge and their practice.

Reflective activities pertain to activities in which teachers can take a step back and think more broadly about their classroom practice and how it relates to theoretical knowledge. This specialised form of thinking can be applied to a puzzling or curious situation (i.e. a 'problem') to make better sense of that situation (Dewey, 1933). Schön (1983) calls this form of reflection 'reflection-on-action': a deliberate process developed and purposely used to reconsider existing knowledge, beliefs, possibilities, ideas and actions. In contrast, 'reflection-in-action' is an almost subconscious process that experts develop and refine as a consequence of their learning through experience. Reflection is a major professional activity (Eraut, 1994; Schön, 1983) and vital to CPD (Cheetham & Chivers, 2001) because it helps teachers explicate their implicit or tacit knowledge and beliefs, granting them more control over their routine actions in the classroom and, if necessary, the ability to make changes (Schön, 1983).

Finally, collaborative activities refer to collaboration with colleagues within and outside the school. The contribution of collaborative activities to better teaching and to better learning outcomes is important: they have both supportive and therapeutic benefits which can reduce stress and improve confidence (Cheetham & Chivers, 2001; Cordingley et al., 2003). They also provide teachers with feedback and bring about new ideas and challenges (Cordingley et al., 2003; Kwakman, 2003; Putnam & Borko, 2000), and can contribute to shaping the learning environment – thus directly and indirectly (via classroom-level processes) affecting student learning (Cordingley et al., 2003; OECD, 2009).

Continuous professional development has a number of important characteristics for improving teacher quality in both high and low-income contexts, and we argue that it should be a crucial feature of sub-Saharan African teacher education.

It relieves pressure from the initial teacher education phase, where a packed curriculum often needs to expand to include new policy or curricula initiatives. By re-conceptualising a career in teaching as a journey and not a destination, and to think of career progression as a development towards becoming a more proficient, accomplished and expert professional, allows us to rethink the purpose and pedagogy of education. Only those aspects of learning appropriate to the first phase need be included in ITE. However, there is a danger that ITE will be reduced to such an extent that it does not provide a solid enough foundation on which CPD can build. In this regard the teacher-as-professional perspective on teaching emphasises the importance of ITE in providing a disciplinary base to teachers' knowledge.

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Planning and structuring teacher education to serve the career-long developmental needs of practitioners affects how pre-service programmes are designed and delivered. Graduation into the profession is no longer seen by teacher education providers as the severance of formal ties with the majority of new teachers but rather the start of a new relationship with new professionals (McMahon et al, 2015). Where teacher education is viewed holistically (i.e. career-long), then subject and pedagogical knowledge, along with the necessary professional skills, can be more carefully planned and phased so that learning in the initial phase is developed and extended into the subsequent phases. This in turn necessitates greater articulation with in-service provision and programmes so that processes and experiences that have been central in the initial phase, such as school-based clinical experiences, can be built upon. What is required, then, is a model of professional learning that sustains and develops teachers in their development throughout their careers, leading towards accomplishment. This needs to be sufficiently flexible and portable to reflect and accommodate non-linear career pathways. This has implications, not only for providers of teacher education, but also for state, national and international accrediting bodies.

Continual professional development has been shown to improve teacher motivation by creating pathways through which they can develop themselves. Since, according to Dadds (Dadds, 1997), the expertise of the well-educated teacher must lie at the heart of continuing professional development, it also allows for the experience of more accomplished teachers to be acknowledged and valued – thus providing a sense of self-worth. This can provide a much-needed career progression framework, which is often lacking in many countries, and the absence of which makes teaching a less desirable career when compared to jobs in the civil service, for example. There is a growing understanding among policy-makers and academics that in order to achieve the highly-desired professionalisation of the workforce, teacher learning should be structured over the phases of a career long continuum OECD, 2005; Schleicher, 2012).

New directions in effective and meaningful staff development hold great promise for building teachers' sense of self-efficacy and worth as a result of interaction with teachers facing similar challenges, teacher exchange and relationship building (Smith et al., 2003; Gaible & Burns, 2005; Avalos, 2011). According to Dembélé (2005), school-based models of pre-service and in-service training raise teacher motivation and the quality of teaching (Dembélé, 2005) when they include 'practice-by-doing', coaching and mentoring and expose students to competence pedagogies to a greater extent than traditional college-based courses (Barrett et al., 2007).

CPD can be used to upskill or qualify teachers hired with few or no qualifications, due to a failure to recruit enough teachers. According to the World Bank, the pattern of recruiting unqualified primary teachers locally, then providing opportunities for upgrading to qualified status through in-service training, has become a second path into the profession in much of sub-Saharan Africa (World Bank, 2009). According to the UIS, less than half of the teachers in classrooms in Angola, Benin, Equatorial Guinea, Guinea-Bissau, Madagascar, Niger, Senegal and South Sudan are trained (UN, 2015). In countries such as these, where replacing unqualified teachers with qualified teachers is not an option, the only alternative to improving teacher quality is CPD. Admittedly, there are legitimate concerns about the detrimental impact of such practices on the quality of classroom teaching

standards, especially in subject areas such as mathematics and science. However, this may also be a reflection of the quality of the CPD unqualified teachers receive.

Singapore is arguably the world leader as regards the quality of its continual professional development. In 2006, the country introduced the 'GROW' package to promote the professional and personal growth of education officers through better recognition, opportunities, and seeing to their wellbeing. For example, teachers who want to do a part-time Master's degree are given the option to take on part-time teaching while studying. Upon completing their degree in an approved course of study, the teacher will be given a one-off monetary award of $4 000. Additionally, the Ministry will introduce a full-time postgraduate award to encourage teachers to pursue higher studies. Non-graduate teachers can apply for full-time advanced diploma programmes at the NIE. Those who do well in the diploma course can purse a degree programme. It is the objective that by 2020, almost all teachers in Singapore will be graduates, and that those with postgraduate degrees increase to 20% (MOE 2016).

As in the example of Singapore, effective professional development and learning requires time, resources and supportive institutions. The African Union (2016) study found the provision of continual professional development is not well grounded on the continent, and the resources needed to establish high quality training and support frameworks are lacking within the ministry budget allocations. The process of professional development is carried out through ad-hoc, in-service programmes mounted by ministries of education and other development partners at country level. Thus, where CPD is practiced, infrequent, poor quality programmes heighten the sense of neglect felt by teachers (Bennell, 2007). Furthermore, in many countries CPD was seen as less significant and only 23% of those surveyed had attended any courses.

The same shortcomings have been noted regarding CPD in South Africa, where government budgets for CPD are in excess of R1 billion for CPD, although only around half of this figure is actually spent (NEEDU, 2017). At the same time, corporate and international donors working in South Africa contribute at least an equivalent amount, yet little is known about the effects of these activities. The rigorous evaluation of CPD programmes is becoming more common in both South Africa and other SSA countries. These initiatives combine scripted lesson plans, and the provision of high-quality reading materials for in-school coaches to improve early grade reading instruction. To what extent such approaches apply to high school teachers is unknown. Another interesting development in South Africa, though currently in pilot form, is the proposal by SACE to link teachers' period re-licensing to fulfilling specified CPD obligation: thus, over each three-year cycle, teachers are required to attend SACE-approved CPD activities (SACE, 2018).

Despite current shortcomings, there is a desire for CPD in Africa. The World Bank Institute (2018) reports that the idea of learning communities, in which teachers meet with other teachers to discuss ideas and issues in their practice, was supported by more than 90 % of the teachers, principals and policymakers interviewed. Learning communities generally meet outside classroom teaching times, yet are best attended if meetings occur regularly and during teachers' paid work schedule. Furthermore, topics most useful to discuss in these communities are concerns related to classroom

pedagogy and new content, rather than one-time issues that could be addressed through individual mentoring or staff meetings. Ongoing and long-term learning communities allow for in-depth discussions of issues and encourage professional growth and development of all teachers over time.

Uganda may be having some success with the STIR Education model. Teachers, or teams of teachers, analyse problems in classroom effectiveness, or in children's learning, and suggest practical solutions. The programme works at school level to reignite the motivational spark within teachers by recognising their existing efforts (their micro-innovations in the classroom), and then connecting them to form local teacher change-maker networks. In these networks, teachers develop the professional mind sets and behaviours evidence shows are needed to create sustained change in teaching practice. The networks also stimulate ongoing interest and mastery in key thematic areas known to improve student learning. Finally, teachers gain practical experience of leading classroom improvement, through the 'Learning Improvement Cycle' – here teachers learn to diagnose classroom problems, collaboratively develop solutions, and reflect on the outcomes. Similar to problem-based school development (PBSD) in North America, it has been suggested that 'this approach takes staff development and school reform to the next level by creating a professional community capable of sustaining long term educational reform' (Clarke et al. 2015; Mugambi, 2016, pg.274).

Promotion

The promotion of teachers is essential not only to having quality teachers in leadership positions, but also to teacher motivation and a sense of professional development, which is essential for retaining quality teachers in the system. According to Cunningham and Cordeiro (2009), successful organisations promote continuous professional development throughout employees' careers to achieve intended organisational and individual goals, while Arriaza and Martin (2006) emphasise the importance of educators being allocated jobs where they are entrusted with important tasks and professional development chances that also lead to personal growth. As in many other professions (Rabore & Travers, 2000), promotion of teachers is often directly linked to an incremental remuneration structure based on hierarchical job groups which determine upward mobility. A career path should provide meaningful rewards and financial and non-financial incentives to motivate teachers to progress, be linked to significant TPD options and be equitable, allowing equal opportunities in career progression.

Wong and Wong (2010) observe that teacher promotion is an important issue particularly because pay levels in education are relatively fixed (unlike in the business world), leaving promotion as an important reward tool through which teachers can strive to meet standards set by their employers. It is of such central importance to many teachers because it is the only means by which money, status, prestige and power are allocated between individuals. Through promotion, teachers are also able to find roles which satisfy them at different positions in the job hierarchy, reversing possibilities of negative reactions when teachers are dissatisfied with their current positions. It thus has a powerful influence upon such matters as the way in which teachers direct their energies, perceive their roles, and develop an occupational identity (Maclean, 1992).

However, systems of promotion must be well designed if they are not to have an adverse effect on teacher motivation and retention. According to Lawrence et al (Lawrence J. Saha, 2009), if rewards are allocated only on non-performance factors, such as seniority, job title, or across-the-board pay raises, employees are likely to reduce their efforts. Worse still is the exercise of corrupt practices, the likes of which are apparently operating on a widespread scale in South Africa – including the 'buying' of posts and manipulating appointments and procedures to favour certain candidates (DBE, 2016).

In contrast, Singapore has a system of generous bonuses that boost teachers' salaries over the course of their careers. The bonuses are based on Singapore's sophisticated teacher appraisal system. Countries have developed a range of models designed to recognise and reward expertise or accomplishment in teaching, but that also serve a developmental function by helping teachers understand how they can improve. These take different forms, though there are many similarities: Chartered London Teacher in England, Chartered Teacher in Scotland and Wales, National Board Certified Teachers in the USA, Master Teacher in Singapore and Advanced Skills Teachers in Australia (see OECD, 2009) are all examples. In Chile, teachers can apply individually for the Pedagogical Excellence Award, but also benefit from the National System of Performance Assessment [*Sistema Nacional de Evaluación del Desempeño de los Establecimientos Educacionales Subvencionados*] (SNED) that rewards top performing schools (OECD 2009, 45). Such schemes are not without controversy, particularly if linked to financial incentives based on student performance in national, state or standardised tests. However, they do provide a sense of career progression which is important for teacher motivation.

In England, teachers are not promoted simply within the school hierarchy, but also as regional mentors. As part of its work, the Department of Education expects teaching schools to draw together outstanding teachers who are committed to supporting other schools in an area. There are currently many designations for these teachers, including 'Advanced Skills Teachers', 'Excellent Teachers' and 'Leading Teachers'. The Department of Education has re-examined this range of designations to create a single simple designation which identifies more clearly leading practitioners who work to support others. Alongside this, the education department has created the national network of teaching schools, and the education department also designates 'Specialist Leaders of Education', who are excellent professionals in leadership positions below the head teacher (such as deputies, bursars, heads of department) to support others in similar positions in other schools (DoE 2010).

In Africa, a perennial complaint is that career progression opportunities are limited, are unlinked to professional development and that salaries increase slowly over time. Both good and bad teachers are promoted together, which many teachers find demoralising (Bennell, 2007). The African Union study "did not find a single, linear pathway or career trajectory for teachers. Instead, career paths are often cyclical and even recursive" (Broad, 2006, p.11). Promotion to school leadership positions is one of the few options available, but is not typically based on performance and merit, rather on years of service and other non-professional factors. In countries, such as Malawi, promotions are even based on interviews which have been widely criticised for their lack of transparency (Bennell,

2007). As a result, not many teachers and school leaders perceive a correlation between teaching effort and attractive career outcomes (Guajardo, 2011). Rewarding excellent teaching is either not done at all or is done superficially without any increase in professional responsibilities (Abbott, 2008).

Kenya is a good example of some of the problems facing promotion structures in Sub-Saharan African countries. Kimengi (1983), Shymala (1990), Karugu & Kuria (1991), Sifuna cited in Kamau (2003), and Ngalyuka (2003) discovered that few promotion opportunities, advancement, recognition and general difficulties in upward mobility in the teaching profession among Kenyan primary and secondary school teachers caused job dissatisfaction. Although the criteria for the promotion of secondary school teachers in Kenya is well outlined by the Teachers' Service Commission (TSC) in terms of academic qualifications, length of service and performance on the job, literature shows that many teachers continue to stagnate in one job group. One of the reasons for this is that the environments in which teachers work are not taken into account when promotions are considered, despite the fact that environment plays a big part in the performance of teachers and learners – which is a criterion of promotion. The TSC criterion that gives much consideration to students' performance in national examinations as well as extracurricular activities, and recommendations from principals of schools, among other factors (Nyongesa, Ndiku & Shiundu 2010) seems to favour national and county school teachers whose schools enrol better performing students. In addition, most national and county schools enjoy superior facilities compared to district schools, and, therefore, their learners may perform better in national examinations and other activities. Poor performance in science and mathematics in many secondary schools (Republic of Kenya, 2005b) also create potential differences among teachers according to their subject specialisation. In these contexts, Bennel and Akyeangpong (2007) observe, even well-intentioned in-service training programmes designed to improve teaching methods and other forms of professional development are rendered less productive if promotion criteria that are insensitive to working contexts are not addressed. Furthermore, the appointment of secondary school head teachers in Kenya by the TSC (Okumbe, 1999 and Sang, 2010) is based on years of service. This deters hard-working teachers with less experience from pursuing promotion to administrative positions.

There is a large body of literature, spanning decades, which points to the fact that a lack of promotion has tended to reduce teachers' morale, causing many of them to seek alternative avenues to achieve professional development and personal goals outside the school setup. For instance, Kimengi's (1983) study on factors determining commitment and non-commitment of primary school teachers in Keiyo, Kakamega and Nyeri district, found promotion opportunities second to salary as a cause of job dissatisfaction, while Ngalyuka (1985) found job dissatisfaction criteria among teachers included a lack of recognition, poor promotion methods and low chances of advancement. A study focusing on satisfaction levels of secondary school teachers in Githunguri division in the Kiambu district (Kamau 2003) shows that policies and procedures in promotion were a great source of dissatisfaction among 70% of the teachers (73% for men and 67% for women). Similar results were confirmed by Oketch (2003) in research conducted in the Homa Bay district. A survey conducted by the TSC (Siringi, 2010) aimed at finding out about employer/customer satisfaction found that teachers wanted, among other things, faster tracks to promotions and a

review of methods used to reward hard-working teachers. These sentiments were echoed by the Kenya Education Sector Integrity Report (Transparency International 2010), which observed an apparent slow promotion of teachers.

Interestingly, the lack of promotion undermines the need for the continual professional development. The Kenya Union of Post Primary Education Teachers (KUPPET), for example, questioned the value of Strengthening of Mathematics and Science in Secondary Education (SMASSE) (an in-service training programme), noting that the programme does not earn merit during promotions.

In Malawi, a similar dissatisfaction occurs due to the absence of any meaningful career paths for most teachers, due to the fact that career paths are not long enough. Not all teachers can be promoted as there are limited posts, and the number of posts varies according to the category of the school making the chances of promotion uneven and unfair. There is also no clear system for promoting teachers within the classroom. In the Gender and Primary Schooling (GAPS) survey, it was noted that opportunities for advancement are more limited for teachers compared with similar professions within the civil service and, as a result, many teachers leave the profession to join other government departments where promotion prospects are better, or engage in private business in order to supplement their income (Kadzamira & Chibwana, 2000). To compound these problems, promotion criteria are de-motivating as they are not based on performance, years of service, or recognition of professional qualifications. As such, they are not transparent. Interviews by the TSC determine whether or not a teacher is promoted. Most teachers interviewed for the Voluntary Service Overseas (VSO) study highlighted the fact that promotions based on interviews were not the best method to assess teacher competency (Tudor-Craig, 2002).

Deeply ingrained gender issues also lead to career progression practices favouring male colleagues and demotivating women teachers (Haugen et al., 2011). For example, women are often assigned to lower primary grades with large class sizes so that the burden of teaching large numbers of young students falls almost exclusively to women (Bennell 2004, Shriberg 2007). In a study in Uganda, female secondary teachers reported that they were expected to teach more classes per week, take on more tasks and earn less because they had fewer opportunities to earn extra money outside the classroom than their male counterparts at the same school (Molyneaux, 2011). In Botswana and Ghana, women reported being overlooked for promotions due to family responsibilities, and male administrators used negative words to describe them – this in turn prevented their promotion (Dunne 2007). Male students were also more likely to challenge the authority of female teachers and refuse their punishments, behaviours that they did not exhibit with male teachers (Dunne 2007).

A report by South East Asia Ministers of Education Organization (SEAMAO) on achieving EFA goals by 2015 recognised the role played by teachers, and consequently recommended teacher motivation strategies through pay and regular performance-based promotions, besides other measures, as a key component of education development plans (Jeradechakul, 2011). An OECD study in SSA (OECD, 2005) observed a brain drain of teachers to other professional fields due to the "erosion of their working conditions." Another study focusing on teacher motivation and incentives conducted in SSA

(Bennell, 2007) found that teachers were facing a motivation crisis and, as a result, learners were not taught properly due to low job satisfaction and motivation levels among teachers. One of the reasons cited was apparent irregular promotions, particularly in rural schools. A World Bank report (2006) noted few female teachers in leadership positions despite them being critical in the expansion and improvement of secondary education. The report recommended affirmative action to increase their representation.

However, promotions are not motivating only because of an increase in salary. Indeed, increasing salaries may not be enough to keep teachers in the profession. A study on secondary school teachers' satisfaction in Transkei, South Africa (Mwamwenda, 2000) found no significant difference between respondents when salary was used as the criterion of satisfaction. There was, however, a significant difference when promotion was used as the criterion. This study should be a reminder that teachers define success and failure in their work in a variety of ways, and are motivated for different reasons. According to Maclean (1992), teachers seeking promotion wish to maximise their influence and power within their school, to have more freedom in their work and to establish new challenges in order to relieve or reduce the threat of boredom. According to Glickman (2009), this might be a consequence of age, since young employees thrive on challenge, training and new opportunities Additional money associated with promotion is not regarded as very important. On the other hand, some teachers do not seek promotion because they are not willing to move between schools in various parts of the state or get involved with the administration. All these factors make teacher promotion a complex issue.

Conclusion: Best practice in teacher education

What can be called 'best-practicology' has enjoyed a great deal of attention – positive and negative – in the last decade, manifesting in influential publications such as the two McKinsey Reports (Barber & Mourshead, 2007; Barber, Chijioke and Mourshead, 2010), the work of Marc Tucker (2011) and others, and most recently a new book by Andreas Schleicher (OECD, 2018). This literature converges around a set of reforms for improving teaching practices and learning outcomes.

This school reform agenda is not a list of boxes to be ticked in any order. When pressed to prioritise among his set of seven key reforms, Tucker (2011) opts for two: developing a quality teaching force, and ensuring coherence in the design of the overall education system. It is self-evident that well-educated teachers are required to educate learners well. Countries which are proud of their teachers and the performance of schooling select the best candidates and educate them thoroughly in subject knowledge, pedagogical knowledge and the practical arts of pedagogy (defined by Tucker as high mastery of complex content). All the pundits agree on this (Darling-Hammond, 2000; Musset, 2010), with the first McKinsey report coining what has become a truism: The quality of an education system cannot exceed the quality of its teachers (Barber & Mourshead, 2007).

Within our model of the lifecycle of a teacher – tracing a virtuous or vicious schooling cycle – it is clear that sub-Saharan African countries face challenges every step of the way in striving to raise the quality of teachers and teaching. They struggle with the twin problems of a shortage of funds and ballooning demand for new teachers arising from the rapid expansion of schooling in the past decade. These problems are exacerbated by difficulties in recruiting high quality candidates into ITE programmes, which in turn is related to the low status of teachers arising from the poor learning outcomes of the majority of schools. Accompanying these factors is the widespread perception that the content, quality and rigour of ITE programmes are of a low standard. In the face of these pressures a number of countries opt to hire low-wage, non-qualified teachers. The performance management of teachers, particularly in rural areas, is sparse and teacher absenteeism can be high. A lack of continuous professional development, when it occurs, is often fragmented and irregular, which means that unqualified or poorly qualified teachers remain that way. This is compounded by promotion structures which, where they exist, often lack transparency or do not benefit hard-working, talented teachers. In short, providing and deploying high quality teachers is a systemic problem requiring a national strategic focus if the quality of learning in all schools, public and private, is to be raised.

The message of this report is not to blame teachers. Nor does the report claim that there are no examples of teacher best-practice in sub-Saharan Africa. The report illustrates how the structural factors of the education systems that teachers work within provide neither adequate training and support, nor convincing incentives for hard work and motivation. All of these factors combine to produce the low learning outcomes that are currently recorded by international tests, as well as the high teacher attrition rates that plague sub-Saharan Africa.

On a simple level, these problems can be attributed to a paucity of finances, and weak institutional capacity within the education system. Before concluding with a discussion on how teacher education and deployment may be improved, we discuss each of these larger structural issues which frame all policy decisions.

Finance

If we compare teacher education systems in sub-Saharan Africa with those of the highest performing countries in the world, the need for increased financial resources becomes clear. Countries like Singapore and Finland attract some of the highest performing candidates, in part because of the status of teaching, but also because they are able to pay teacher trainees throughout their education. While teacher salaries in the majority of high-performing countries may not be exceptionally high, they provide a comfortable living wage, and are competitive with similarly qualified careers (Baber and Mourshed, 2007). Furthermore, some countries provide fully funded opportunities to advance within the teaching profession, as well as bonuses for teachers who perform well (Tan et al, 2017).

This is in stark contrast to some sub-Saharan African countries which struggle to pay teachers a living wage, let alone finance their education and promotions. Targeted donor support is making a

difference (IEG, 2016; GPE, 2018) but sustainability can only be achieved by a growing fiscus. The low standards of living for many teachers de-professionalises teaching, thus contributing to a vicious cycle in which the status of teachers declines and the country struggles to recruit quality candidates for the profession. However, while a certain threshold of funds is necessary to achieving an acceptable standard, the availability of funds does not guarantee success. Barber and Mourshed (2007) support this point with evidence emerging from their comparative study of the world's best performing systems. Intra-African comparisons further confirm this contention: for example, while South Africa outspends Uganda on schooling by at least a factor of 10, the two countries consistently perform at very similar levels in the SACMEQ tests (van der Berg et al, 2011; van der Berg & Hofmeyr, 2017; Mlachila & Moeletsi, 2019).

Neither Singapore nor Finland started with abundant finance and high levels of teacher status when they embarked on their comprehensive economic and educational reform programmes more than half a century ago. Strong economic growth, supported by an increasingly strong education and training system and the growing attractiveness of the teaching profession resulted from policy commitment over a long period, the systematic development and recognition of talent and motivation, and intolerance of corruption. It seems that a successful school system is a necessary but insufficient condition for national development. Most important, once the economy picks up, it generates additional funds for social spending, and in particular for education. Success breeds success in the virtuous cycle.

It will take time before efficiency gains through better teacher education begin to provide the dividend required to address financial constraints, but in the meantime, much more can be done with what exists. Both the more efficient use of resources and building smart institutional capacity are dependent on good governance, and without the political will to exercise it no reforms are possible.

Institutional capacity

Institutional capacity with regard to teacher education refers to the capacity of the government or Ministry of Education to make legible[2] (Scott, 1998) their teacher workforce, for the purposes of promotion and accountability. In Singapore, for example, teachers are constantly being supported and evaluated by those in mentorship roles, according to external standards as well as their own professional learning goals. This makes it possible to promote teachers or offer bonuses in a documented and transparent way for the successful achievement of pre-specified criteria. The Ministry of Education and National Institute of Education work closely with schools, receiving feedback on the kinds of professional development and support they require (Tan et al, 2017). Teachers are able to be promoted into roles that interest them and for which they have been qualified, such as a subject specialist, or a master teacher. All of these require efficient systems of

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[2] Here we use the term *legible* in the technical sense employed by James Scott (1998) to denote a state in which government has sufficient information on the population to enable well-informed decision making.

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inter-institutional communication and record keeping, as well as a well-disciplined workforce that gives accurate reports for which they are held accountable.

The case of Finland, also commonly recognised as maintaining one of the world's top performing school systems, illustrates the point that the factors on which the Singapore miracle depends do not include the existence of an autocratic state and the restriction of free speech. Finland enjoys a similarly excellent school system under conditions of participatory democracy.

Sub-Saharan African countries, by contrast, often suffer from a low level of institutional capacity, which makes it difficult to make nation-wide decisions and predictions, let alone understand the needs and ambitions of an individual school or teacher. As a result, it becomes difficult to create transparent approaches to promoting teachers, or to receive feedback from schools regarding areas in which they require professional development. Success seems to depend not so much on a specific country context, but on the way in which teachers are educated, supported, and promoted into leadership positions.

Generally poor institutional capacity in SSA can be attributed to four reasons. The first is the paucity of personnel deployed to oversee and support schools. Furthermore, support staff are generally not selected according to expertise. This means that when issues do arise in a school, including serious problems such as sexual abuse or alcoholism, the school may opt to not report them due to the length of time that problems can take to resolve. The second is as a result of ill-discipline, corruption or discrimination among the workforce, which thrive in an environment of low accountability, nepotism and limited resources. The third is a result of poor infrastructure, particularly in rural areas, which means that it can be difficult to travel between schools and the main cities where governance offices reside. Roads may be unusable at certain times of the year, it may not be safe for female staff members to travel alone, or it may simply be a result of the amount of time that it takes. The same is true of telecommunication infrastructure, which, combined with transport, makes contact with some schools exceedingly difficult.

But the most important reason for poor leadership and management is inadequate education and training. Educators can be dedicated and honest and follow policy to the letter and they may be expert administrators, but without the expertise required to provide leadership in the complex business of curriculum delivery, they can't do the job. Our analysis above indicates that, given the failures of schooling, building the capacity of educators during their pre-service years is key to school reform. On-going professional development of working educators at all levels is just as important in providing the skills required to adapt to changing classroom conditions and to managing and supporting teachers.

Best practice

Given the constraints of finances and institutional capacity, how should teacher education in sub-Saharan Africa proceed? We suggest that there are three main areas of focus which, our theory predicts, are likely to exert maximal leverage, despite the constraints under which low-income countries operate. They are: strengthening ITE through better selection of student teachers and

more intensive education in both disciplinary and pedagogical knowledge; supplementing the focus of ITE with a vision of teaching as a life-long career which requires continuous and effective professional development; and finding ways to improve motivation among teaching staff. We discuss each prong of this three-fold strategy in more detail below.

Improving the quality of ITE candidates and programme content

The quality of ITE candidates shapes a lot of what teacher educators can achieve, and the types of teachers that eventually end up in the classroom. It is, therefore, important that enough teachers are trained, that those teachers have strong literacy skills in the language of teaching and learning as well as a solid foundation at least in the subject matter that they will be expected to teach. In some African countries, there may simply not be enough qualified graduates to merit entry into ITE. In these cases, we suggest that provision be made to build academic literacy and re-teach these teacher trainees the high school curriculum content, before they progress to teacher training: evidence shows that the content of ITE will have limited effect if subject matter has not previously been acquired. This is the case in many SSA countries where students leave school with poor foundation skills.

A number of approaches can be taken to improve the number and quality of ITE applicants. At the most basic level, teaching conditions can be improved. This would involve increasing teacher salaries, reducing class sizes, improving teacher housing etc. However, we recognise that these are structural issues which require large amounts of financing, and which may not be realistic at this stage in the development of many sub-Saharan African education systems.

A shorter-term approach, which we strongly recommend, is improving the ITE recruitment approach to make it more systematic and attractive as a profession, as has been successfully done in England and Singapore. Another approach might be to focus on women who have raised their children to a point where they have more time and independence, although these women may require a substantial amount of training if they have not been in the formal workforce for a number of years.

While these measures will result in higher quality and more appropriate student teachers entering ITE, in the medium- to long-term, teachers provide their own publicity through their professional comportment and the performance of their learners. These behaviours, in turn, rely on good management systems and teachers who are well educated in the subjects they are to teach.

Once they have been selected, it is important to provide teacher education students with the highest quality of disciplinary studies, familiarity with the research literature on teaching and extensive school experience under the mentorship of experienced and dedicated teachers. Regarding the content of ITE programmes, there is strong evidence that teacher development is more likely to improve student learning outcomes if it increases teachers' understanding of the content they teach, how students learn that content and how to represent and convey that content in meaningful ways (Darling-Hammond, 1999; Cohen & Hill, 2000)

Continual Professional Development as standard practice

There is wide agreement in the research literature that ITE and CPD should be integrated into a continuum which supports teachers' capacity throughout their careers (Nakabugo et al, 2009; Musset, 2010; McMahon et al, 2015). However, the two serve different purposes and are not interchangeable, a distinction made explicitly by Musset (2010): ITE provides teachers with a solid base of the knowledge and the skills that they will need for their task, while CPD allows them to update their knowledge and skills, and to adapt these to changes in the teaching environment.

Account needs to be taken of the research findings that CPD in the form of short workshops has little effect on teaching practice, and that an effective programme should last at least for several days, it must be subject-matter specific, and its content and emphasis must take into account the instructional goals and the challenges faced by the school in which the teacher is working (Hill, 2007). In addition to subject-focused study, an important form of CPD places the work of the school at the centre of the programme and is designed around the challenges teachers face in their classrooms (Musset, 2010). Research indicates that programmes that are linked to specific school needs are more effective, especially activities based on demonstration and peer-review. School-focused CPD provides opportunities for synergies to develop among the teachers and the staff of the school. Successful education systems such as Ontario, Finland, Japan, South Korea, and Singapore devote considerable time at the school level to activities that are related to instructional improvement, such as collaboration among teachers on the analysis of instructional practice, mentoring, and professional development (Darling Hammond & Rothman 2011, Darling-Hammond 2010, Levin 2008). The best known example of such activity is the Japanese Lesson Study system where teachers within the school share expertise and lesson plans and novice teachers are systematically mentored through the successive levels of expertise (Cheung & Wong, 2014). Teamwork of this kind has also been found to improve teachers' sense of job satisfaction, which in turn reduces teacher attrition.

In the best performing systems that have a rigorous and lengthy ITE programme, CPD forms an integral part of a teacher's career, and is linked to issues of motivation and career progression. In Singapore, for example, CPD is not seen as an add-on to ITE, but rather a continuation of the support from the MOE and NIE, as well as the personal and professional journey associated with life-long learning.

In the case of sub-Saharan Africa, where significant numbers of teachers are unqualified, CPD might fulfil a different approach. In this context, CPD might be essential for helping teachers become qualified, and equipping them with the approaches that they would have received from ITE. Again, we emphasise that this is not the approach that we would advocate. However, the number of unqualified teachers is a reality, and it is not a problem that will be solved by simply removing them from the classroom, if the improvement of their qualifications is to be underpinned by an improvement in competence, rather than serving merely to provide them with certificates. But CPD aimed at improving teacher competence will require substantive courses, for which teachers could perhaps be given time off to attend, and combine face-to-face instruction and support by distance.

CPD in this context should help teachers work towards a qualification in a way that is connected to their work in the classroom. At its most basic level, this might involve helping teachers to learn the content knowledge that they are expected to teach, as evidence shows that many teachers, particularly in mathematics and science, could not pass high school examinations in the subjects they are responsible for. Only once a threshold of content knowledge has been grasped can pedagogical content knowledge, and an understanding of how to teach be developed.

Improving the management of teachers

Improving teacher motivation is essential both for the status of the teaching profession, as well as the rates of teacher retention. We have argued that teacher motivation isn't necessarily linked to higher salaries above a certain threshold. As such, it does not necessarily require a significant investment of financial resources, but is improved by clean and well-maintained school environments, supportive school leadership, a management system that rewards good teaching practice and punishes poor teaching practice and a promotion framework which is transparent and offers room for personal growth.

All of these factors, apart from school environment, are directly related to institutional capacity rather than financial capacity and so require system management and sufficient human resources to achieve. In successful systems, however, school leadership is something which teachers prepare for through CPD, and which is earned through demonstrated competency in the classroom. School leaders who have been selected on this basis are more likely to be supportive of good pedagogy and teacher development, rather than simply see themselves in an administrative capacity. They are more likely to be respected by their staff members for their expertise in teaching.

This approach to selecting school leaders is also motivating for ambitious teachers who can see a pathway to career progression through their own efforts. One of the challenges of motivating teachers is finding a sufficient number of roles that teachers can be promoted into. Singapore has addressed this issue by creating different streams that teachers can specialise in, which helps teachers to experience progress, within their chosen stream. The role of teacher mentors can also contribute in this way, thus also assisting the efforts of CPD. A teacher who has completed a CPD module might be 'promoted' to assisting more junior teachers to achieve the same. While not necessarily associated with significant income raises, the feeling of personal development is essential to the professionalisation of teaching, as well as to retaining teachers in the workforce.

A final point on educator professional development concerns quality assurance. Programmes which appear to be well designed and follow a set of standards do not necessarily lead to knowledgeable and skilled teachers. In recognition of this problem, Musset (2010) reports that in half of the OECD countries, a teacher education qualification is not sufficient to get a certification to teach: thus, in France, Germany, Greece, Italy, Japan, Korea and Spain, aspirant teachers have to pass a competitive exam to be certified and enter the profession. The examination can be used to obtain a teaching license but also to obtain tenure in a public school. In other countries, they have to complete as well a probation period before getting their certification. A sub-Saharan example is offered by Uganda's

National Teacher Policy, which makes provision for teacher licensing and provides space for assessing teachers' knowledge and skills prior to employment.

Steps towards building a virtuous cycle

The ways in which teachers are educated, deployed and supported throughout their careers are central to reforming any school system. Under conditions of poverty, high levels of citizen illiteracy and the rapid expansion of both primary and secondary schooling, almost all SSA countries are struggling to address the twin problems of teacher supply and pedagogic quality. A number of countries (Finland, Japan, Singapore, South Korea) and smaller jurisdictions (Ontario, Alberta, Shanghai, Chicago) have managed to affect a revolution is their school systems. While conditions in SSA countries are very far from those which pertain in high performing systems, in many of the latter this has not always been the case, and where reform has been successful it has often occurred under initial conditions of resource deprivation and taken at least a generation of dedicated, sustained and coordinated effort to achieve.

Reasons why developing countries are unable to follow the examples of countries which have achieved a virtuous schooling cycle are frequently extended. The reasons include the extreme poverty existing in many countries which struggle with their educations systems, the countries' cultural heterogeneity and much larger populations and the low base which exists in terms of national literacy rates. These arguments can be countered by the fact that, on gaining full sovereign status in 1965, Singapore could be compared to many African countries at the time, exhibiting cultural heterogeneity with four official languages, high levels of illiteracy and low GDP.

While there is no gainsaying the advantages that small size confers on a country in organising schooling along professional lines, there are no reasons why larger and more populous nations – or country sub-units – cannot follow the examples of countries which have established a virtuous schooling cycle, characterised by strong academic performance, low inequality and high teacher status. The components which contribute to these outcomes are based on a perspective of teaching as a profession and include:

1. the selection of the best graduates from the school system into ITE programmes;
2. intensive pre-service education in disciplinary and pedagogic knowledge accompanied by extensive in-school work under experienced mentors;
3. a focus on continuous in-service education which is linked to daily work in schools and to the promotion of educators into positions of leadership; and
4. a management and promotion regime which systematically identifies, nurtures and rewards talent in the allocation of leadership responsibilities.

These factors are not all of the same status, with the latter two being path dependent on the first two. The first priority must be to improve the quality of ITE, through a combination of points 1 and 2 above. This is because subsequent steps are dependent on the existence of well-educated and experienced curriculum leaders and administrators in schools and higher levels of the system, able and willing to mentor and guide younger teachers, coordinate meaningful CPD within and across

schools, and identify and develop the best candidates as future leaders. Because of the overlap between steps 2 and 3, achieving the schooling revolution is inevitably an iterative process, taking several decades to achieve, as a critical mass of competent educators builds up in the system.

These considerations argue strongly against two tendencies currently evident in SSA countries. First, is the inclination to shorten and even eliminate ITE, in favour of getting teachers into the classroom as quickly as possible. While this an understandable response under conditions of rapid expansion and financial constraints, it is a tendency which severely undermines any chances of improving the quality of schooling. Coupled with this tendency is a second temptation, to assume that CPD can substitute for ITE. On the contrary, the two forms of teacher development complement each other, with CPD building on the foundation skills developed during school and ITE (the latter having to make up a lot of slack due to poor schooling) to expand teachers' pedagogic horizons, by refreshing teachers' subject knowledge and systematically deepening their pedagogical competence in collaborative, practice-based, research reflective situations. And the more these processes are driven by expert mentors, the more successful they become, requiring that curriculum experts be selected according to their track records and not according to nepotistic or random criteria, as is currently the case in large parts of many national SSA systems.

Finally, Tucker's (2011) second most important element of systemic best practice needs to be kept in mind: clarity and consensus on the goals for education and coherence and alignment of the components of schooling:

… the standards are aligned with the curriculum, which is aligned with the instructional materials available to teachers. And the examinations are also aligned with the curriculum, as is the training that prospective teachers get in teacher training institutions.

Any thorough-going reform initiative requires a long-term view – of at least two decades – in which the different components of teacher preparation and deployment discussed in this report are carefully aligned and rolled out.

Research gaps

A final note is required regarding gaps in the research that provide an agenda for future work. While there is an abundance of literature on the overall state of teacher education – including material on SSA – which details the dominant trends and barriers facing the provision of quality teachers in SSA, the literature lacks detailed case studies which examine the dynamics at play within a single education system. Case studies which have been carried out have usually focussed on one aspect of teacher provision, such as motivation or the content of ITE programmes. As this report has shown, teacher training is a cycle of many interconnected parts. It is, therefore, difficult to understand the levers and pressures on any part of the cycle without a reasonable understanding of context. With this in mind, we advocate for research which, cognisant of the continental trends, can contextualise them in detailed and nuanced case studies. Periodic reviews of performance management systems by country, comparative studies within SSA regions, and research into the secondary education system teacher needs would also provide useful comparative insights.

Implications for the Study of Secondary Teacher Education and Support in SSA

This Literature Review serves as a foundation for the remainder of our study of the education and support of secondary school teachers in sub-Saharan Africa. The first step in building this foundation was to elaborate a theory, first proposed elsewhere (Taylor and Robinson, 2016), which places school systems on a continuum, depending on the degree of specialisation of and relative emphasis on initial (ITE) and continuing (CPD) teacher education. A corollary of this cyclical perspective on schooling is that no aspect of teacher preparation and career progression – selection into ITE, the ITE curriculum, certification, on-going development, management and promotion – can be neglected in the search for improved quality of school outcomes. A set of research questions, derived from this theoretical framework, was then formulated (see Appendix 2) to guide the subsequent phases of the study.

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APPENDIX 1: Research products

The investigation into the education and support of secondary school teachers in SSA produced seven research reports:

1. **Literature Review**

Taylor, N. and Robinson, N. (2019). SECONDARY EDUCATION IN SUB-SAHARAN AFRICA: Teacher Preparation and Support. LITERATURE REVIEW

2. **Market Scan Report**

Robinson, N. and Taylor, N. (2019). SECONDARY EDUCATION IN SUB-SAHARAN AFRICA: Teacher Preparation and Support: MARKET SCAN REPORT

3. **Four Case Study Reports:**

Adotavi, J. & Taylor, N. (2019). SECONDARY EDUCATION IN SUB-SAHARAN AFRICA: Teacher Preparation and Support. CASE STUDY: SENEGAL.

Arinaitwe, J., Taylor, N., Broadbent, E., and Oloya, C. (2019). SECONDARY EDUCATION IN SUB-SAHARAN AFRICA: Teacher Preparation and Support: CASE STUDY: UGANDA.

Taylor, N. and Robinson, N. (2019). SECONDARY EDUCATION IN SUB-SAHARAN AFRICA: Teacher Preparation and Support. CASE STUDY: SOUTH AFRICA.

Uwase, J. & Taylor, N. (2019). SECONDARY EDUCATION IN SUB-SAHARAN AFRICA: Teacher Preparation Support. CASE STUDY: RWANDA.

4. **Overview Report**

Taylor, N., Deacon, R. and Robinson, N. (2019). SECONDARY EDUCATION IN SUB-SAHARAN AFRICA: Teacher Preparation Support. OVERVIEW REPORT.

Appendix 2: Research questions

A set of research questions was formulated to probe policies and practices in each of the eight areas of interest:

1. **ITE institutions**

   - What kinds of institutions train teachers (colleges/universities/schools)?
   - What are the delivery modalities (face-to-face/distance/mixed)?
   - What is the size and shape of the ITE system in terms of:
     - number of institutions;
     - enrolment numbers, through-put and drop-out rates, number graduating;
     - spend per teacher on teacher training;
     - the nature and extent of financial support offered to students;
     - percentage of the education budget allocated to teacher education; and
     - regional differences in provision and capacity?

2. **The nature and content of ITE programmes:**

   - Describe the content of ITE courses in terms of the subject mix, the balance between content and pedagogical knowledge, the breadth and depth of subject content addressed, the pedagogical strategies advocated, and the nature of the teaching practice component.
   - Are there differences between programmes for upper and lower secondary teachers? If so, how do they differ?
   - Describe the content of the various programmes.
   - To what extent are academic support programmes offered to assist learners with poor school results?
   - If these academic support programmes are offered, what is the nature of these programmes and what are their success rates?
   - What kinds of qualifications are offered (degree/diploma, length of study)?
   - How is assessment done?
   - What are the through-put rates and graduation numbers?

3. **Selection into ITE:**

   - What criteria are applied in selecting prospective teachers into ITE programmes?
   - What is known about the knowledge and skills they bring from school?

4. **Induction**

   - Is there a formal induction process? If so, what is its nature?

- Are the schools used for induction selected? What about mentors?
- Do teachers feel they are adequately prepared for teaching in the schools in which they are placed, not only during formal induction (if this exists) but also during their first school placement as a certified teacher?

5. **License to practice**

- Is there a formal licensing process?
- If so, who undertakes this?
- How are prospective teachers assessed?

6. **Performance management of teachers**

- Is there a formal performance management system?
- If so, how does it work?

7. **Continuous Professional Development (CPD)**

- Is CPD formal (in terms of teachers being required to acquire CPD points over a certain period) or is it ad hoc?
- If CPD is formal, how does it work, and is it linked to re-licensing?
- What types of programmes are typically offered (in-school/out-of-school, length, frequency, content)?
- Are these programmes research-based? If so, describe kinds of research evidence available and the findings.
- Describe the content and duration of the various programmes.

8. **Promotion**

- Does promotion depend on further training?
- If so, what types of training programmes are required (qualification types, content, duration)?
- If not, how are teachers promoted into leadership positions?