Teachers Are More Than ‘Supply’: Toward Meaningful Measurement of Pedagogy and Teachers in SDG 4

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1 Introduction

The significant improvement in school access (particularly at the primary level) is one success story of the Education for All (EFA) movement and the Millennium Development Goals (MDGs). However, many already marginalised children were left further behind during the global mass enrolment drive of the 1990s and early 2000s, and today half of the world’s children without basic skills in literacy or numeracy are actually *in* school, according to recent data from UNESCO (Rose, 2015). With the launch of the Incheon Declaration for Education 2030 in May 2015 and the Sustainable Development Goals (SDGs) later that year came a noticeable shift in the discourse, from an almost exclusive focus on expanding access to formal schooling to the improvement of the quality of education, specifically through the improvement of student learning outcomes. SDG 4 includes targets and corresponding indicators for basic literacy and numeracy achievement (Targets 4.1 and 4.6), for ‘relevant skills ... for employment, decent jobs and entrepreneurship’ (Target 4.4), and, finally, for ‘the knowledge and skills needed to promote sustainable development’ (Target 4.7). This emphasis on improving quality by improving learning outcomes has ignited an interest in teachers and teaching and, subsequently, has put teachers in a position of greater prominence on the SDG agenda in the form of a dedicated ‘means of implementation’ in Target 4.c: ‘By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States’ (UNGA, 2015b).

While some might view it as a promising development that teachers are included in the SDGs, in this chapter, we argue that *how* teachers are included in the agenda is a cause for concern for educationists and for the international community as a whole. To elaborate, Target 4.c is the only one of the 10 education targets to explicitly mention teachers, and it does so in reductive terms,

referring to them as a 'supply' and a 'means of implementation', rather than as active stakeholders in education (and as human beings in their own right, who may face discrimination and rights violations themselves). This view of teachers as merely a human resource input continues to dominate the discourse of international and national development policymakers and practitioners around the world. Such a view stands in contrast with the perspective of a burgeoning group of educationists who argue that teachers and teacher organisations should be included in the development of policies and agendas, and not just in the policies and agendas themselves (Ginsburg, 2012, 2017).

Our concerns are framed within a broader discussion around the measurement of progress in education. We engage with the emerging argument within the international educational discourse that it has become common practice to 'treasure what is easy to measure' (e.g., basic learning outcomes, enrolment rates, etc.), rather than to work toward ways to effectively 'measure what we treasure', no matter how challenging (Alexander, 2015). Looking at the current indicator framework intended to evaluate progress toward the SDGs at the global, thematic, regional, and national levels, we explore the extent to which the current SDG 4 indicator framework allows us to adequately measure progress relating to the role of teachers in the development agenda, and seek to understand the key barriers to and potential catalysts for effective measurement in this regard. We argue that, as the focus of the SDG agenda shifts from the global- and thematic-level toward regional- and national-level actors and action, a productive space has opened up for influencing the development of regional- and national-level indicators that conceptualise teachers as active stakeholders and rights-holders in education. Such indicators could focus on processes of teaching and learning, rather than the more easily quantifiable measures that have dominated the field to date. We contend that quality, inclusive, equitable education hinges on learning to treasure the world's teachers through measurement processes that build on the development of a range of quantitative and qualitative context-specific indicators.

2 Measuring Teachers

In order to contextualise our critical analysis of the measurement of teachers in SDG 4, we begin with a review of the scholarship on the measurement of educational progress, focusing on teacher performance and learning outcomes, and how this relates to the SDG agenda.

As 2015 – the target year for the MDGs and EFA – drew nearer, there was a growing realisation around the world that the overriding emphasis on access

to and enrolment in primary education in these global agendas had sidelined education quality. The finding that children who had been attending school for years had in many cases still not mastered the basics of literacy and numeracy (Rose, 2015) drew particular attention, but the limitation of the singular focus on enrolment was also evident in the dire conditions and facilities of the schools that many children were enrolled in, among other problems. The Incheon Declaration and the launch of the SDGs heralded a welcome shift in focus in the international educational discourse toward quality and the improvement of student learning outcomes, in part through the improvement of teaching. Unfortunately, however, much of the new international policy literature examines teachers and teaching in a narrow sense, emphasising ‘teacher qualification’ and ‘teacher performance’ (which is commonly gauged by looking at student achievement on formal assessment), rather than attempting to understand the complexities of teachers’ lives, experience, and ongoing education (Avalos & Barrett, 2013). As Alexander (2015, p. 255) points out, ‘Preferred evidence is top-down. It reflects the world, the preoccupations, the priorities, and the experiences of policymakers rather than those of teachers and children’. As with the MDGs, these priorities and preoccupations are also focused on what is easily quantifiable (Barrett et al., 2015; King, 2017; Rose, 2015). This focus on what is most easily quantifiable tends to favour certain types of indicators, namely relatively straightforward input and output indicators rather than more complex process indicators (Alexander, 2015), and leads to mismatched proxy indicators, where, for example, student test scores are used as a proxy for teacher performance,¹ or the proportion of qualified teachers is used as a proxy for the quality of the teaching force.² Even the post-2015 agenda, then, is dominated by indicators such as student/teacher ratios, literacy rates, and enrolment rates, while ‘non-quantifiable’ indicators associated with quality such as citizenship, values, and/or sustainability are crowded into the omnibus Target 4.7 on education for sustainable development. Actual processes of teaching and learning are largely ignored.

There is a perceived capacity to measure learning as a direct output of teachers’ work, and the subsequent emphasis on gauging the quality of the ‘human capital’ making up the teaching force, is one feature of a current neoliberal climate of global governance. This discourse of neoliberalism builds on free market-based ideals and economic principles to drive education improvement via blunt instruments of measurement (Ball & Olmedo, 2013). While the measurement tools employed within this governance regime – for example, standardised tests, teacher numbers and attendance/absenteeism, capital works, and student/teacher ratios – can provide some useful data (Bold et al., 2017), the positive and productive impact of neoliberal policies and evaluation measures on education, educational outcomes, and teacher capacity are limited.

Attempting to measure teacher quality through primarily quantitative proxy indicators is unlikely to build a deep picture of the conditions and circumstances under which teachers are working, including their personal and professional support networks, the extent of their own schooling, initial teacher training and their ongoing professional development, the availability of consumable resources, housing, contractual status, and reliable (and at least adequate) salaries, among many other factors. Also missing from current analyses of teaching quality are the perceptions and viewpoints of teachers themselves (see Akyeampong, Pryor, and Ampiah [2006] for a nuanced analysis of Ghanaian teachers' understandings of pedagogy, learning, and assessment, and a discussion of how active engagement and dialogue with teachers themselves can be used as a type of formative evaluation).

Rather than supporting education for a socially just and democratic society, neoliberal policies reproduce an economic market ideal of competition, one aspect of which is creating illusions of choice that contribute to a narrative of competitive educational systems. In such systems, with their educational 'winners' and 'losers'; parents are positioned as having a 'choice' to decide which school is most desirable for their child (Angus, 2015; Connell, 2013; Ndimande, 2016). This education 'market' plays out differently across the world. In many high-income countries, it is evident in the organisation of teacher appraisal around a performance goal structure, where teacher performance is evaluated based on student scores on standardised tests (Skaalvik & Skaalvik, 2017). This approach to teacher evaluation is often tied to performance pay schemes, where teachers' bonuses (and, in some cases, salaries) are awarded based on their 'value added' to student learning, which is measured by looking at student test scores, as, for example in the case of the recent Gates Foundation's Intensive Partnerships for Effective Teaching initiative (Stecher et al., 2018). It has been pointed out that it is actually not possible to objectively evaluate teacher performance, that it is unfair to hold only teachers accountable for student learning, and that teacher motivation and cooperation might be adversely affected as a result (Bramwell, Anderson, & Mundy, 2014).

Also typical in high-income countries is the use of international standardised testing, such as the Programme for International Student Assessment (PISA) and the Trends in International Mathematics and Science Study (TIMSS), in combination with national school comparison websites and reports, such as My School in Australia, and school league tables in the UK. Such websites tend to be populated with decontextualised, disembodied data from national standardised tests. Using standardised testing as a proxy for learning or school quality while apportioning blame for poor outcomes to individual schools

and teachers rather than systemic ills or injustices perpetuates, and can even increase, schooling inequalities (Gable & Lingard, 2013).

In low-income countries, educational gaps have been further emphasised, in part through the neoliberal structural adjustment programmes of the 1980s and 1990s, where international loans were disbursed only if certain conditions were met by receiving governments (Connell, 2013). These structural adjustment policies aimed to achieve macroeconomic stabilisation by downsizing public expenditure, privatising public utilities, and liberalising markets. Educational changes instituted as a result of structural adjustment included a concentration of public investment at the primary level, cuts to the number of civil servants, the fostering of a climate more receptive to private education provision, the decentralisation of education systems, and increased contributions by parents to offset the costs of educational infrastructure and resources (Mundy and Verger, 2015). Subsequently, and in keeping with the development agendas of the time, education spending was directed at promoting educational expansion at the primary education level, with enrolment rates used as the primary indicator of progress. This emphasis on expansion masked significant inequalities in education provision, as wealthier families were in a better position to ensure the quality of their children's schooling, and children from poorer families left to attend underresourced and overstretched government schools, where qualified teachers were not guaranteed, if they attended at all. This legacy of inequality continues today.

It should be noted that neoliberalism, with 'its central dynamic not within the metropole, but in the *relation* between metropole and periphery' (Connell, 2013, p. 101), has had another consequence for the international education development agenda: Knowledge and expertise on education and development tend to flow from high-income to low- and middle-income countries, regardless of their relevance and quality, and rarely in the opposite direction (Akyeampong et al., 2006; Connell, 2007; Pence & Ashton, 2016). In fact, despite the problems associated with teacher evaluation based on performance goal structures and value-added models that is currently favoured by many high-income countries, a recent rigorous review of the political economy of education systems in so-called developing countries recommends 'formal examinations of students to provide a basis for assessing school performance' and 'serious performance-based evaluations of teachers' as part of the structural changes needed to bring about positive educational reform (Kingdon et al., 2014, p. 52). In other words, the chances that low- and middle-income countries will be given adequate space and resources to sustain their own locally sustainable programmes without facing competition from imported solutions from high-income countries are slim (Masko & Bosiwah, 2012), and the chances that high-income countries will look to low- and middle-income countries for ideas are even slimmer.

Marginalising the systemic and institutional realities of teachers' personal and professional lives through restrictive measurement does the classic neoliberal work of shifting focus from the social and organisational structures, cultures, and resources teachers need to do their work effectively, to individual teachers and their perceived individual and autonomous commitment and capacity. In other words, while the blunt neoliberal measurement tools may provide some useful evidence for 'big picture' outcomes, they are unlikely to provide much in the way of evidence for what forms of support teachers need to improve student learning. For this information, teachers, teacher educators, and governments need to work together to collaborate/research and build locally sustainable programmes for capacity building and change. However, as has been alluded to earlier, teachers are very rarely asked for input as active participants in educational processes, even when it would seem appropriate to do so. A case in point is a recent World Bank report, entitled *What Do Teachers Know and Do? Does It Matter? Evidence from Primary Schools in Africa*. The authors used 'data derived from direct observations, unannounced visits, and tests' (Bold et al., 2017, p. 2) to determine how much time teachers spend teaching, if they have relevant content knowledge and skills, if they have pedagogical knowledge and skills, and the extent to which these knowledge and skills bases matter. However, at no point do they actually ask teachers for input or seem to consider the impact their evaluations are having on the teachers in question. As Schweisfurth (2015, p. 259) notes, 'Classroom interactions are at the heart of pedagogy, and any effort to improve or to evaluate the outcomes of these processes generates its own set of interactions, and shapes the priorities and identities of teachers and learners'. In the UK, Ball (2003) and Ball and Olmedo (2013) argued that performing 'teaching' within an environment of surveillance and measurement entails personal and professional costs for teachers. In other words, when the processes of teaching and learning are ignored in evaluations, and teachers are treated as inputs/resources to be assessed 'objectively' for quality by external experts, their ability to do their jobs well is significantly constrained. This performance culture has led to a 'controlled or compliant professionalism' among teachers, who tend to be more conservative and risk-averse, and are unlikely to view themselves as active agents of development, able to 'contribute to the production and co-production of new knowledge about practice in order to improve it' (Sachs, 2016, p. 424).

Paragraph 9 of the Incheon Declaration, which replaced the 2000 EFA Declaration and attempted to shape the SDG on education, makes an important step forward in this regard, resolving to 'ensure that teachers and educators are empowered, adequately recruited, well-trained, professionally qualified, motivated and supported within well-resourced, efficient and effectively governed systems' (WEF, 2015, p. 8). This is a particularly noteworthy improvement given

that, while teachers were mentioned a number of times in the 2000 EFA Declaration, for example, in the framing document, where ‘governments, organisations, agencies, groups and associations represented at the World Education Forum’ pledged to ‘enhance the status, morale and professionalism of teachers’ (WEF, 2000, p. 8), there were no explicit references to teachers and teaching in the main text of the six EFA goals.³ However, teachers are still relatively marginalised in the overall SDG agenda. The scant attention paid to teachers in both past and current agendas is puzzling even from a more neoliberal perspective that *does* treat teachers purely as inputs, given that they are – by far – the costliest input. After all, it is not uncommon for staff salaries to account for 90% of recurrent education expenditure or around 70% of overall expenditure.

Within the global education research community, the role of teachers is much more highly recognised and valued, as captured in the work of Akyeampong et al. (2006), Ball and Olmedo (2013), Schweisfurth (2015), and others. In the words of Alexander (2015, p. 254), ‘Without teachers there is no teaching, and without good teachers the learning potential of many children will remain untapped’. In recent years, we have seen significant innovations within scholarship demonstrating the effectiveness of student-centred pedagogy, or ‘learner-centred education’, in a range of contexts around the world. Yet, ironically, ‘pedagogy continues to be a neglected priority in discussions on the post-2015 agenda for education’ (Schweisfurth, 2015, p. 259) and the actual relationship between students and teachers is largely ignored.

Based on the research demonstrating the effectiveness of learner-centred education, policymakers and practitioners have tended to oversimplify learner-centred education as meaning the polar opposite of ‘teacher-centred education’, which has further contributed to a ‘learner-centric’ measurement of education and a failure to recognise the importance of teacher-centred planning and the key role for teachers as active ‘facilitator[s] of learning’ (Di Biase, 2019, p. 569). Further, while learner-centred approaches do important work in drawing attention to the rights of students (Schweisfurth, 2015) (see Chapter 16 by Luke Shore and Viktor Grønne), there is significantly less educational programming that is based on a view of teachers as rights-holders (Tao, 2013).

3 A Global Snapshot of the Current Status of the ‘Supply of Teachers’ Target

We now turn to an analysis of the current status of the ‘supply of teachers’ target and its corresponding indicators to provide a global snapshot. As previously

mentioned, Target 4.c is one of the three means of implementation targets presented for SDG 4. It represents a commitment to 'substantially increase the supply of qualified teachers' by 2030, focusing particularly on so-called 'least developed countries' and 'small island developing States'. Broadly speaking, recent data on teacher availability suggest a huge demand for teachers in order to meet Target 4.c. In 2016, almost 70 million new teachers were projected to be required to reach the 2030 education goals. Over 24 million teachers are needed at the primary school level, of which at least 21 million will be needed to cope with staff attrition, which is discussed in the following paragraphs. The remaining 3.4 million primary school teachers will be required to reduce the student/teacher ratio to 40:1. The additional number of teachers needed for secondary education is almost double that for primary. By 2030, at least 44.4 million teachers will be needed in secondary education: 27.6 million of these new recruits will replace teachers who will leave the workforce and 16.7 million will be needed to work with increased numbers of students projected to attend secondary schools while reducing the student/teacher ratio to 25:1 (UIS, 2016c, p. 1).

For both of these levels of education, teacher shortage is most acute in sub-Saharan Africa and Southern Asia. At the primary level, 26% of the total teachers needed are for sub-Saharan Africa, and 17% for Southern Asia. At the secondary school level, 25% of the 44.4 million needed are for Southern Asia and 24% for sub-Saharan Africa. In spite of the apparent shortage in both regions, there is a significant difference in the demand for teachers. That is, in sub-Saharan Africa, 38% of the 6.3 million teachers required for primary education will be recruited to staff new classrooms and the remaining 62% will be recruited as replacement for attrition. By comparison, in Southern Asia, over 90% of teacher demand for primary education is attributed to staff attrition and only 6% of new recruits will be used to staff new classrooms. For secondary education, 66% of teachers will be needed to staff new staff classrooms in sub-Saharan Africa relative to the 45% projected for Southern Asia (UIS, 2016c, p. 15).

Teacher shortage and attrition are not restricted to low- and middle-income countries. According to a recent European Commission report on teaching careers in Europe, most countries report shortages of teachers and an ageing teaching workforce (Eurydice, 2019). Further, some European countries faced challenges with insufficient numbers of students enrolling in initial teacher education and teachers leaving the profession.

Seven indicators have been developed to monitor progress toward Target 4.c. Four levels of indicators have been proposed to measure progress toward each SDG: global, thematic, regional, and national (Sachs-Israel, 2016). The global level indicators are a small set of globally comparable indicators developed by

the Inter-Agency Expert Group on SDG Indicators and to be used for monitoring all the goals. Eleven of these indicators are listed under the education goal SDG 4. The thematic indicators are a broader set of indicators developed by the Technical Advisory Group on Education Indicators (TAG), a multistakeholder group that includes teacher representation, which was connected with the EFA Steering Committee. The thematic indicators are based on five criteria: relevance, alignment with target concepts, regular data collection feasibility across countries, ease of communication, and interpretability. There are 43 thematic indicators for education, of which the 11 global indicators are a subset (Sachs-Israel, 2016).

Both global and thematic indicators are predominantly quantitative in nature and focus on inputs and outputs, rather than the key processes of teaching and learning. While discussions around the indicators occurred alongside the development of the 17 SDGs and 169 accompanying targets (and, to some extent had been going on long before the development of the SDG agenda), the global and thematic indicators were formally proposed and decided only after the launch of the goals and targets, and the regional and national ones are still in various stages of development across the world.

Of the seven indicators developed to monitor Target 4.c, one is global and six are thematic. The precise wording of these indicators has evolved over time. By October 2015, those developing and negotiating the indicators had expressed them in terms of percentages of teachers who were 'qualified, trained, motivated, and supported' (UNESCO & UIS TAG, 2015, p. 10; see Table 10.1). That formulation was repeated in the SDG 4 Framework for Action (FFA), published in December 2015 (WEF, 2015, pp. 74, 81).

By October 2016, at the second meeting of the Technical Cooperation Group for SDG 4 held in Madrid, the present formulation of SDG 4 indicators emerged (UIS, 2017j, pp. 16, 56). That formulation is reproduced in authoritative guidance issued by UIS in February 2018 (UIS, 2018e, p. 43; see Table 10.2). The process of indicator development was, frankly, messy, with technically sound concepts sometimes subordinated to the need to achieve political agreement. For example, the original concept of percentages of qualified, trained, motivated, and supported teachers, is not explicitly addressed by the resulting, current indicators.

The global indicator for Target 4.c is Indicator 4.c.1, formerly 39 (see Tables 10.2 and 10.1, respectively), a stand-alone indicator that is to be used to evaluate progress at the global level. The remaining thematic indicators for Target 4.c are also intended to be comparable across countries, but they broaden the scope of what is being considered, aiming to assess multiple aspects of the teaching profession.

TABLE 10.1 Indicators to monitor Target 4.c, October 2015, 4.c. By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing states

Concept	No.	Indicator	Equity	Sex	Location	Wealth Available	Coverage	Proposed global indicators	Comments
Qualified	37	Percentage of teachers qualified according to national standards by education level and type of institution	Yes	X	X	Yes			Common standards will need to be agreed that can be applied to both public and private institutions Qualified teachers have at least the minimum academic qualifications required by national standards for teaching a specific subject
	38	Pupil/qualified teacher ratio by education level	No			Yes			

(cont.)

TABLE 10.1 Indicators to monitor Target 4.c, October 2015, 4.c. By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing states. (cont.)

Concept	No.	Indicator	Equity	Sex	Location	Wealth Available	Coverage	Proposed global indicators	Comments
Trained	39	Percentage of teachers in (i) pre-primary; (ii) primary; (iii) lower secondary; and (iv) upper secondary who have received at least the minimum organised and recognised teacher (i.e. pedagogical) training	Yes	X	X	Yes		TAG	Common standards will need to be agreed that can be applied to both public and private institutions
		pre-service and in-service required for teaching at the relevant level in a given country, by type of institution						UN	Trained teachers have received at least the minimum pedagogical training required by national standards to become a teacher
Motivated	40	Pupil-teacher ratio by education level	No			Yes			A methodology will be developed based on labour force data
	41	Average teacher salary relative to other professions requiring a comparable level of education qualification	No			1–3 years			The coverage of current data collections will be extended to all countries
	42	Teacher attrition rate by education level	No	X		1–3 years			

(cont.)

TABLE 10.1 Indicators to monitor Target 4.c, October 2015, 4.c. By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing states. (*cont.*)

Concept	No.	Indicator	Equity	Sex	Location	Wealth Available	Coverage	Proposed global indicators	Comments
Supported	43	Percentage of teachers who received in-service training in the last 12 months by type of training	No	X		3–5 years			A tool to assess the incidence, duration and content of training will be developed

Notes:

Column 1 lists the four concepts relevant to Target 4.c – qualified, trained, motivated, and supported – to which each indicator corresponds. As part of the focus on equity, columns 4–7 indicate whether only the national average or aggregate value of an indicator can be tracked or whether, as in the majority of cases, the indicator can be disaggregated by particular individual characteristics (sex, location or wealth). Column 8 indicates whether an indicator is currently available and, if not, how long it might take for an indicator to be developed. If an indicator is currently available, column 9 indicates the current extent of country coverage. Column 10 identifies those indicators that were proposed by the UN system to the LAEG-SDGs as potential global reporting indicators and identifies the two cases where the tag recommends an alternative selection. Finally, column 11 offers some initial thoughts on outstanding, indicator-specific issues, which have been taken into account and need to be addressed.

SOURCE: UNESCO AND UIS TAG (2015, P. 10)

TABLE 10.2 Indicators to monitor Target 4.c, October 2016 onwards

Target 4.c By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States

4.c.1	Proportion of teachers in: (a) pre-primary education; (b) primary education; (c) lower secondary education; and (d) upper secondary education who have received at least the minimum organised teacher training (e.g., pedagogical training) pre-service or in-service required for teaching at the relevant level in a given country, by sex
4.c.2	Pupil-trained teacher ratio by education level
4.c.3	Percentage of teachers qualified according to national standards by education level and type of institution
4.c.4	Pupil-qualified teacher ratio by education level
4.c.5	Average teacher salary relative to other professions requiring a comparable level of qualification
4.c.6	Teacher attrition rate by education level
4.c.7	Percentage of teachers who received in-service training in the last 12 months by type of training

SOURCE: UIS (2018E, P. 43)

The four concepts are still covered by these seven indicators: qualification (4.c.3 and 4.c.4, formerly 37 and 38), training (4.c.1 and 4.c.2, formerly 39 and 40), motivation (4.c.5 and 4.c.6, formerly 41 and 42), and support (4.c.7, formerly 43), but not as explicitly. Despite the changed wording, it is clear that some care has been taken to look beyond the notion of an adequately qualified ‘supply’ of teachers, as called for in the target: Not only does this set of indicators draw a distinction between ‘qualification’ and ‘training’, where the former refers to the academic qualification and the latter to pedagogical preparation, but it includes measures of teacher ‘motivation’ and ‘support’ in recognition of the fact that good teaching is not just dependent on having qualified and trained teachers but also on whether or not those teachers feel motivated and have adequate support in the form of in-service teacher education. In fact, the 2016 UNESCO Global Education Monitoring (GEM) Report provides an explanation for this broadened monitoring scope:

There has been dissatisfaction that the SDGs treat teachers as a ‘means of implementation’, which risks underestimating the profession’s

fundamental contribution to the provision of good quality education and an enabling learning environment. The formulation of the target is weak, with a limited conception of key teacher issues.

The GEM Report addresses the monitoring implications of the more general commitment, expressed in the Education 2030 Framework for Action, to 'ensure that teachers and educators are empowered, adequately recruited, well-trained, professionally qualified, motivated and supported'. (UNESCO, 2016b)⁴

To assess the level of qualification among teachers, two indicators are proposed (4.c.3 and 4.c.4): Indicator 4.c.3 measures the percentage of teachers that are qualified, and Indicator 4.c.4 measures the ratio of pupils to qualified teachers. Two indicators are also proposed to assess the level of training (4.c.1 and 4.c.2). Subtle changes to the wording were introduced between 2015 and 2016: The former Indicator 39 referred to both 'organised and recognised' training. The current Indicator 4.c.1 mentions only 'organised' training. The loss of recognition as a feature of desirable teacher training is unfortunate. On the other hand, the training was described as 'teacher (i.e., pedagogical) training' in Indicator 39; by 2016 this morphed into 'teacher training (*e.g.*, pedagogical training)' in Indicator 4.c.1 [emphasis added]. This represents an acknowledgement that teacher training includes pedagogical training but is much more than that, which is a positive development. The current Indicator 4.c.1 requires measurement of teacher training 'by sex' rather than 'by type of institution', which demands at least a minimal examination of gender concerns.

The last two concepts – motivation and support – are measured by teacher salary (Indicator 4.c.5, formerly 41) and attrition rate (Indicator 4.c.6, formerly 42) in the case of motivation, and in-service training (Indicator 4.c.7, formerly 43) in the case of support. The feasibility of accurately measuring these indicators has been subject to much debate.

Interestingly, as the UNESCO GEM Report for 2016 highlighted, while Target 4.c focuses on 'qualified' teachers (which traditionally refers to teachers who have the minimum academic qualifications, regardless of the field of study, expected for the education level to be taught), the corresponding global indicator focuses on 'trained' teachers (which traditionally refers to professional training in education). This has led to some confusion in the international education community, though a choice to emphasise professional teacher training rather than educational attainment in monitoring the 'supply' of teachers seems a logical one.

Although data are increasingly available on teacher training, there are concerns as to the extent to which this indicator can be truly comparable across countries (UNESCO, 2017b). That is, there is yet not a standard level of training, pre-service or in-service, that is demanded by the international community. Countries determine their own standards of teaching, prerequisites for teacher training, and pathways into teaching, and these can also vary within countries, for example, depending on whether teachers will be entering the public or the private education sector. When it comes to refugee education, a meaningful measure seems even more out of reach: In her global review of the state of refugee education, Dryden-Peterson (2011) notes that, at the time, refugee teachers were defined as ‘trained’ if they had had at least 10 days of training.

With such differences in policy and practice, there is doubt as to whether it is feasible for the international community to derive a meaningful comparison between countries in this regard. As the 2017/18 UNESCO GEM Report puts it: ‘Even the concept of a common definition of training requirements seems too ambitious, given the varied challenges teachers face worldwide’ (UNESCO, 2017b, p. 244). In fact, it could be argued that teacher training *should* look different in different parts of the world, precisely because of these contextual variations, and that, therefore, attempting to agree on a rigid common global definition of requirements for teacher training would seem counterproductive.

A similar reservation can be expressed about the indicator that measures qualification. This too is based on standards set in each country and, as such, presents heterogeneous definitions of what constitutes a ‘qualified’ teacher (UIS, 2017h). There are wide variations between countries in the process of qualification to be a teacher. Differences exist, for instance, in the admission requirements, duration of a programme, curriculum content, delivery modality, amount of school-based practice, and forms of assessment (UIS, 2017h). A further problem that compounds this complexity is that not all countries have a clear distinction between ‘trained’ and ‘qualified’, as alluded to in the previous paragraph. Some countries combine both the academic qualification with the professional training while others treat the two pathways as separate. Evidence from the UIS database shows that 81 countries reported data on both qualified and trained teachers for primary education and 61 countries reported data for the same indicators for secondary education (UIS, 2017h, p. 1). Of these 81 and 61 countries, 31 and 15, respectively, defined qualified teachers as being the same as trained teachers. Discrepancies between the supply of trained and qualified teachers are most prevalent in low-income countries. In Jamaica, for example, 15% of secondary school teachers are categorised as ‘qualified’ compared to 85% of teachers that are categorised as ‘trained’ (UNESCO, 2017b).

This contrasts with Niger where 100% of teachers are 'qualified', and 15% are 'trained'.

According to Table 10.1, all of the indicators for training and qualification (4.c.1 to 4.c.4, formerly 37 to 40) are technically available. However, according to the 2017 GEM Report, which has as its mandate to monitor progress on all of the SDG 4 targets, not all countries report data for qualified classroom teachers. The report found that from 2016 to 2017 the number of countries reporting data for qualified classroom teachers had increased from 40 to 48% at the primary level and from 29 to 38% at the secondary level. The number of countries reporting data for trained teachers changed only modestly between the two years: data were available for 47% of the 209 countries in 2017, relative to 46% in 2016 at the primary level; for trained teachers at the secondary level, data availability was slightly lower in 2017 than in 2016 (dropping from 36 to 35%). Limitations in data availability make it difficult to present a reliable estimate of global, regional, or subregional averages. Because of the earlier emphasis on primary education in the MDGs, data availability on indicators related to primary education is greater than for preprimary or secondary education. Though perhaps not consistently measured, data for the global indicator on improving the supply of 'trained teachers' (4.c.1) is more readily available because this had been previously reported under the MDG/EFA Framework by some countries, particularly in terms of the ratio of pupils to trained teacher at the primary level. Thus, in the new GEM Report, it has been possible to generate a global average for trained teachers for primary education but not the other levels of education. Globally, according to available data, primary school teachers are more likely to have been trained (86%) than those at the preprimary (36%) and secondary levels (45%) (UNESCO, 2017b, p. 244).

When it comes to teacher training and qualification, the indicators for Target 4.c only measure the supply of qualified teachers at the early childhood, primary, and secondary levels: there is no indicator on qualified teachers at the higher education level and for TVET and adult education (see Chapter 6 by Stephanie Allais, Elaine Unterhalter, Palesa Molebatsi, Lerato Posholi and Colleen Howell and Chapter 15 by Stephanie Allais and Volker Wedekind). Crucially, there is no indicator on qualified and trained teacher educators, even though in many countries teacher educators lack adequate preparation to be training future teachers (Akyeampong, 2017; Iwakuni, 2017). Nor are there any indicators on the quality of teacher education institutions and programmes, despite the fact that there is a strong link between the quality of initial teacher education and the health of the education system (Livingston, 2016). Further, despite the fact that it is also listed as a means of implementation, Target 4.b makes no special mention of scholarships for teacher education, focusing

instead on information communications technology (ICT), engineering, and science:

By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries. (UNGA, 2015b)

This latter point is particularly problematic, as the mass expansion of ECE, secondary education, adult education, and higher education implied by the rest of SDG 4 will require a significant increase in the number of qualified teachers, especially if quality education is to be ensured.

It is even more difficult to show what the current state of progress is on the indicators for motivation (4.c.5 and 4.c.6) and support (4.c.7). There is a paucity of data since many countries do not regularly and systematically collect data on remuneration packages (4.c.5), attrition/turnover (4.c.6), and in-service training (4.c.7). The OECD is the only organisation worldwide that systematically collects data on teacher salaries. Even so, out of the 35 OECD countries, recent data shows that only 24 reported data on teacher salaries for primary and secondary education, and only 21 reported data on teacher salaries for preprimary education. From the available evidence, teacher salaries increase with the level of education at which they teach. However, overall, their income is significantly lower than other workers who hold commensurate qualifications (UNESCO, 2017b, p. 245). Similar observations have been made in Latin America, where between 1997 and 2007, teacher salaries were found to be significantly lower than in other professions (Mizala & Nopo, 2016, p. 20). Collecting data on 'average' teacher salaries relative to other professions requiring similar educational qualifications may not prove useful in the long term, given the typically large disparities in pay between beginning teachers and senior teachers (Crehan, 2016), and between teachers working in the private and public sectors.

Data availability for teacher attrition (Indicator 4.c.6) is also limited, largely because teacher attrition is a complex, nonlinear phenomenon that will look different in different country contexts. Currently, this indicator is only available as an indirect estimate. Specifically, it is derived from comparing the reported number of teachers in successive years, as well as new entrants into the teaching force. Again, countries are more likely to report on this phenomenon in primary education, although only 26 of 209 countries reported data, according

to the 2017 GEM Report (UNESCO, 2017b, p. 25). Among the countries reporting data on attrition, it is unclear whether the data submitted distinguish between temporary and permanent exit from the teaching profession. Further, attrition data are generally not disaggregated according to teacher background characteristics such as age, sex, or location. Finally, this indirect estimate does not allow for the potentially important distinction between teachers leaving the profession due to retirement (which plays a key role in teacher attrition), death, emigration, family commitments, further study, or a change of profession. In Sweden, for example, many teachers leave the profession temporarily and return years later after undertaking individual efforts to improve their teaching abilities (Lindqvist, Nordänger, & Carlsson, 2014). With respect to this question, there is practically no internationally comparable data available. In contrast to some other indicators, however, there are data available at some level of every education administration on public school teachers who quit and stop drawing a government salary, which typically distinguish between retirement and resignation. While this leaves some measurement issues unresolved, such as the differentiation between those who emigrate but do not leave the profession, consolidating these available data would go a considerable way toward developing a model for global attrition flows, especially since these potentially follow one of the more predictable patterns in education planning.

Crucially, teacher recruitment often follows a cyclical pattern. This means that retirements go up and down, reflecting ebbs and flows in recruitment 30 to 40 years earlier. Even without administrative data on actual retirements, there appears to be an unexploited opportunity to examine the overall age profile of teachers in international databases of censuses and/or large-scale household surveys. The same applies to other important characteristics of teachers, such as their family status. Studies from low- and middle-income countries have shown that the background characteristics of teachers as well as their working conditions can have a significant bearing on whether they remain in or exit the teaching profession (Akyeampong & Stephens, 2002; Avalos & Valenzuela, 2016). Being able to predict attrition flow and a greater availability of more detailed data, therefore, would be important to determine future teacher recruitment needs (to replace retiring teachers) and to understand other reasons for teacher attrition, which could then be addressed through policy solutions.

An issue that relates to both Indicator 4.c.1 (trained teachers) and Indicator 4.c.6 (attrition) is the complete absence of data on individuals who trained as teachers in the past, including those who are not currently in the profession. This figure would include both individuals who failed to secure a teaching post during a trough in the recruitment cycle mentioned previously, as well as

others who eventually left the profession. Such a figure would be relevant not only because it would provide a more accurate basis for an extrapolation of the potential teacher training capacity than the actual growth rate in the teaching force does, but also because, where this capacity is insufficient to meet the demand for teachers implied by universal primary and secondary schooling by 2030, at least some of this dormant pool of teachers may be reactivated. Broadly speaking, in global educational databases, data coverage relating to teachers is very limited, even when it comes to more straightforward, quantitative indicators. The basic indicators available are the number of teachers by education level, and the percentage of teachers that are female, trained, qualified, and leaving the teaching profession each year (i.e., the attrition rate), respectively. Even among these elementary pieces of information, there are significant gaps in coverage, as discussed above. The most detailed and nuanced data are available for Africa and, more recently, a handful of countries in East and South West Asia, for which UIS in 2014 included additional queries in its standard country questionnaires. For Africa, this includes the possibility of identifying new recruits as well as new teacher training graduates. For East and South West Asia, in addition to these data, information is also available about contract type and average years of teaching experience.

The ability to monitor such indicators would be crucial to examining the implications of estimates of the need for new teachers to meet all the targets for SDG 4 (UIS, 2016c). Not least, a massive recruitment drive may substantially change the balance of experienced to novice teachers, but may also be used to justify the practice of increasing the share of contract teachers, both potentially detrimental developments that call for close monitoring.

In sum, there is a historic dearth of systematic global data collection on key dimensions of teachers' roles within the education system, and next to none on their characteristics as people. There are some promising steps toward more detailed data collection. However, this has been limited to a small number of countries so far and is still severely restricted in terms of the variables covered.

4 Discussion

The global and thematic indicators proposed to monitor progress on Target 4.c broadened the scope of what was seen as a weakly formulated, narrowly defined target on teachers, by attempting to address more complex teacher issues beyond training and qualification, including motivation and support (UNESCO, 2016b). However, these seven indicators are all quantitative and

are insufficient on their own to serve as proxy indicators, particularly in the case of the indicators for the concepts of motivation and support. Anyone who has spent any time in a classroom will attest that to determine whether or not teachers feel sufficiently motivated and supported is dependent on more than an understanding of teacher salary (Indicator 4.c.5), attrition rate (Indicator 4.c.6), and access to in-service training (Indicator 4.c.7). For example, when it comes to in-service training, research suggests that teachers are often reluctant to participate in the most common continuing professional development (CPD) activities, including workshops and short courses, as they take up time in an already overcrowded schedule with very little pay-off (Geldenhuys & Oosthuizen, 2015). According to the research, the opportunity to work with an experienced mentor is often much more highly valued by beginning teachers than more formally organised CPD (Avalos & Valenzuela, 2016). Improved motivation and adequate support are also dependent on teachers' relationships with other key education support personnel who make up the complex social fabric of schools, including principals, administrative staff, school counsellors, teaching assistants, school management committee members, cooks, cleaners, and bus drivers, to name a few. These key education support personnel are noticeably absent from the SDG agenda.

The data required to track progress according to these seven indicators are not always readily accessible in the majority of country contexts, and even where they are, often they are not disaggregated (or disaggregated only by sex and location, but not by wealth). Finally, none of the indicators take national hiring processes into account, when, as discussed in a recent review of the literature on alternative teacher hiring practices in low- and middle-income countries (Chudgar, Chandra, & Razzaque, 2014), teacher staffing policies in many of these contexts are in flux. While many 'contract teachers' who work in these contexts are undertrained or underqualified, there is little reliable information about these teachers and their impact on learning outcomes. This adds a further level of complexity to the process of data collection on teachers. For a small number of years and some African countries, UIS collected and published data on the proportion of teachers who were newly recruited and their training status, but this exercise has not been updated recently.

The trend toward casualisation may also have an impact on the attractiveness of teaching as a profession for potential future recruits, and hence on future learning, and raises important questions about the status of teaching as a profession and about teachers' labour rights, issues that have been raised previously in the international community, though not sufficiently represented (cf. the ILO/UNESCO *Recommendation Concerning the Status of Teachers* [ILO and

UNESCO, 1966]). Rather than focusing solely on teachers as a system input – or means of implementation – to achieving education for all, a direct link must be made between the role of teachers and SDG 8, which calls for ‘full and productive employment and decent work for all’ (UNGA, 2015b). We noted at the beginning of this chapter that Target 4.c is the only one of the 10 SDG 4 targets to mention teachers. Further, outside of the seven indicators for Target 4.c, teachers/teaching are only mentioned once in the remaining 36 indicators for Target 4.7. Global Indicator 4.7.1 aims to measure the extent to which (i) global citizenship education and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in: (a) national education policies, (b) curricula, (c) *teacher education*, and (d) student assessment (UIS, 2018e, p. 42, emphasis added).

In other words, in spite of the attempts to broaden the scope of measurement for the dedicated teachers target, there appears to be no scope for measuring what teachers actually do – i.e., teaching⁵ – and their relationship to education quality (Alexander, 2015; Rose, 2015). This highlights a significant problem raised by Faul in her analysis of global policy actors’ narratives of EFA in relation to the post-2015 agenda, that while there is ‘seeming consensus that access to school should be complemented with quality there is ongoing competition as to what “quality” may mean’. Faul further argues that ‘policy actors can mobilise the metanarrative of “quality” to legitimise and justify their policy preference’ (Faul, 2014, p. 16). In fact, targets 4.1, 4.2, and 4.3 all call for ensuring ‘quality’ education at various levels, and yet, despite burgeoning evidence demonstrating that teachers and teaching are fundamental to ensuring education quality (Mendenhall et al., 2015), the corresponding indicators are all to do with student participation rates and student learning outcomes, with a heavy emphasis on the cognitive dimensions of learning (especially literacy and numeracy). There are no corresponding indicators related to teachers or teaching.

While there are some regional and national initiatives and research underway that attempt to capture data on teachers and teaching, including teacher absenteeism, number of teaching hours and content knowledge, the data collection methods employed often involve observation of teachers, rather than interaction with them (see the research by Bold et al. [2017] discussed earlier, for example). These surveillance-style evaluations have led Schweisfurth and others to call for a more ‘interactionist perspective’ to education (Schweisfurth, 2015, p. 262), one which recognises that teachers are shaped not only by their teacher education programmes, as well as their interactions with each other and with their students, but also by how they are observed and evaluated

by the administration, the community, and researchers. A case in point is research conducted by Akyeampong and others involving Ghanaian teachers. They described how teachers admitted to 'dubbing' (recycling lesson notes) or 'computation' (imputing missing marks) to meet strict inspection requirements given time and other constraints, when unexpected visits were made by school inspectors. They note that, while these practices can be viewed as 'abuses of the system and evidence of incompetence ... if instead one works with the premise that teachers are potentially competent, but struggling to cope with difficult circumstances, [these practices] can instead be seen [as] a rational response to a burdensome and counterproductive system' (Akyeampong et al., 2006, p. 170).

Three points are worth noting here. First, some forms of evaluation and surveillance can actually lead to poor teaching practices. Second, qualitative data relating to the standards and processes of teaching within countries provide important context for quantitative measures. Third, teachers have a potentially powerful role to play in monitoring SDG 4 themselves, particularly as they were instrumental in work with the EFA Steering Committee, OWG deliberations, and TAG, as discussed by Antonia Wulff in Chapter 2. After all, the Ghanaian teachers actually admitted to these poor teaching practices but were then able to explore the reasons for this together with the researchers. In other words, the international community should include 'members of the teaching profession', not just in the language of their declarations but also in practice. It would be important to ensure meaningful inclusion by reaching out to teacher unions and other representative organisations.

5 Conclusion: Learning to Treasure the World's Teachers and Measure Accordingly

We have argued that teachers are a central and human part of the education system, that they are rights-holders and require ongoing professional communities and development. The current focus on quantifiable inputs and outputs – and attempts to find easily quantifiable proxy indicators – marginalise the human work of education, silencing teachers' need for an inclusive work environment, adequate resourcing, opportunities for collaboration and continuing professional development, and other forms of support (Sachs, 2016). As Sayed and Ahmed suggest, 'The post-2015 education agenda, whilst containing a welcome target on teachers that represents, at some level, a substantive advance in the current global education discourse, needs to pay more attention to ... [the d]ynamic process-oriented models of teaching and learning,

the continued foregrounding of pedagogy, and substantive engagement with diversity and context' (Sayed & Ahmed, 2015, p. 337).

SDG 4 and the Incheon Declaration represented a welcome shift in the development discourse, with potentially transformative language, foregrounding inclusion, equity, and quality. For Rose (2015, p. 290),

Successful goals and targets are easily communicated, such that they capture public concerns and provide a focal point for global mobilization and action. ... They should not be seen as an end in themselves but rather a trigger for action, spurring governments to identify and implement contextually relevant strategies that can achieve universal rights. An important advantage of internationally agreed goals and targets is that they transcend national politics, and so avoid shifting in priorities according to which party is in power.

As a whole, the SDGs do represent a powerful focal point for such global action, but the success of the agenda is dependent on the capacity of governments to identify and implement those 'contextually relevant strategies' that Rose highlights.

Now that the focus of the SDG agenda has begun to shift from the global- and thematic-level toward regional- and national-level actors and action, a productive space has opened up for influencing the development and implementation of these 'contextually relevant strategies', and, subsequently, the regional- and national-level indicators required to evaluate them. Burford, Tamás, and Harder (2016) discuss one promising model of engaging with local civil society organisations to improve the design of indicators for the complex SDGs. They describe how the conventional model employed by the UN process led to the development of 'rigid global-level indicator[s] with unclear local value'. Drawing from and synthesising the experience and expertise of a broad base of local-level stakeholders can lead to the development of a more meaningful 'reference "fuzzy framework" of slightly generalised proto-indicators suited for deep contextualisation locally' (Burford et al., 2016, p. 1). We would argue that a similar approach could be taken to developing indicators on the role of teachers and effective teaching in the SDGs.

Despite the transformative language used to articulate the overarching SDG 4 (Brisset & Mitter, 2017), Target 4.c and its corresponding indicators describe teachers from a purely utilitarian perspective, as a means to an end. As discussed extensively in this chapter, they are not even considered an active means to an end: not only are they referred to merely as 'supply', but there are no indicators designed to measure what teachers actually do in the classroom.

If we instead view teachers not only as a means to an end but as rights-holders and active partners in education, it allows us to take a more nuanced approach to further indicator development at the regional and national level. For example, a target such as Target 4.a, to 'build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all' could include indicators measuring how the learning environment is experienced by teachers, and, in so doing, ensure that 'inclusive, equitable, and quality education' extends to teachers as well (UNGA, 2015b).

Notes

- 1 See, for example, the Intensive Partnerships for Effective Teaching initiative, which used student test scores to determine how much a teacher has improved students' academic growth through a form of value-added modelling (Stecher et al., 2018).
- 2 As is the case with Target 4.c of the SDGs and its corresponding indicators.
- 3 The six EFA goals were as follows: Goal 1: Expand early childhood care and education. Goal 2: Provide free and compulsory primary education for all. Goal 3: Promote learning and life skills for young people and adults. Goal 4: Increase adult literacy by 50%. Goal 5: Achieve gender parity by 2005, gender equality by 2015. Goal 6: Improve the quality of education.
- 4 See <http://gem-report-2016.unesco.org/en/chapter/target-4-b-teachers/>
- 5 Not only are there challenges associated with collecting these data, but Target 4.7 significantly expands the remit of what teachers are expected to teach without providing much guidance, thus putting teachers under additional stress.