Evidence-based approaches to improving teachers' skills, in schools serving poor and marginalised communities

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Abstract:
In low and lower-middle income countries most children will reach the ‘end of primary-school age’ without having learned basic skills. The situation often worsens in secondary schools. Teaching quality is the most important factor in determining student learning outcomes, yet despite massive investment in teacher education, many teachers remain poorly prepared to address learners needs, regardless of whether they are fully trained, un- or under-trained. The UK Department for International Development (DFID) Education Policy 2018, in alignment with other donors, will support national efforts to “overhaul out-dated models of teacher training, drawing on evidence-based approaches to improve teachers’ skills which deliver for children, including those who are poor and marginalised”. Particular importance is given to “practical experience in the classroom and ongoing school-based support”. In this paper we seek to set-out a succinct summary of the evidence-base on effective approaches to improving teaching quality for the children of poor and marginalised communities, before practically considering how such evidence-based approaches are manifest across different programmes from Bangladesh and India, to Palestine and Zimbabwe. We provide a starting point for those wishing to understand, emulate or adapt such programme designs, by illustrating ‘how’ school-based support and open-learning have been used to improve teaching quality across a range of settings. Further in-depth practical advice is provided to those wishing to explore School-Based Teacher Development (SBTD) programme design and development, through the COL SBTD Blueprint and Toolkit (Moon, 2018).
**Introduction**

The UN Sustainable Development Goal for education (SDG 4) is ambitious, seeking to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". It includes targets to achieve universal primary and universal secondary education by 2030 but according to the first Global Monitoring Report, even in best-case scenarios these are very unlikely to be met within the next 40 years: ‘...the poorest countries will not achieve universal lower secondary completion until the end of the twenty-first century’¹. The report contains three stark messages “in order to meet the SDG for education, we need new approaches; we must act urgently; we must fundamentally change the way we think about education”. Whilst there are many aspects to this challenge², this paper focuses upon approaches to improving pedagogy in low- and middle-income countries through teacher education and development.

It is well-established that teachers are the most important determinant of educational quality³⁻⁶. Yet despite massive investment in traditional teacher training programmes, the majority of children in low and middle-income countries leave primary school without having become proficient in basic literacy or numeracy skills⁷⁻⁸. Moon eloquently summarises the findings of a recent World Bank study of education in Sub-Saharan Africa⁹:

“…a study covering 40 per cent of the child population showed that after three years of public schooling, almost half of all students could not read a simple word. Seventy per cent could not read all the words in a basic sentence and only one child in seven could read a simple paragraph and infer meaning from it. One in five children could not recognise numbers and half of all children could not order numbers. Nearly half of all children could not manage double-digit addition”¹⁰

We urgently need new and more effective approaches to teacher education and development, with practical impacts on teaching and learning¹¹. There is a growing readiness to consider school-based approaches to teacher development, as reflected in the new UK Department for International Development (DFID) education policy¹², which states when considering proposal for future work:

“We will support uptake of the following evidence-based approaches for quality teacher training, recognising that they will be implemented differently across contexts:

- **Practical experience in the classroom and ongoing school-based support**, instead of one-off theoretical training.
- **Assessment of teacher knowledge and performance rather than reliance on credentials**, backed by intensive remedial interventions where teachers fall short of minimum standards. We will support decision-makers to explore the potential of education technology to enable delivery of remedial education at scale, as part of a blended learning approach which also includes face-to-face support. ³⁻⁴
- **Teaching strategies proven to work well for poor and marginalised children**, such as teaching at the right level for each student through an interactive approach, regular assessment and where practical teaching in small groups, rather than focusing on the best performers or sticking rigidly to curricula that are too advanced for many students. We will also support education systems to ensure that a growing number of teachers have the skills and resources to support poor and marginalised children, including hard-to-reach girls, children with disabilities and children affected by crises. This includes developing the teaching workforce so that it reflects the diverse cultural and linguistic groups present in a country, enabling children to be taught in a familiar language, and ensuring those teachers are willing and able to challenge discriminatory social and gender norms.
- **High quality teaching materials**, including open digital resources customised for different contexts, accessible via mobile phone.”

In this paper we seek to set out a succinct summary of the evidence-base on effective approaches to improving teaching quality for the children of poor and marginalised communities, before practically considering how such evidence-based approaches are manifest across different programmes from Bangladesh and India, to Palestine and Zimbabwe. We provide a starting point for those wishing to understand, emulate or adapt such programme designs, by illustrating 'how' school-based support and open-learning have been used to improve teaching quality across a range of settings. [Complementing the COL (2018) framework and toolkit for SBDT].

**Recurrent themes in recent international literature reviews of teacher development**

There have been a number of systematic literature reviews have been conducted over the last decade, examining the characteristics of teacher development interventions in low- or middle-income countries, that are associated
with improved classroom practices and learning outcomes. These reviews are summarised briefly here and are considered critically and in more depth elsewhere10,11.

A DFID systematic review of strategies to improve the practice of un- or under-trained teachers12 found that those with the most convincing evidence of change all used open-learning self-study materials for use by teachers in school, with support from local peers or experienced teachers (within or between schools) and regular opportunities to discuss teaching practices and experiences. Effective CPD programmes did not use one-off ‘out of school’ meetings as training events, but typically had initial workshops to introduce the programme approach, followed by subsequent workshops providing opportunities to discuss teaching methods in the light of real classroom experience. Effective programmes also used school visits, including observations of teaching practice, to support and monitor implementation in classrooms.

At the same time, another DFID systematic review examining teacher education in developing countries13 also highlighted the importance of co-learning and peer support between teachers as a primary mechanism for teacher development, operating ‘...through informal groups, formal clusters or pairs of teachers at the same school’. Effective programmes set out to develop teachers’ practice through a combination of regular teacher development meetings, classroom observations and feedback on practice from mentors or peers/facilitators. Several of the studies reviewed also indicated the role head teachers could play either as promoters of, or obstacles to, teachers’ implementation of new pedagogies promoted by teacher development programmes.

An extensive review of the literature on teacher development for school improvement was carried out with a focus on Latin America14, that identified four relevant and effective strategies:

- Providing guidance on specific teaching strategies/approaches, with accompanying materials supporting delivery of a well-defined daily curriculum
- Filling knowledge-gaps or deepening teachers’ expertise in their subjects
- Improving teachers’ classroom effectiveness through lesson planning, efficient use of class time, strategies for keeping students engaged with more effective teaching techniques
- Structured opportunities for peer collaboration, enabling small groups of teachers to observe and learn from each other’s practice, within or between schools.

A major World Bank study of in-service teacher professional development sought to examine the most rigorous quantitative and qualitative research in this area over the last decade, concluding that and concluded that in-service programmes were most effective at improving student learning when they:

- Were clearly related to the curriculum;
- Provided detailed guidance or instructions/resources for classroom practice;
- Provided ongoing face-to-face support within or between schools
- Involved groups of teachers in co-learning within or between schools.

Although the characteristics identified by such studies are often framed slightly differently, there are recurrent themes across all these reviews. Teacher development programmes are effective when there are:

- Teacher learning resources addressing subject knowledge and/or pedagogic practice
- Clear expectations of application in the classroom, often with some aspect of prescribed activity (typically in the form of guides or instructions for specific classroom activities which teachers may follow or adapt), supporting resources or even in extremis, scripted lessons.
- Opportunities for teacher peer- or co-learning, supported over time, within or between schools
- Significant, sustained follow-on support by someone outside the school, usually in a coaching/mentoring or facilitating role (i.e. acting as a more experienced peer, not a ‘trainer’ or ‘master trainer’)
- Clear links to student curriculum and assessment requirements

All of the characteristics identified by these rigorous reviews highlight the need to consider more school-based approaches, where teachers are supported to develop their pedagogy and practice through clear guidance on effective learning activities, supporting classroom resources, ongoing practical and emotional support from peers and school leaders, and regular meetings with local teachers or mentors beyond the school. The following examples of school-based teacher development programmes illustrate how such approaches have been operationalised in different contexts across continents and regions.
Evidence and Experiences from International SBTD programmes

Funded by DFID, the OU’s TESS-India is pioneering models of local mentoring of primary school teachers in several states in India, drawing upon Open Educational Resources (OERs) that provide structured guidance and resources for classroom activities in English language, literacy, maths and science lessons. The resources and activities are all aligned to the state curriculum, textbooks and examinations. Additionally, pilot projects have used low cost tablet PCs and mobile phones to document teachers’ classroom practices through audio or video recordings and photographs, taken by teachers or their peers. These provide a source of evidence for discussions with local teacher educators, supporting a series of coaching/mentoring activities. Pilot studies show these engagements have led to improvements in teachers’ classroom practice and in children’s active engagement in learning. Two state governments in India are currently funding an upscaling of this work within their state schools.

In TESS-India an open source and open content Massively Open Online Course (MOOC) has been used to target teacher educators and teachers across seven states in India. The course launched in 2015, with 10,000 participants. It achieved a remarkable 51% completion rate (compared to a global average of 5-10% for MOOCs) through:

- A focus on authentic teacher-educator activities in the learning design and assessment
- Use of mobile technology and digital content appropriate to context (i.e. recognition of low bandwidth and very limited use of video which requires fast connectivity)
- A support model combining ongoing opportunities for peer- or co-learning through formal mentoring, informal peer support and harnessing social media such as WhatsApp groups.

Initially funded by the Allan and Nesta Ferguson Foundation, and later the William and Flora Hewlett Foundation, Teacher Education in Sub-Saharan Africa (TESSA) is a consortium of institutions from ten countries in Sub-Saharan Africa, supported with technical expertise from the Open University. TESSA was established to collaboratively develop a common but locally adapted and implemented School Based Teacher Development programme for un- and under-qualified teachers across Sub-Saharan Africa. This was positioned as an emergency response to the large-scale challenges of rapidly expanding access to Universal Primary Education. Making professional development materials as OERs enabled collaborative development of materials across institutions and countries. TESSA OERs were developed to address areas of the primary curriculum that were common across the partner countries. The primary purpose of the OER was to improve teachers’ subject knowledge and pedagogic practice, by providing structured guidance for teacher development through classroom-based activities. OER were developed in Arabic, English, French and Kiswahili, with versions specifically adapted for local country contexts and cultures, by partner institutions. The OER were designed to be used by teachers in schools, over a period of 6-9 months. Open-Educational Resources can be used, copied, adapted or incorporated into other materials, for free. This allows them to be translated into local languages; versioned to be appropriate for different cultural contexts; and adapted for use in a wide variety of settings, from pre-service to in-service or postgraduate study, as well as independent individual or school use. TESSA OERs have been incorporated in to professional development programmes reaching hundreds of thousands of teachers across Sub-Saharan Africa and have had ‘a significant impact on changing the identity and practices of teacher educators and a profound impact on teachers themselves’.

In countries like Malawi and Sierra Leone, there are often challenges of equity and inclusion in ensuring an adequate supply of teachers, particularly female teachers, in rural areas. In particular, there is a shortage of teachers who themselves grew up in such communities and therefore understand local languages/dialects and cultures/concerns. Teachers from less marginalised communities and groups are often reluctant to be posted to these areas and schools and a variety of initiatives such as enhanced remuneration have had little success. This leaves children in these schools often facing teacher shortages, large class-sizes and/or teachers with whom they don’t share a common language/dialect or local culture.

The OU has pioneered an innovative SBTD response to this problem through an ‘Access to Teaching’ programme in both Malawi and Sierra Leone. Young women from the local community who are interested in becoming teachers but who lack the academic qualifications for entry into teacher training courses have participated in Learning Assistant Programmes that combines academic study of core curriculum subjects (through supported open-distance learning) with a highly structured in-school placement. As part of the induction into the teaching profession, Learning Assistants spend four days each week in their local primary school working alongside teachers in the classroom and supporting children’s learning. By the end of the programme, Learning Assistants have been prepared for the relevant examinations for entry into teacher training.
programmes. Thus the programme increases the supply of potential teachers from rural areas and, critically, improves the learning experience of children through increased support for their learning by adults familiar with their language and context. In Malawi, some 2,000 young women are being supported by the MATS programme and will provide mentoring and inspiration to approximately 160,000 young girls in school. In the Sierra Leone programme Learning Assistants are particularly encouraged to support children with disabilities. The programme has shown considerable success in enhancing the self-esteem and confidence of the Learning Assistants.

In the Palestinian refugee camps in Jordan, UNRWA’s SBTD programme seeks to transform classroom practices supporting the use of active pedagogical models and a variety of learner focussed strategies, across all areas of the curriculum. Teachers initially engage in open-distance learning using text-based professional development modules, thinking about their own teaching and reflecting on different approaches and responding to case studies, before being supported to try new approaches in their own classrooms. Teachers may choose to study the materials or write up evaluations of the activities any time or place, but most of the activities are carried out in school. The text materials are enhanced by multi-media resources made available on a website and on DVD for teachers/schools with limited internet access. Teachers work on one module per month, over a period of six months. All teachers in a school (teachers of grades 1-6) work through the programme together to provide peer-support and opportunities for co-learning. Head Teachers/School Principals have an active role in guiding teachers through the programme in their school, informally day-by-day. Education specialists from outside the school also have an important supporting role, through school visits and organised teacher development sessions. Professional development activities build on teachers’ regular tasks (lesson planning, teaching, evaluation) but with some extra reading or reflection and writing up of activities. Initial evaluations are in progress at the time of writing.

English in Action (EIA) included a large-scale, SBTD programme for English Language Teachers (ELTs) in primary and secondary schools across Bangladesh. It was requested by the Government of Bangladesh and funded by UKAID. EIA ran for a period of ten years (from 2008 to 2018) over which time it contributed to improved classroom practices for 47,000 teachers and improved learning outcomes for 6.4 million students. In the final three years, the SBTD approaches had been institutionalised in the primary education sector and were being delivered by education officers and teacher facilitators in half of the upazilas (local administrative units) across the country.

EIA Teachers took part in an SBTD Programme, learning communicative language teaching approaches through carrying out new classroom activities, guided by teacher development videos that showed teachers, students and schools similar to those across the country. Teachers also had classroom audio resources for use with students. All digital materials were available offline, on teachers’ own mobile phones, so there is no dilution of the Programmes core messages about teaching and learning by some intermediary coming between the teacher and the materials. Teachers were supported through these activities by other teachers in their schools, by their head teachers and by local education officers. Some teachers from each area were also given additional support and guidance from divisional project staff, to act as Teacher Facilitators, helping teachers work through activities and share their experiences at local cluster meetings. Whereas previous cohorts of teachers had attended eight local teacher development meetings over their participation in the project, in the final phase, this was reduced to four meetings, with a greater emphasis being placed on support in school by head teachers, as well as support from local education officers. This change was part of the move towards institutionalisation and sustainability of project activities within and through government systems and local officers.

Key features of the EIA approach were that it adapted the way in which classroom activities had previously been embodied in open-learning resources (such as in TESSA) and wrapped a comprehensive programme of support to implementation in school around these, which was defined by being:

- **Technology-enabled.** Teachers own mobile phones were used to provide bespoke audio resources for classroom use, alongside teacher development videos that demonstrated and explored Communicative Language Teaching (CLT) approaches in authentic classroom settings.

- **School-based.** Teacher development activities were provided in the most effective place for professional learning: the workplace. Teachers enquired into their own classroom practice, exploring new teaching-learning approaches and developing practical insights into improving student learning. Teachers' development progressed through peer-learning and shared journeys of discovery, as opposed to cascading 'knowledge' through teacher trainers.

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1 See Mamie tell her story here: [https://youtu.be/EnDyI4kN2zU](https://youtu.be/EnDyI4kN2zU)
- **Networked.** Active, participatory and social-learning was used so that teachers experienced Communicative Language Teaching activities as learners themselves and could then see what such approaches looked like in the contexts of their own classrooms. Teachers learned from each other, working with other teachers in their school and with teachers from other schools, offering peer-support through local teacher development meetings.

Several data sources point to substantial changes in teaching practices in participant teachers’ lessons. For example, monitoring data was collected annually. In 2014-2015, over 2,000 teachers provided self-reporting data: over 70% said they watched the teacher development videos every week and over 80% said they carried out the classroom activities every week. Government Education Officers observed 200 lessons during this time: they found students spoke mainly in English in two-thirds of all lessons observed, with 90% of lessons including pair and group work. The same year, systematic lesson observations were carried out by post-graduate researchers from the Institute of Education and Research (IER) at Dhaka University: these showed that after 12 months of participation in the SBTD programme, in primary lessons, student talk had risen to 27% of lesson-time, with 94% of their talk in English and 14% of student talk in pairs or groups (p1-2). In secondary lessons, student talk had risen to 24%, with 92% of their talk in English and 23% of their talk in pairs or groups… all of these were at negligible levels in the pre-intervention baseline. At the same time, over 1,000 students (579 primary, 480 secondary) took part in an end-line study of English Language Competence, carried out by independent assessors. There were statistically significant differences showing substantial improvements over baseline for both primary and secondary students. For primary students, the pass-rate rose 34.4%pts from 35.2% to 69.6%, whilst for secondary students, the pass-rate rose 8.3%pts, from 74.5% to 82.8%.

In the final phase of the EIA SBTD programme, DFID provided additional funds to enable a quasi-experimental study of classroom practices and learning outcomes, which was designed and evaluated with support from the South Asia Research Hub. Although a fragile security situation meant the post-test had to be carried out when teachers were only half-way through the treatment, analysis of 163 systematic timed lesson observations found statistically significant experimental effects after only six months, just half-way through the treatment. Primary and secondary teachers spent less time ‘presenting’ to students (effect size r=0.2); student-student talk (pair and group) increased fourfold in primary lessons, from 4%pts to 16%pts (effect size r=0.3); whilst in secondary lessons, teachers and students both used more spoken English (effect size 0.2). As part of the same study, 1,802 students participated in assessments of English Language Competence (ELC), carried out by independent assessors. Again, the post-test was conducted after only six months, just half-way through the teacher-development treatment. In treatment schools, the differences between pre- and post-test ELC were larger than in control schools (rising by 0.3 GESE grades in treatment, compared to 0.2 grades in control), but at this early stage the differences were not yet statistically significant. However, there were small-to-medium sized experimental effects for rural secondary students (r=0.2) and urban primary students (r=0.2).

It is not possible within 4,000 words, to interrogate in sufficient depth and breadth the range of SBTD programmes in different countries and continents that we have overviewed in this paper but our hope is that in these pen-sketches, we have provided sufficient illustration to demonstrate the various ways in which SBTD programmes, serving different purposes, communities and geographies, all echo the key characteristics of effective teacher development, as identified by several recent rigorous reviews. The intention is to provide a starting point for understanding what such programmes might look like, or how the various aspects might fit together, for policy makers and practitioners wanting to consider implementing SBTD programmes. More in-depth practical advice is provided to those wishing to explore School-Based Teacher Development (SBTD) programme design and development, through the COL SBTD Blueprint and Toolkit.

3,941 words.
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