All Children Reading – Asia (ACR-Asia)

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Cambodia Teacher Professional Development Policy Options Brief

April 2017, revised September 2017

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Acronyms

CFS	child-friendly school
CPD	continuous professional development
DTMT	district training and monitoring team
ESP	Education Strategic Plan
GPMLS	Gauteng Provincial Mathematics and Literacy Strategy
HEI	higher education institution
ICT	information and communications technology
INSET	in-service training
MOEYS	Ministry of Education, Youth, and Sport
NGO	nongovernmental organization
PD	professional development
SD	standard deviation
TEC	teacher education college
TEPS	teacher education provider standards
TPAP	Teacher Policy Action Plan
TTC	teacher training college
VSO	Voluntary Service Overseas

1. Introduction

Cambodia's teacher professional development (PD) system is at a crossroads. There is a growing realization that the lower than expected learning outcomes in Cambodia are directly related to lower than desirable classroom teaching. To respond to this reality, Cambodia aims to put in place improved systems for pre-service teacher preparation (moving to a 12+4 system and introducing a new Bachelor of Arts in Education (BA [Ed.]) degree, intensive upgrading of existing teachers, and continuous professional development and mentoring. A working group organized by the Teacher Training Department is bringing together stakeholders to assist in the design and implementation of an improved in-service training (INSET) system. The present document aims to bring together pertinent information and evidence on effective continuous professional development (CPD) to support the work of this group.[1]

1.1 Cambodia's teacher policy context

Cambodia's current policy reforms relating to teacher professional development can be found in a series of key documents produced and in production by the Ministry of Education, Youth, and Sport (MOEYS). These are the **Teacher Policy** document of May 2013 (MOEYS, 2013), the **Education Strategic Plan (ESP) 2014–2018** (MOEYS, 2014), the **Teacher Policy Action Plan** ([TPAP] MOEYS, 2015), and a **Teacher Career Pathways** document (MOEYS, under development).

Cambodia's ***Teacher Policy*** document (MOEYS, 2013) specifies four objectives: (1) "to attract and motivate competent persons into the teaching profession"; (2) "to ensure [the] quality of pre-service teacher training"; (3) "to ensure regular professional development and in-service training for teachers"; and (4) "to ensure the conditions necessary for teachers to fulfill their professional activity effectively and efficiently" (MOEYS, 2013, p. 4). To realize this far-reaching set of objectives, the document laid out nine strategies, of which three relate directly to teacher training: defining standards for teacher training systems, developing teacher training centers, and developing in-service trainings and professional development opportunities for teachers (MOEYS, 2013, p. 5).

As noted in Cambodia's ***ESP 2014–2018*** (MOEYS, 2014), "The fact of ASEAN integration in 2015 and the desire of Cambodia to be a middle income country by 2030 require considerable investment in education." (MOEYS 2014, p. 12). The ambitious reform program laid out in the ESP calls for, among other things, a revised teacher training system with the creation of a BA(Ed) and replacement of 12+2 with 12+4 as the standard pre-service training formula for basic education teachers by 2020 (MOEYS, 2014, pp. 22–23). The changes envisioned in the ESP will also entail fundamental improvements to in-service teacher training, enabling teachers already in service to upgrade their skills[2] with an objective of at least 5% of teachers receiving in-service training each year from 2016, and 100% reaching 12+2 equivalent by 2018 (MOEYS,

[1] See also other perspectives on teaching in Cambodia, notably Kim & Rouse (2011); Prigent (2016); Shuttleworth & Shuttleworth (2016), and Tan & Ng (2012).

[2] Cambodia's current stock of basic education teachers includes not only those prepared on the 12+2 standard formula, but also, those employed with 9+2 initial training in rural and disadvantaged areas.

2014, p. 55). The establishment of teacher standards and quality assurance mechanisms is also envisioned.

Building on both the Teacher Policy and the ESP documents, the ***TPAP*** (MOEYS, 2015) lays out a number of specific actions to implement the objectives and strategies identified, essentially resulting in a full overhaul of Cambodia's pre-service and in-service teacher PD systems. These include, importantly, the elaboration of Teacher Professional Standards (TPAP Action 2.4.1), and of Teacher Education Provider Standards (TEPS) (Action 2.4.2).

The development of the TPAP and such standards puts in place firm policy guidelines for the development of teachers and teacher training over the medium-term future. The TPAP acknowledges the need to address the issue of in-service teachers with qualifications below current and desired MOEYS standards through upgrading and other in-service training, and to put in place improved systems for pre-service training, and ultimately a new BA(Ed) degree (TPAP strategy 3.2.1). In order to support those teachers who are in service but have not yet achieved the BA(Ed), the TPAP lays out the intention to offer an opportunity for upgrading through arrangements with institutions of higher education (TPAP strategy 2.3.1.2).

The wide set of reforms laid out in the TPAP is being undertaken in the context of a desire for meaningful CPD for teachers that will support improvements in instructional quality in the classroom.

Putting the work in a context of the volume of teachers concerned, Exhibit 1 presents the MOEYS' projections of the numbers of primary and lower secondary teachers from 2014 through 2018.

Exhibit 1. Projections of Teacher Numbers for Primary and Lower Secondary Schools, 2014–2018

Level and type	2014	2015	2016	2017	2018
Primary					
New teacher requirement	1,503	1,961	2,336	3,375	4,040
Urban	9,619	9,619	9,619	10,179	10,950
Rural	37,613	38,141	39,018	40,318	41,998
TOTAL	***47,232***	***47,760***	***48,637***	***50,497***	***52,948***
Lower secondary					
New teacher requirement	909	909	909	1,306	1,309
Urban	7,715	7,715	7,715	7,715	7,715
Rural	19,352	19,352	19,352	19,736	20,109
TOTAL	***27,067***	***27,067***	***27,067***	***27,451***	***27,824***

Source: Excerpted from MOEYS, 2014 (p. 62), Table 4: Teacher Projection by Level.

Exhibit 1 shows that roughly 75,000–80,000 teachers are or will be active in basic education during the period 2014–2018. These existing teachers present a broad range of knowledge and skills, qualifications, years of experience, and contextual circumstances, differences that will need to be taken into account in the development of appropriate CPD programs for them. It is also estimated that pre-service training for basic education will need to produce 2,500 (2014) to over 5,000 (2018) new teachers annually to keep up with demand.

Two further aspects of the nature of current teacher support in Cambodia are important to take into consideration. One is the role of the District Training and Monitoring Teams (DTMT) especially in promoting and monitoring implementation of the child-friendly school (CFS) policy. The second is the system of school clusters, in which virtually all primary schools are designated as "core" or "satellite" schools organized in clusters, and through which, in principle, much of the ongoing support to teachers at the primary level is intended to flow.

The DTMT, as described in *DTMT Guideline[s] for Basic Education* (MOEYS, n.d.), can play an important role in identifying teacher and principal training needs through constructive school monitoring for quality assurance relating to CFS principles and serve as a bridge to organize needed trainings across schools, clusters, district and provincial offices of education, and teacher training colleges (TTCs).

Cambodia's cluster system, as noted by Bredenberg (2002), Pellini and Bredenberg (2015), and others, can be an efficient means of reducing the isolation of smaller rural schools and delivering support to a broad network of schools. The cluster mechanism has been used effectively in this manner in initiatives supported by development partners. However, as long as school clusters remain entities unable to receive government funding directly, their potential as a system-wide, sustainable mechanism for delivering support to teachers will be limited and precarious.

1.2 Purpose and structure of this brief

The present policy brief is intended to support Cambodia in its design and implementation of teacher CPD reforms outlined in the TPAP. The brief is organized to provide policymakers with a review of recent evidence on teacher PD, with particular focus on in-service options. The principal task is to assemble and discuss information and lessons regarding teacher CPD programs that have been employed in Cambodia and elsewhere and, while the evidence base is modest, to examine what research tells us about whether and how particular approaches are likely to have an impact on student outcomes at scale.

In **Section 2** we offer some key learnings about teacher education from the international literature. These include a modified model of teacher PD by Guskey (1985; 2002), and findings from a recent set of multi-country research studies showing some of the largest impacts on student learning, called the "triple cocktail" (taking a phrase from the health sector literature). Recent evidence is also presented on the impact of information and communications technology (ICT) on teacher PD, both to point out what we know works and to encourage policymakers to see ICT as important, yet ancillary to designing a strong teacher education system.

In **Section 3,** the brief gets to the core of its purpose, which is to share and analyze recent evidence on the nature of various in-service teacher PD designs, and their effectiveness in improving teachers' pedagogical practice and ultimately, student learning. We approach this task first in an abbreviated form, followed by a deeper dive to examine which in-service choices might be most relevant for Cambodia. **Section 4** takes a look at pre-service training and at teacher career path options, given that each of these two additional facets of teacher PD interacts in important ways with in-service PD, in terms of content, inducements for participation, teacher appraisal, effectiveness, and in other ways. **Section 5** concludes the brief with a summary of the findings and some further considerations to help inform and orient Cambodia's CPD decisions going forward.

Two appendices provide additional information. Appendix A offers a detailed matrix of information on each of the featured in-service PD designs described in Section 3. Appendix B offers a write-up of some of the choices that Indonesia's USAID Prioritizing Reform, Innovation, and Opportunities for Indonesia's Teachers, Administrators, and Students (PRIORITAS) project made when faced with the need to strengthen the country's system of cluster-based CPD provision, from which Cambodia may take some lessons.

2. Some key learnings on teacher professional development from the international literature

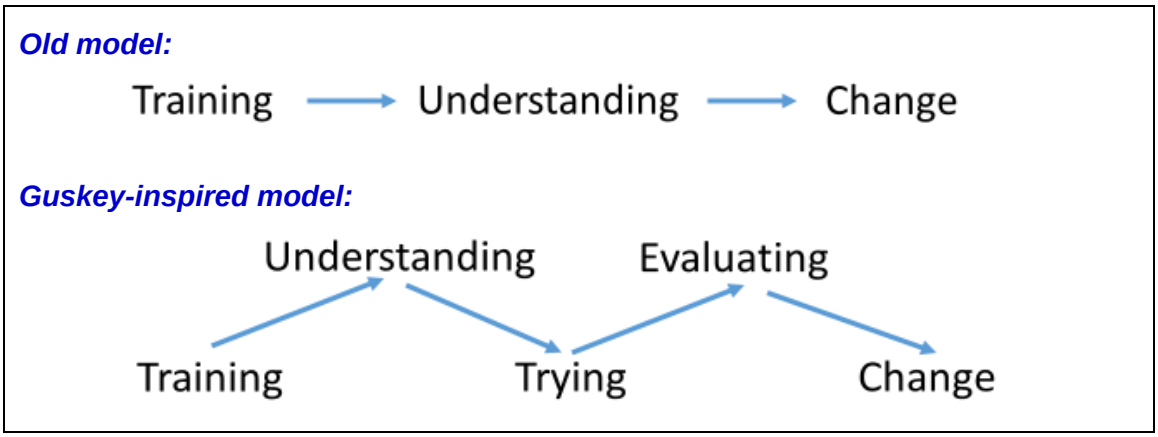
What insights can the international literature offer on the training and ongoing support of basic education teachers that may have relevance for Cambodia? We turn first to foundational work of scholars on teacher behavior change, on which many subsequent models have built, and then to recent evidence on in-service PD features of current interest and how effective they may be, alone and in combination.

2.1 Implications of Guskey's model for teacher PD in Cambodia

Thomas Guskey's (1985; 2002) model for teacher change is not new, but has held up to the test of time across many settings. The model recognizes the teacher both as a learner and as an adult who uses direct experience to test and weigh the value of what s/he is learning and makes choices about whether to apply it. Guskey's work continues to be a widely cited foundation for many teacher training programs across the world and remains salient for Cambodia's teacher PD design decisions. Cambodia's comprehensive overhaul of its teacher PD system demands large-scale instructional change, whether one is considering the pre-service sector (faced with the task of overcoming the influence of how teacher trainees were themselves taught) or the in-service sector (faced with the task of changing daily practice that may have been in place in classrooms for years, even decades).

Cuban (1993) argued that teaching is a profession as resistant to change as any, and given Cambodia's recent rapid expansion of the teaching force and relatively low remuneration, Cambodia's teachers and teacher trainees may be even more resistant to change. In this context, Exhibit 2 below presents two different models for thinking about the relationship between teacher training and instructional change. The first model, the "Old Model," assumes that what teachers need is to understand the new method. Once the teacher achieves that understanding through training, instructional change occurs. While few programs are naïve enough to assume such a simplified model would likely lead to the desired changes in the classroom, the decisions that many national teacher training programs make often result in a *de facto* adoption of this model.

Exhibit 2. Teacher PD Models



Consider the push in the 1990s and 2000s to encourage an active learning, student-centered, constructivist model in many parts of the developing world, including in Cambodia. At their core, these reforms had the intention of fundamentally changing classroom practice on an ongoing basis. These programs, however, were not designed to support the actual change processes that teachers undertake as they determine whether a reform effort is in their interests. We posit that many of programs of the student-centered era failed not because increased student-centeredness was a wrong goal to pursue but because the fundamental model of and approach to teacher development was, like the "old model" in Exhibit 2, flawed.

Exhibit 2 also shows a Guskey-inspired model of teacher PD that is focused more on meeting and supporting teachers at their key decision points. The intent of this model is to structure PD and adult interactions around teaching at the key junctures where teachers make decisions that determine whether the instructional reforms have a chance at implementation. First, teacher PD has to help teachers understand the new reform. This is one area in which many of the cluster-based[3] PD programs in Cambodia did succeed: ensuring that teachers understood student-centeredness in the previous era and the content of the new textbooks in more recent reforms. The flaw was insufficient attention to the next stage of the Guskey model: helping teachers to try the new method in their classrooms. Due to the heavy emphasis on initial training in pre-service and only modest donor-funded in-service PD, support structures to help teachers when they initially tried the reforms in the classroom were lacking. As a result, a high percentage of teachers actually never attempted the new method, deciding it was too complicated or too much work. This high percentage is unsurprising and is the result of the design flaws inherent in so many PD programs. The Guskey model shows that teachers who eventually do attempt to implement the new methodology will evaluate the effectiveness of the program based on their own experience with it in their classrooms. Those teachers in Cambodia who have attempted previous reforms on their own have had very little classroom support in the actual implementation of the program and even less in

[3] "Cluster-based" programs rely on a grouping of neighboring schools (a "cluster") to share and exchange knowledge, experiences, and pedagogical resources, generally with a core school and five or more other member schools. They can offer administrative efficiencies, but require their own regular source of funding to thrive. Pellini and Bredenberg (2015) provide a useful evaluation of the effectiveness and shortcomings of Cambodia's use of cluster-based systems for providing professional development support to primary and early secondary school teachers.

their makeshift evaluation procedures to determine whether it was successful. Under such circumstances, it is understandable why few teachers would change their instructional practice.

Lessons from Colombia's *Escuela Nueva* ("New School") experience are also instructive, as summarized in Colbert and Arboleda (2016). As part of the promotion of "student-centered participatory pedagogy" in rural multi-grade schools, teachers and even teacher trainers were introduced to and instructed in the *Escuela Nueva* methods in the same participatory, experiential way that they were expected later to carry out instruction in the classroom or training center. In addition, the new methods were designed with a view to practical application and simplicity, so that they could be easily replicated by trainers and ultimately teachers without great loss of quality or integrity in the cascade training[4] process. Training manuals and teaching and learning materials accompanied the program and were consistent with it. Teachers were encouraged to exchange experiences and support their colleagues through learning circles, as a means not only to develop practical skills but also to bring about attitudinal change. These methods effectively transformed rural education in Colombia and much of Latin America. The *Escuela Nueva* story includes some important cautions, however: Educational decentralization in Colombia that began in 1991 has proved challenging for the effective continuation of the program. Not all local education authorities have embraced or maintained the program as the central Ministry had once done. Mid-level staff and principals trained in the approach moved into other positions, and teachers' new pedagogical supervisors were not themselves well versed in the approach. The critical importance of keeping local authorities, school principals, district officers, and inspectors, as well as teachers, informed and on board with any teacher PD program cannot be understated.

In order to design a comprehensive set of teacher PD structures that could be successful, we suggest that a sea change in thinking may be in order, with the system reorganized to meet and support the teacher at the key decision points in the process of implementing—or deciding whether to implement—a given instructional change. Create opportunities for teachers to try the new method, first at the training venues and then again, with support and feedback, in the classroom. Provide adult learning opportunities with other professionals to discuss and analyze their attempts to implement the new method, so that teachers can be supported in applying it in ways that are effective for them. Make tough decisions about the design of the PD system, streamline it, and embed it in the teacher career structure so that teachers have the incentives to implement the new reform rather than reject it out of hand due to a perception that it is unmanageable or overly complex. Hold this teacher change process in mind as decisions are made regarding the length, locus, content, and methods of training and the modalities of coaching[5]/mentoring and support to teachers once they are back in the classroom, in addition to the incentives that the teacher career ladder provides for them.

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[4] "Cascade training" refers to a method for widespread training delivery, whereby master trainers, themselves often among the designers of a training program, train a second tier of trainers who will then deliver the training to teachers (or a third training tier). The challenge for designers is to minimize the amount of "slippage" or dilution of content or methodology of the training, from one tier to the next.

[5] The term "coaching" refers to the work of a more experienced teacher or other specially trained actor to support the teacher over time with individualized feedback and guidance. While a mentor typically works with recently certified or promoted teachers, a coach can also support teachers

2.2 Emerging evidence of the "triple cocktail"

Demonstrating large-scale improvements in learning outcomes in any educational context has proved to be elusive. Intermittent successes spread across a large number of projects have created a perception that educational improvement is haphazardly distributed, and lacks a clear set of principles that can be derived regarding what differentiates successful and unsuccessful programs.

Evidence from the last 5 years has begun to change this perception, however Researchers in South Africa have suggested that a "triple cocktail" of interventions in this sector have had consistently positive effects on learning outcomes. They demonstrated improvements in the Gauteng Provincial Mathematics and Literacy Strategy (GPMLS) project in Guateng province (Fleisch et al., 2016) and collected evidence through several randomized controlled trials that followed the initial GPMLS natural experiment (Cilliers et al., 2016).

TRIPLE COCKTAIL ELEMENTS

While contexts differ, the countries that have seen rapid improvements in literacy and numeracy have focused on training teachers on at least three things:

1. Structured lesson plans scaffolded to help lower-skill teachers
2. Instructional materials for children that are carefully aligned with the lesson plans
3. Ongoing coaching that reflects and reinforces the instructional ideas discussed in the training and implemented in the lesson plans

The triple cocktail that was in place in these South African programs included practice-based in-service teacher PD that was of limited duration (approximately three days per term). This approach allowed teachers to see models of how the instruction was done, practice the methods at the training venue, and receive feedback. The key elements were as follows: (1) structured lesson plans[6] designed to help teachers with little training in literacy and numeracy instruction understand how to implement a focused approach to instruction, (2) instructional materials for children that were carefully aligned with the lesson plans, and (3) classroom-based coaching and feedback for the teacher implementing the program. Coaching was designed to reinforce the specific behaviors that teachers would need to implement in the classroom as required by the literacy or numeracy instructional activity. Similar approaches have led to large-scale impacts in literacy programs in Uganda (RTI International, 2016), Rwanda (Education Development Center [EDC] 2017), Kenya (Piper et al., 2014), and Malawi (Pouezevara, Costello & Banda, 2013), and in numeracy in Kenya (Piper et al., 2016).

A recent McKinsey report (Mourshed et al., 2010) called "How the World's Most Improved School Systems Keep Getting Better" made the same argument. In their

later in their careers, as they are called on to incorporate new practices or improve their performance.

[6] "Structured lesson plans" offer less-experienced teachers an explicit structure on which to create and deliver their daily classroom lessons, to help ensure that key elements are included (statement of objectives, method, specific content, materials to be used, exercises and practice, etc.). "Scripted lesson plans" are an extreme form, providing a full "script" of the step-by-step actions of the teacher and class. These may be provided as illustrative examples, or as comprehensive guidance for every day of the school year.

research on 103 systems and programs, they investigated the large-scale systems or countries that made rapid improvements in improving basic learning outcomes, similar to what Cambodia is planning in ESP 2014–2018 (MOEYS, 2014). The McKinsey report calls for scripted teaching and learning materials, coaching on the curriculum, increased instructional time, school visits by the center for accountability, and incentives for high performance. This list maps on to the triple cocktail noted by the South Africans, with a few extra activities thrown in for good measure.

Room to Read is an organization that has recently had tremendous impact on core literacy skills in the East Asian region in programs that apply the same principles evident in the triple cocktail and the McKinsey study. In Cambodia, Room to Read has increased reading fluency outcomes at two and a half times the rates of the control group (Cooper & Jukes, 2015). Room to Read has also provided inputs to MOEYS in the development of new early grade reading textbooks in line with the structured approach they are using, and of library policies to expand access to reading activities. Room to Read has seen similar meaningful improvements in literacy outcomes in Bangladesh, India, Laos, Nepal, Sri Lanka, and Vietnam (Alexander, Kwauk, & Robinson, 2016).

2.3 ICT in teacher professional development (from *Piper et al., under review*)

It is noteworthy that Cambodia's newly adopted TEPS (MOEYS, 2016) place an emphasis on adequate ICT equipment and educational media in TTCs and in other higher education institutions (HEIs) that will be preparing new teachers and providing in-service education. The TEPS also require that faculty are versed in the use of ICT in training and that teachers themselves be trained to use ICT as part of their pedagogical toolkit. The evidence tends to support this emphasis, with some key caveats.

The evidence on whether and how ICT supplied to teachers (both to support management functions and to provide pedagogical material or feedback) has an impact on learning outcomes is somewhat more promising than the literature on ICT at the student level, but is not without its own challenges. Across the literature on ICT in education, researchers agree that an understanding of instructional improvement and teacher usage of ICT is the critical link between ICT and improved learning outcomes (Bebell & Kay, 2010). In other words, technology can be an amplifier of a good instructional practice. It can be a powerful tool for a strong teacher but is rarely transformative on its own.

There has recently been an increase in the availability of rigorous evidence on the impact of ICT applied at the student and teacher levels on student outcomes. ICT can potentially improve learning by improving teachers' instructional delivery. Coaching is an effective form of teacher support when implemented consistently and well (Kraft, Blazar, & Hogan, 2016; Piper & Zuilkowski, 2015). However, the costs and complexity involved in sending experienced coaches to observe and support teachers have prompted many researchers to investigate how ICT can make coaching more cost-effective. In well-resourced contexts, it is common to use video as a resource for teacher preparation or other digital technologies to support communities of practice and virtual coaching (Ermeling & Yarbro, 2014; Hall & Wright, 2007; Kane & Staiger, 2012).

One of the largest and most rigorous studies of video-based coaching was the 2012 Measures of Effective Teaching study sponsored by the Bill & Melinda Gates Foundation. Teachers reported that they made a number of changes in their instructional practices after viewing video recordings of their teaching shared by a coach. In a study

of one particular coaching software program, the effect sizes[7] were 1.09 SD for teacher knowledge and .66 SD for implementation fidelity of a Grade 1 reading intervention. Variance in student achievement was explained by the number of teacher-coach contacts; for each teacher/coach contact, students gained between .03 and .09 raw score points depending on the measure (Mathes, 2015). Although these examples show that ICT can support better coaching, it requires significant infrastructure and capacity to implement and is therefore not yet suitable for many low-resource contexts. At the same time, careful use of model videos shown on portable devices can provide a resource for coaches and teachers in lower-resourced environments. The recent increase in smartphone technology in Cambodia indicates that this area may be a very productive avenue over the medium term (see Phong & Sola, 2015).

Recent research in Kenya indicates that the implementation of ICT in teacher PD may largely depend on the quality of the PD without ICT. The Kenya Primary Math and Reading ICT impact evaluation is instructive in this respect, as the ICT components of the PD had little impact over and above the core program. We find that it is the underlying PD program that is successful, and the ICT intervention is only secondary in its impact on learning (Piper et al., 2016).

2.4 Other converging evidence on the effectiveness of teacher PD elements

CPD can take on many different forms and sizes and may have different effects in different contexts and combinations. However, as Popova, Evans, & Arancibia (2016) point out, only a few studies have tried to compile the accumulating evidence on CPD across a broad range of contexts in a systematic way (but see Westbrook et al., 2014). In addition, they lament, "many evaluations fail to provide sufficient details on the actual content or delivery mechanisms of the trainings to inform the design of successful programs" (p. 2).

To address this challenge, Popova et al. (2016) conducted a meta-analysis of the results of multiple studies.[8] The authors used the results from 26 rigorously designed evaluations of in-service teacher PD programs to determine which elements of these various programs appeared to promote students' learning outcomes the most.

Resulting from this work, Exhibit 3 below presents the effect on student outcomes associated with particular design elements of in-service training as determined through a series of bivariate regressions on the dataset of 26 programs. The elements are ordered according to effect size obtained for each element, as represented by the size of the standard deviation (SD) in students' test scores when the element is present in the design, versus when it is absent.[9] Elements with the largest positive effect sizes are

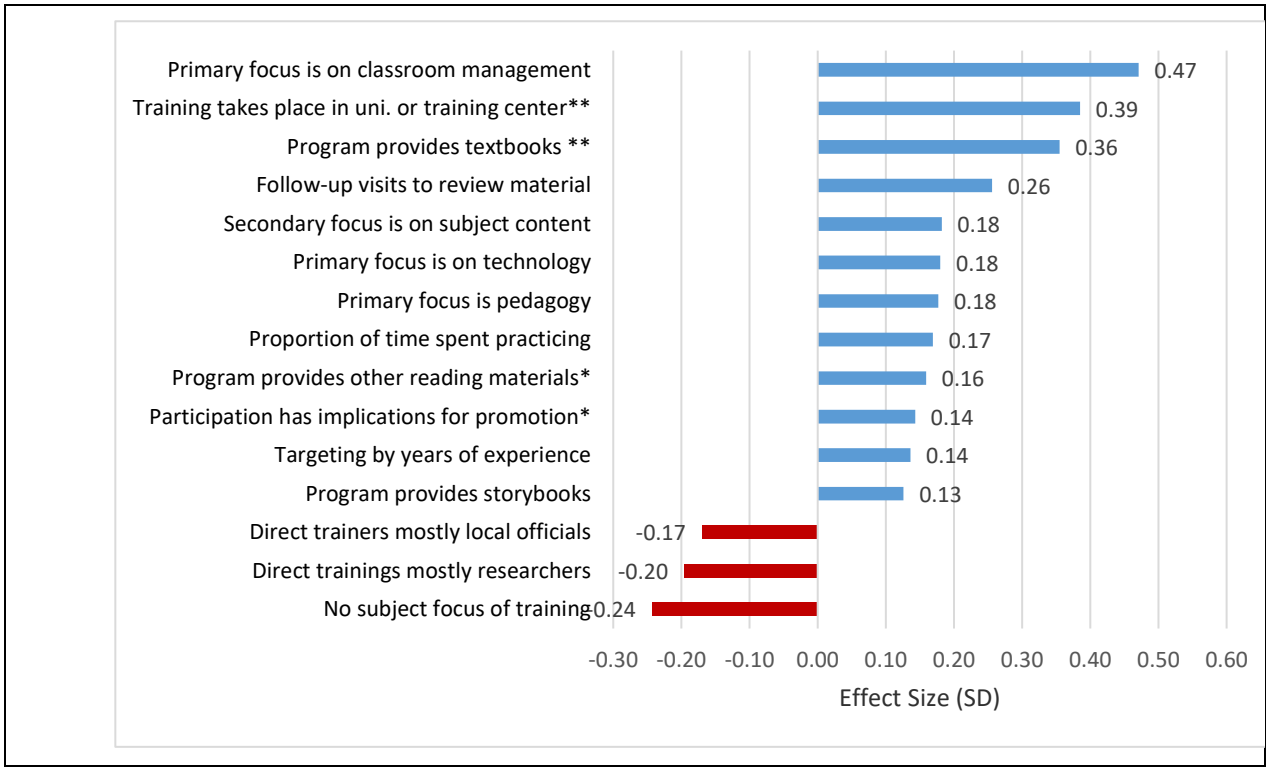
[7] "Effect size" is a statistical means of characterizing the effect or impact of a given factor (such as use of ICT) on an outcome of interest (such as teacher performance or student learning). In education research, a standardized absolute effect size of 0.2 SD is typically considered small but meaningful (moving the outcome value for the intervention group 0.2 standard deviations beyond the average value for the control group); larger effect sizes (in positive or negative directions) indicate a greater effect of the factor or intervention on the outcome of interest.

[8] Meta-analysis combines the results of multiple studies to determine if any consistent patterns of effect relating to the outcome of interest (in this case, student learning) emerge.

[9] In other words, the effect size indicates how far the average test score for students in the group receiving the intervention differs from that of students in the group who do not receive the intervention, and taking the overall distribution of scores into account. Effect sizes of less than 0.20 (regardless of the direction of effect) are generally considered to be trivial, indicating no

toward the top of the figure; those having smaller positive effect sizes fall toward the middle, while the bottom three elements were found to be associated with negative effects on students' learning outcomes.

Exhibit 3. Teacher Training Design Effects on Learning Outcomes in Effect Sizes (SD)



Source: Constructed from Popova, Evans, & Arancibia (2016).
** p < .05; * p < .10

Several areas are of interest. The figure shows the greatest effect size, 0.47 SD, was obtained for programs that included a focus on classroom management as a specific skill. Training conducted in a university or training center (rather than at another type of central location such as a hotel, or at the school), is associated with a positive 0.39 SD effect on student learning and may reflect the value of creating focused training experiences that are relatively less susceptible to distractions. The provision of textbooks as part of the program had a 0.36 SD effect, while having follow-up visits to review materials was associated with a 0.26 SD effect. The exhibit shows other elements with smaller positive effect sizes, and at the bottom, three types of PD associated with a negative impact on student outcomes: providing training with no specific subject focus (-0.24 SD), having trainers who were researchers (-0.20 SD), and having trainers who were local officials (-0.17 SD). Note that given the small sample size (26 observations), not all of the effects presented were statistically significant.

Even qualitative studies and studies of programs implemented in very different settings can offer useful lessons and insights. Westbrook et al. (2014) examined 45 "high quality"

particular effect of the intervention, while larger effect sizes (which can be positive or negative) indicate that the intervention is associated with higher student performance (if the effect size is positive) or lower student performance (if the effect size is negative).

studies, many of them qualitative, and rated the strength of evidence of "enabling" and "disabling" factors across teacher education and support among other things. Positive (enabling) factors that were judged to have "moderate" strength of evidence included training that was aligned with teachers' needs, school curriculum, and specific pedagogic practices; provision of teacher manuals with scripted lessons; regular in-class support, lesson modeling, and constructive feedback provided by mentors or teacher educators; and formal and informal peer support to share resources, lesson plans, and assessment practices and jointly observe lessons. Having expert teacher educators who modeled promoted practices was a less strongly evidenced, but still positive, factor. Disabling factors included training curriculum that is misaligned with school curriculum, students, or classroom realities and lack of practical application of methods presented through CPD.

Citing Wei et al.'s (2009) review of US-based programs that included qualitative as well as quantitative studies, Popova, Evans, and Arancibia (2016) note, "teacher training is most effective when it focuses on 'concrete tasks of teaching, assessment, observation and reflection' instead of abstract teaching concepts," and effective programs tend to be "sustained" and "intense" rather than of the "one-shot workshop" variety (2016, pp. 6–7). This work as well as studies from Japan, Singapore, and other high-income countries (Darling-Hammond, 2005; Darling-Hammond et al. 2010), lead the authors to conclude that "…there is suggestive evidence that in-service teacher training programs in high-income countries have been most effective at improving student learning where they have been embedded in the curriculum; prescribed a specific method, with detailed instructions on implementation; included significant and sustained in-person follow-up support for teachers; and involved teachers in a co-learning model" (Popova, Evans, & Arancibia, 2016, p. 7).

Whether in less well-resourced environments or in high-income countries, a common theme emerges: multi-pronged yet specific and detailed, practice-oriented approaches that include teaching and learning materials and follow-up support tend to be associated with more effective in-service teacher training.

2.5 Cautionary note on the limits of evidence to date

For the purposes of informing policy for Cambodia or any particular country, meta-analytic studies need to be approached as potentially useful but indicative only. First, the body of rigorous studies is small, with an unknown selection bias from the universe of types of programs that may or may not have been evaluated. Second, even with a solid effort to characterize the main program elements of all the studies analyzed, the potentially mitigating effects of context and possible interactions among elements are (as in this example) often left unexplored.

Popova, Evans, and Arancibia (2016) are not hesitant to point out the dilemma facing Cambodia and other countries hoping to base their teacher training choices on conclusive evidence: "Despite the significant resources spent on in-service teacher training programs, rigorous evidence of the effectiveness of such programs remains limited. Overall, evidence for the small share of programs that have been evaluated is mixed…. [T]he evidence we have suggests that …teacher training programs vary enormously, both in their form and in their effectiveness" (pp. 2–3).

While meta-analyses and reviews that attempt to identify converging patterns of results across a range of studies contribute to the knowledge base with promising avenues for study and intervention, the evidence to date remains to a large degree inconclusive, as

many have noted (Glewwe et al., 2013; Glewwe & Muralidharan, 2015; Fuje & Tandon, 2015; Popova et al. 2016). Conclusions drawn are typically general and indicative, but insufficiently precise to directly guide policy or program design.

In the next section, we examine more closely a number of specific examples that offer relevant experiences and lessons for Cambodia as the country proceeds with TPAP implementation.

3. In-service teacher professional development policy options for Cambodia

In the course of developing its educational system, interrupted brutally by the Pol Pot regime but taken up with renewed vigor starting in the 1980s, Cambodia has implemented both large- and small-scale in-service teacher PD programs to build its teaching force and improve the quality of teaching. The results of Cambodia's efforts, as well as those of many other countries, as noted above, have been mixed.

In-service PD of primary and secondary school teachers in Cambodia currently supports a teaching service in which teachers' background qualifications and experience vary widely, and both the qualifications of teachers and the results of instruction in the classroom are at less-than-desired levels. PD is provided through school- or cluster-based weekly technical meetings; short-term events organized by MOEYS, often with partner organizations in the donor community; and longer (1.5 month) training programs carried out during the annual school break at TTCs (Voluntary Service Overseas (VSO), 2016) for a small proportion of in-service teachers. As noted in the ESP, "These trainings have not been clearly and systematically implemented" (MOEYS, 2014, p 55).

Cambodia's new TPAP (MOEYS, 2015) is an important step in resolving this situation. It outlines a comprehensive vision for reform of teacher PD and identifies actions to be undertaken that include the following:

- Promoting induction activities and mentoring at schools, primarily for new teachers (TPAP Action 3.2.1), and including redistribution of workload of best performing teachers to take on such roles
- Developing and implementing INSET improvements (TPAP Action 6.1.1), involving comprehensive INSET needs assessment and identification of delivery options; creating a new INSET structure within teacher education colleges (TECs), starting with pilot effort in Phnom Penh and Battambang TTCs in 2018 Q2, and other INSET actions
- Establishing a "credit system" for INSET participation (TPAP Action 6.1.3), standardized across all INSET activities carried out whether by Ministry, donors, or nongovernmental organizations (NGOs); with unified requirements for each type of INSET; and specifying the number of credits needed for upgrading, higher degrees, and other kinds of benefits
- Strengthening on-site support systems for teachers (TPAP Action 6.2.1) through a study of strengths, weaknesses, and challenges of existing systems, followed by development and implementation of improved mechanisms for delivering subject-matter and pedagogical support

- Institutionalizing a system of school-based INSET at all educational establishments (TPAP Action 6.2.2), including involvement of INSET trainers meeting TEPS criteria
- Establishing and expanding mechanisms to provide continuous technical supports (TPAP Action 7.3.2) such as study clubs, professional subject societies, technical support groups, and regularized technical meetings among subject specialists
- Providing accelerated training for existing 12+2 teachers to be upgraded to BA holders by cooperating with HEIs (TPAP sub-strategy 2.3.1.2).

Determining the way forward to carry out these ambitious strategies can benefit not only from broad reviews of international evidence provided in the previous section, but also from the specific experience and lessons of past efforts and other systems, to which we now turn.

3.1 Overview of relevant examples for Cambodia

A closer review of the experiences of a few specific examples of in-service teacher training programs and the design options they chose, and of the strengths and weaknesses (pros and cons) of these designs, can provide useful lessons and implications for Cambodia. Appendix A presents a detailed examination of the following CPD design options:

- Carry out training through college-based coursework and/or short-term workshops
- Utilize cluster systems to deliver training
- Embed intensive and systematic coaching within and through the cluster system
- Deliver coaching directly at the school level
- Utilize the cluster level for reflection meetings to support instructional reform
- Utilize the school for both reflection meetings and as a locus of professional PD
- Support the principal to become the instructional leader of the school and expand the PD skills of the school directly
- Develop materials and mechanisms for teachers to engage in distance learning, self-study, and practice
- Undertake the “triple cocktail” of pupil books, teacher lesson plans, and intense coaching

Exhibit 4 below offers a simplified listing and description of the options examined in Appendix A, with indications of their potential impact and relative costs.

Exhibit 4. In-Service CPD Delivery Options

Option	Description	Impacts*	Cost**	Examples
Training and upgrading through centralized college coursework or shorter workshops	Intensive, often residential multi-day training delivered by trained instructors to introduce new curriculum, textbooks, or instructional methods. Often designed and supported by donor-funded programs. Key issue is how to minimize "dilution" of training during cascade process	+ / -	$$$	Cambodia long- and short-term trainings; Indonesia (deRee, 2015); Sri Lanka (Hayes, 2000)
Training delivered through cluster systems	Using clusters to support teaching improvement	+	$	Cambodia, Ethiopia, Bihar, Japan, Malawi, Uganda; Indonesia
Coaching through clusters	Using cluster-based personnel to support coaching efforts	++	$	Uganda, Rwanda, Malawi, Kenya, Jordan, Nepal, South Africa, Cambodia
Coaching delivered at the school	Supporting teachers through coaches	++	… to $$	Kenya, South Africa
Cluster-based discussion meetings	Utilizing clusters to provide structured discussions for teachers	+	$	Cambodia, Ethiopia, Bihar, USAID
School-based discussion meetings	School-based discussion meetings for teachers	+ / -	…	Kenya, Ethiopia, South Carolina, Philippines, multiple, in emergencies
Principal as instructional leader	Having principals provide instructional support for teachers	+ / -	…	Many, sub-Saharan Africa, in emergencies
"Triple cocktail"	Providing books, lesson plans, and coaching to improve outcomes	+++	$$$	South Africa, Kenya, multiple

* "Impacts" on student learning as demonstrated through rigorous studies are presented as positive (+) or negative (-), with one symbol (+) indicating that modest effect sizes were obtained; two ++ for moderate effect sizes; and three +++ signifying large effect sizes. The notation "+ / -" indicates mixed effects across studies. Effects are estimated based on the authors' understanding of the combined literature in developing countries relevant to the Cambodian context, but are not drawn from a formal quantitative analysis.
** Costs associated with implementing each option are summarized as minimal (- - -), relatively small ($), moderate ($$) or high ($$$) in a given country context. The symbols are indicative only, as there can be great variation across settings in terms of unit costs, presence of existing systems, and specific elements of a given option.

Exhibit 4 illustrates not only that CPD can take many forms, but also, that the more costly approaches have not necessarily been the most effective. In addition, the evidence is mixed for a number of widely used approaches (intensive training, school-based discussion meetings, principal as instructional leader), and costs can vary (for coaching delivered at the school for example, whether the coach is already school based or must travel to the school can have important cost implications). Appendix A provides further detail on the strengths and weaknesses of each approach.

What is less evident in Exhibit 4 is that the choices are not mutually exclusive. In fact, as we will see in the next section, all of the programs presented have combined intensive training with coaching and/or meeting-based support; the "triple cocktail" is itself a combined approach.

3.2 Analysis of CPD design choices by other programs

Our examination of CPD options so far has provided some suggestions based on the research regarding general designs for teacher PD. As noted in Section 2 above, many researchers and analysts have observed that in-service teacher PD shows wide variation of form, a situation which renders empirical comparisons of "effectiveness" difficult. In fact, there can be great variability in quality, duration, and intensity even within each of the delivery modalities listed in Exhibit 4 above and these variations will inevitably impact effectiveness, and cost, as well. So while the overall research indications may appear promising for a given modality such as cluster-based coaching or discussion meetings, how the modality is carried out in a particular setting—for whom; by whom; with what focus; for how long; and with what incentives, supports and methods—can affect the results as much as the specific modality chosen.

In the present section, we take a closer look at the design of several programs. Exhibit 5 below presents eight large-scale instructional improvement programs (Kenya and Uganda columns each cover two programs) and each program's specific design choices, which were selected for maximum output by the designers. We are not able, in the confines of this brief, to present which of these projects are most effective and why, but we share them for comparison as Cambodia considers how to structure its CPD system for maximum impact. The exhibit presents each program's design choices across the following dimensions, each of which constitutes a design decision point for Cambodia:

- **Training location**: Where should the primary locus of implementation of in-service training be? At the school, at the cluster, at the college, or at the district?
- **Training content focus**: What should Cambodia's in-service training focus on? Should it be general classroom management, pedagogical improvements in general, increasing pedagogical content knowledge, how to be a reflective practitioner, or focus on specific subject content?
- **Training modality**: What are the modalities of training? Should the training allow for a great deal of teacher practice with their neighbors? Should there be modeling by the trainer? How much verbal explanation of new concepts should be included?
- **Trainer selection**: Should trainers come from the teaching community itself or should they be skilled and experienced trainers from an external body? Could district education officers serve as trainers?
- **Duration of training**: This is a common question facing countries like Cambodia: Should training be delivered in a single block of 5–10 days or more during the annual school break, or through a series of shorter but more frequent sessions?
- **Coaching and other ongoing support**: What design of coaching and feedback should be utilized? A peer-to-peer model, a lesson study model, an instructional leadership model, an external coach model? Or should a senior teacher from the school or cluster be selected to serve as a coach?
- **Material supports**: What kinds of material supports (structured lesson plans, other subject content or instructional guidance materials, teaching and learning materials, video, ICT) should be provided as part of the CPD program?

Exhibit 5. CPD Design Elements Applied by Different Programs

Dimension	Element	Ethiopia READ[10]	Kenya TUSOME	Nepal EGRP	Uganda SHRP	Uganda LARA
Training Location	School-based	✓ Mentoring baseline		✓		✓ Continuous professional development (CPD) during joint support supervision & district led support supervision
	Cluster-based		✓	✓		✓ Cluster-based learning events
	Teacher Training College (TTC)-based	✓ Module based training			✓	✓ All teacher training take place in primary TTCs
	District-based	✓		✓ Training of trainers (TOT)		✓ Training in clinical support supervision at district level
	Other (describe)				✓Alternative venues used are secondary schools in the districts when TTCs are hosting other training programs e.g., Global Partnership for Education (GPE)-led teacher trainings or LARA.	
Training Content Focus[11]	Classroom mgmt.			✓	✓	✓
	General pedagogy			✓	✓	✓
	Subject-specific pedagogical content	✓	✓	✓	✓	✓

[10] Project abbreviations are as follows: EGRP, Early Grade Reading Program; READ-TA, Reading for Ethiopia's Achievement Developed Technical Assistance; SHRP, School Health and Reading Program; LARA, Literacy Achievement and Retention Activity; PRIORITAS: Prioritizing Reform, Innovation, and Opportunities for Reaching Indonesia's Teachers, Administrators, and Students.

[11] Under "Training content focus," we distinguish general principles of classroom management or pedagogy, from "subject-specific pedagogical content" that relates to pedagogy and instruction of a specific discipline such as reading or mathematics (following Shulman, 1986), subject-focused content that aims to fill gaps in teachers' content knowledge about a specific discipline, and a "reflective practice" (Dewey, 1910; Schön, 1983) focus that aims to develop educators' continuous learning through critical thinking, action research and self-evaluation skills.

Dimension	Element	Ethiopia READ[10]	Kenya TUSOME	Nepal EGRP	Uganda SHRP	Uganda LARA
	Subject content	✓	✓	✓	✓	✓
	Pedagogical method(s)	✓	✓	✓	✓	✓
	Reflective practice		✓	✓	✓	✓
	Other (describe)	✓ Gender and Inclusion	✓ ICT integration by use of tablets with various applications and documents	✓ Continuous assessment	✓ Local language; orthography; special needs orientation to identify and support children with special learning needs; supplementary readers to support learning; components of reading	✓ Experiential (Kolb, 2014)
Training Modality	Practice & feedback	✓	✓	✓	✓	✓
	Modeling by trainer	✓	✓	✓	✓	✓
	Lecture/Explanation	✓	✓	✓	✓	✓ Minimal during introduction
	Other (describe)			✓ Off-site reflection project following in-person training	✓ Modelling is also done by champion teachers and head teachers. Lectures are done as interactively as possible with a lot of questions and answer time, e.g., in the orthography sessions there is "lecture" but also modelling and practice e.g., letter sounds.	✓ Group working through exercises, i.e., locating information in guides and presenting on principles, scenarios, role play, skits
Trainers	Cluster coordinators		✓	✓	✓ Coordinating Centre Tutors (CCTs)	✓ CCT in Uganda
	External trainers	✓			✓	✓ retired
	District officers		✓	✓	✓	✓ Education officers, inspectors, college pre- and out-serve, principals

Dimension	Element	Ethiopia READ[10]	Kenya TUSOME	Nepal EGRP	Uganda SHRP	Uganda LARA
	Other (describe)	✓ TTC mother tongue lecturers	✓ RTI staff at national and regional level and ministry of education national-level staff	✓ Roster trainers (resource centers keep a roster of trainers that they use for teacher professional development modules training)	✓ Teachers, head teachers, university lecturers, ministry officials, retired district officials and staff	✓ Subject experts, outstanding classroom teachers,
Training Duration	5 or more days consecutively	✓		✓	✓	✓
	Short (< 5 days)		✓		✓ Refresher training is for 3 days	✓
	Multiple sessions / year		✓		✓ (5+3)	
	Other (describe)				✓ 1 day CPD workshops are conducted during support supervision by joint program and district teams per school term. CPDs are also conducted by CCTs and our Field Assistants for selected schools as needed.	
Mentoring /Coaching and Support	Peer-to-peer support		✓	✓ (Expect to come on board in the next year)	✓ Zonal head teachers train other head teachers in their zones	
	Principal as coach or instructional leader		✓	✓ (Expect to come on board in the next year)	✓ Head teacher support)	✓ Pilot effort
	Senior teacher as coach	✓ Pilot effort	✓			
	External coach			✓		✓ CCTs, Field Assistants
	Lesson study					
	ICT approaches		✓	✓ (expect to come on board in the next year or two)	✓ SMS messages guiding best practice	✓ Tablets, SMS, sound /Papaya app

Dimension	Element	Ethiopia READ[10]	Kenya TUSOME	Nepal EGRP	Uganda SHRP	Uganda LARA
	Other (describe)				✓ CCTs and district officials, e.g., inspectors of schools, Voluntary Service Overseas volunteers based at TTCs	
Materials provided or used	Structured lesson plans	✓	✓	✓	✓	✓ In teacher's guide (TG)
	Subject content supports	✓	✓	✓ Heavy use of teaching and learning materials during training.	✓	✓ How to teach section in TG
	Instructional guidance	✓	✓ Mainly for Grade 3, as structured lesson plans are developed	✓ Heavy use of the teaching and learning materials during training.	✓	✓ How to teach section in TG, do more boxes, and remedial support
	Video/SMS/ICT content/feedback	✓ ICT content and video (for TTC training)	✓		✓	✓ Blue book and open ended question for coaching teachers
	Other (describe)		✓ Other teaching and learning materials such as pocket chart activities, stimuli for early grade reading assessment and letter cards		✓ Alphabet charts, supplementary readers to 25% of schools, local language orthography guides, reflective journals and support supervision books to each teacher and head teacher	✓ Continuous Assessment Form, alphabet chart, pre-reading support material, Papaya, library books/supplementary reading materials (in local language, i.e., story cards, and in English Books for Africa), pupil books in English and local language

For each dimension shown in Exhibit 5, a number of approaches are possible, and the dimensions themselves are inter-dependent. The content and purpose of a given training, for example, will affect, if not determine, decisions about its duration, modality, materials, and the profile of trainers as well. The distribution of choices made across the different programs analyzed reflects the history, context, specific needs, and available resources of each setting. All of the programs reviewed include substantial training, coaching and/or other forms of support, and a selection of materials, although specific choices differ.

3.3 Summary of promising CPD options for Cambodia and the importance of local adaptation, evaluation, and adjustment

Exhibit 6 below draws on both the evidence of the international literature discussed in Section 2 and the experiences of individual countries and programs presented earlier in Section 3 and in Appendices A and B. It offers a summary of promising practices as suggested by the research, across a range of dimensions for the three principal forms of in-service CPD: (1) training courses and workshops, (2) mentoring and coaching, and (3) other ongoing support activities. Where relevant, Cambodia's current approaches are also shown, with TPAP innovations noted in ***bold italics***.

Exhibit 6. Summary of Current Practice and Possible CPD Options for Cambodia

Dimension		Modality		
		Training Course / Workshop	**Mentoring / Coaching**	**Other Support**
Operational definition		Structured group course or workshop of several hours' or days' duration	Ongoing individualized support provided at intervals by more experienced educator	Teachers affiliated by school cycle or subject area who come together for meetings and other activities for sharing, exchange, and mutual support
Appropriate applications		- Introducing groups of teachers to new or unfamiliar concepts, methods, knowledge, and/or skills, such as during curriculum reform or upgrading program - For greatest efficiency, participants with similar levels of prior training and experience should be grouped together	- Providing encouragement and technical support as teacher begins and strengthens the use of new information, knowledge, or techniques in the classroom - Coaching within first five years of entering teaching profession more likely to be effective	- Providing ongoing peer support and information exchange in a professional community of practice
Location	Cambodia	- TTCs; teacher education college (TEC) / higher education institution (HEI) for upgrading	Cluster; school	School ("Thursday meeting")
	Research suggests	- Central location organized for the purpose (such as TTC);	At the school; may also occur in a cluster	School and/or cluster, depending on school size, resources available, and

Dimension		Modality		
		Training Course / Workshop	**Mentoring / Coaching**	**Other Support**
		well-structured distance delivery for some content also possible - Short (1–2 day) trainings may also occur in a cluster situation if the cluster is adequately resourced	situation if the cluster is adequately resourced	distances between schools; virtual networks also possible
Provider characteristics	Cambodia	Teacher training colleges; mobile teaching teams (for lower secondary), ***TEC and HEI that meet Teacher Education Provider Standards (TEPS) criteria***	District training and monitoring team staff (not always trained as mentor); various, depending on development partner	Technical Group Leader
	Research suggests	- Experienced trainers well versed in the subject matter and in principles of adult learning; and meeting established quality criteria (such as TEPS)	- Senior teacher or principal at the school, or pedagogical counselor from outside the school - Should be specifically trained in coaching/ mentoring tools and techniques in order to play this role and have time in work schedule set aside to perform it	- Group members are fellow teachers, ideally of varying levels of experience, with one or more members trained in group facilitation - Coach/mentor (see previous column) may also participate as facilitator
Content	Cambodia	Various, depending on development partner	Various, depending on development partner	Various, depending on development partner
	Research suggests	- Structured content focused on a specific school subject or classroom management issue, conveying information and/or methodological approach - Course content is selected to fill gaps in teachers' knowledge or skills base that have been identified through needs assessment - Learner assessment methods, and the use of assessment results to improve one's own instructional practice,	- Can vary depending on identified needs of the individual teacher - Coach/mentor prepared to observe, listen, and determine appropriate content, or where to place emphasis for particular teacher and circumstances if pre-determined content is to be conveyed - In general, focus on techniques of teacher operational practice and behavior; and support knowledge gaps as needed	- Can vary depending on identified needs of the group - Prior identification and focus on one or just a few topics in a given meeting is likely to be more effective

Dimension		Modality		
		Training Course / Workshop	**Mentoring / Coaching**	**Other Support**
		constitute an often-identified area of need		
Pedagogical methods	Cambodia	Various, depending on development partner	Various, depending on development partner	Various, depending on development partner
	Research suggests	Apply principles of adult learning; model instruction that teachers are themselves expected to use (e.g., learner-centered, experiential)	Observation with specific feedback, demonstration, provision of targeted materials to support knowledge gaps	Guided peer-to-peer sharing and exchange around a specific theme or topic; some provision of expert advice or content
Materials and ICT	Cambodia	Various, depending on development partner	Various, depending on development partner	Various; depends in part on development partner
	Research suggests	- Trainer's materials to ensure consistency of training - Participant materials appropriate to support participants as post-training guidance and as teaching and learning materials for classroom use related to training - May include videos, references, and distance coursework delivered via web or SMS	- Can vary depending on identified needs of the individual teacher - ICT (social media; SMS) can play useful supporting role	- Can vary depending on identified needs of the group - Typically, materials are member produced or identified, then shared - ICT (social media; SMS) can play useful supporting role
Duration / Frequency	Cambodia	1.5 months (Ministry of Education, Youth, and Sport upgrading program); various shorter term (3–8 days) depending on development partner	Various, depending on development partner	Weekly "Thursday meeting"
	Research suggests	34 shorter (1–3-day) sessions across the school year likely to be more effective than longer (5+ days) sessions covering multiple topics.	At least monthly face-to-face; ongoing contact	At least every 2 weeks and as needed
Integration of practice	Cambodia	Various, depending on provider	Various, depending on provider	Various, depending on skills of provider
	Research suggests	- Lesson simulation or video may be part of course itself - Multi-session course alternates with teachers practicing in their classrooms what was presented in the course,	- Typically includes mentor's observation of teacher's lesson, or demonstration lesson, as the basis of exchange, reflection and feedback	- Network members bring classroom experiences, lesson plans for discussion to meetings - Lesson observations may be arranged as for mentoring/coaching

Dimension		Modality		
		Training Course / Workshop	**Mentoring / Coaching**	**Other Support**
		and discussing the results of the experience at next course session		
Induce-ment to participate	Cambodia	Ministry of Education, Youth, and Sport long-term (1.5 month) course leads to upgrading & possibility of moving to secondary cycle. Short courses have more or less motivating allowances, depending on provider.	Various, depending on provider	
	Research suggests	- Course completion may confer credits toward degree or professional upgrade - Promise of recognition of improved performance against teacher professional standards evidenced in teacher appraisal	- Focused, individualized feedback and counsel on performance and challenges encountered - May be formally linked to teacher appraisal system - Promise of recognition of improved performance	- Antidote to isolation - Help with specific challenges in the classroom, sharing to reduce individual teachers' preparation burden

Exhibit 6 brings home the variability in approaches that exists in Cambodia across the range of dimensions and modalities of teacher capacity development—each constituting a decision point confronting designers and policy makers. In some cases, Cambodia's current or planned practices already resemble what the convergence of research suggests (planned changes to TTC roles and creation of TECs, Thursday meetings, school clusters and mentoring programs where these function well). In other cases, Cambodia's landscape presents considerable variability, reflecting the country's large number of active local and international development partners, with no fewer than 38 NGOs reporting provision of primary-level teacher capacity development support in the NGO Education Partnership's *Education NGO Intervention Mapping 2015* (NGO Education Partnership [NEP], 2016). Examining the nature of these different initiatives and their quality of execution against the convergence of research will likely be instructive.

The literature also offers some strong indications of practices that are best avoided:

- Providing lengthy general or theoretical training divorced from classroom practice or follow-up seldom translates to better performance in the classroom. Teachers are pragmatic—if they do not themselves directly experience the value-added of training provided, they are less likely to incorporate it into their own practice.
- Upgrading teachers based solely on paper credentials—academic qualifications or training credits—without appraising their actual knowledge and performance, can lead to costly changes with little improvement in quality of instruction or learning.

- Overly incentivizing teachers to aspire to move “up” to lower secondary or upper secondary positions, at the expense of deepening their expertise in primary education removes skilled teachers from the primary level, where critical foundations of children’s learning must be laid.
- A “one size fits all” approach is unlikely to produce an effective teaching force. Cambodia’s teachers present a broad range of knowledge and skills, qualifications, years of experience, and contextual circumstances. These differences must be taken into account in the development of appropriate CPD programs.
- Neglecting to keep school directors and district officers informed of the content of teacher CPD programs is not conducive to creating the mutually supportive environment teachers need to apply new knowledge and skills.

As noted earlier, the current evidence base on CPD does not point to a single optimal approach. Cambodia’s program designers and policy makers must accept that adaptation, application, piloting, and continued monitoring, evaluation, study, and adjustment will be necessary to build an effective program for their specific setting. A period of piloting and adjustment to the Cambodian context and to local contexts within Cambodia is a necessity, not a luxury.

In this respect, Cambodia has an opportunity to leverage the variety of active partners and NGOs operating in the education sector. It is noteworthy that Cambodia’s current practice for several dimensions of CPD, as indicated in Exhibit 6, is “various, depending on development partner.” Taking advantage of this variety, a deliberate and rigorous process of testing, comparing results, and adjusting distinct models of training, coaching, and support, building on the lessons summarized in this brief, can go a long way to help Cambodia settle on its own best choices.

Some of these development partners, such as UNICEF and Room to Read, already do and will continue to carry out rigorous evaluations of the effectiveness of the teacher strengthening interventions they support. Beyond such initiatives that are valuable but likely to be “partner-specific,” MOEYS would do well to coordinate a more deliberate and extensive process of bringing together these and other experiences, identifying gaps (both in the range of approaches tested and in the evidence base compiled), and selecting what CPD approaches to pursue with new or further testing, monitoring and evaluating, providing standards for this work, and calling on all development partners to participate. In their formative evaluation of Cambodia’s CFS program, Shaeffer & Heng (2016), make an important observation that is germane in relation to CPD as well: ““M&E is essential to all development projects and provides the foundation for evidence-based decision-making and sustained positive impact. But without a robust and adequately funded M&E approach from start to finish … it is very difficult to assess progress, identify challenges, and make mid-term refinements during a project’s life span. Thus, an M&E framework, including clear indicators, baseline data, and a process by which its results can be fed into the system’s larger EMIS, is critical to the success of evidence-based reform and essential in providing credibility to education innovations” (p. 46).

Finally, decisions about CPD must be considered in conjunction with changes in pre-service education and teacher career structures, as these will have heavy implications for the ultimate effectiveness of the in-service system. For a discussion of some of these factors, please see Section 4.

4. Related considerations: Pre-service teacher training and teacher career path

This brief focuses primarily on CPD of in-service teachers for a good reason, as they represent well over 90% of primary and lower secondary teachers in the 2015–2018 period (see Exhibit 1). Investing in improving CPD reaches the large majority of teachers and has the greatest potential to help improve teacher performance and student outcomes in a reasonable time frame. Dollars spent on converting primary TTCs to TECs are dollars that won't go to improving the existing teaching force.

Nonetheless, while pre-service education and teacher career pathways are not the primary focus of this analysis of CPD options for Cambodia, these other elements of teacher policy are also crucial in developing a coherent and sustainable system. Constructing mutually supportive alignment across all three areas—improved CPD, enhanced pre-service preparation, and an attractive and performance-focused career path approach—will be necessary to achieve more effective and lasting teaching performance in the classroom. The TPAP in its comprehensive vision offers an unusual opportunity to bring this alignment about.

4.1 Pre-service teacher training

Following the new TPAP (MOEYS, 2015), Cambodia is in the process of expanding pre-service teacher education for basic and secondary education teachers from a 12 + 2 model to a predominantly 12 + 4 model to be launched as soon as 2020. The Plan also envisages the transformation of at least some TTCs into TECs (TPAP Action 4.2.1); MOEYS, working with the Japan International Cooperation Agency, will pilot the development of two comprehensive TECs in Phnom Penh and Battambang, due to open in 2018, to service pre-primary, primary, and middle school teachers.[12] Bachelor and master of arts in education degree programs (BA [Ed] and MA [Ed]) for teachers and TTC/TEC lecturers, respectively, are also planned (TPAP Actions 3.1.2.1 and 3.1.2.3).

The TPAP also makes room for diversifying entry points into the teaching profession, allowing BA holders to become basic education teachers (TPAP Action 2.3.1.1), and piloting a one-year post-BA teacher preparation stream in which Regional TTCs and TEPS-certified HEIs offer non-education BA graduates a path to teacher certification (TPAP Actions 2.4.3.1 and 2.4.3.2).

Additional progressive actions for pre-service outlined in the TPAP include strengthening the TTC practicum with support to application schools (TPAP Action 3.1.2.4), ensuring the TTC curriculum adequately addresses inclusive education and gender (TPAP Action 3.1.2.5), and creation of an induction package for new teachers (TPAP Action 3.2.1.1).

This combination of supportive actions is promising. Our analysis of the research in this area suggests that extending the amount of time without also changing the fundamental relationship between content and pedagogy is insufficient. Education systems that have merely lengthened pre-service training or increased the level of pre-service qualification required (i.e., increasing the teacher certification requirement to a BEd level) only succeeded in raising the cost of their teaching forces without necessarily improving the quality. Lessons can and must be drawn from other contexts on how to make this

[12] This Japan-funded effort is known as the E-TEC program. Thanks to Nick Hinde for providing some detais.

fundamental shift and re-organize expanded TTC coursework. In addition, expanding the opportunities for connections to classrooms by TTC lecturers is essential so that both the lecturer and trainees can experiment with and learn from experienced teachers.

Exhibit 7 summarizes some of these key considerations facing Cambodia, based on our review of the literature and experience in other countries.

Exhibit 7. Considerations for a Strong 12+4 Pre-Service Teacher Education Program

Aspect	Features	Impacts	Examples (Sources)
Extension of post-secondary teacher education from 12+2 to 12+4	Cambodia's 12+4 model increases post-secondary education of teachers by two years from the current 12+2 model. Combined with new Teacher Education Provider Standards (TEPS), creation of the BA(Ed) degree and upgrading of some if not all teacher training colleges (TTCs) into teacher education colleges (TECs), it constitutes a significant change in pre-service teacher education. Other countries have transitioned to 12+4 or 12+3 models.	A longer (3- or 4-year) post-secondary teacher preparation phase can create more time for practicum as well as needed strengthening of content and pedagogical knowledge, and specialization by teaching level and subject area.	Indonesia (deRee, 2015); Kenya (Piper et al., 2012), 6 African countries (Akyeampong et al., 2012)
	Implications for Cambodia: The transition from 12+2 to the 12+4 system (anticipated by the year 2020) must be done systematically given that a longer period of training and an expectation of 12 years prior to selection for teacher training will reduce the yearly number of teachers available for teaching. Ensure that teacher projections take into account the transition to a 12+4 training program, or teacher shortages will ensue and class size will continue to increase. "12+4" must not be carried out simply as an increase in the volume of training, but as a means to introduce more practicum work and more experiential, active, and reflective pedagogical learning. TEPS and BA(Ed) are critical pieces of this decision. Consider supporting a Teach for Cambodia program that would attract graduates of top universities to teach in public schools, in part to increase the concept of what a teacher is in Cambodia, as well as to maintain teacher numbers especially during the transition phase.		
Specialized university course for TTC lecturers	Given the frequent weakness of primary TTC lecturers to have the technical expertise in particular subjects, such as literacy, several countries have moved to create a university course targeting primary TTC lecturers so that their skills in early learning are enhanced. This course should be practical and consider that many lecturers have never had opportunities to teach in lower primary or in primary at all, and seldom have the pedagogical skills that match their academic qualifications.	The courses designed to support lecturers to increase their skill level are often quite well received. Actually having the lecturer engage deeply enough in instructional activities to improve their own teaching is important.	University of Nairobi, Ethiopia, Cambodia (Orleans, 2010; Tan, 2007), in emergencies (INEE, 2015); Indonesia (Sentosa & Arlianti; n.d.)
	Implications for Cambodia: The objective of this activity should be to help lecturers teach more interactively and to mimic the sorts of behaviors with their trainees that we want the trainee to undertake with the child. Trainees will teach as they were taught, and few programs have been incentivized strongly enough to persuade lecturers to fundamentally change their own teaching style. Holding the instructional practices of		

Aspect	Features	Impacts	Examples (Sources)
	lecturers at the forefront of our minds as to the expected impact and outcome is likely to help somewhat. Short courses, for example at TECs and other TEPS-accredited higher education institutions, might be most effective as they can be embedded into a broader course of study (such as the MA[Ed]), and also mimicked at the primary TTC in the courses offered for teachers. We teach as we are taught, and lecturers are often themselves among the most "traditional" of teachers as well as resistant to change, so such a course should be radically focused on instructional methods and quality.		
Connecting TTCs to schools	Connecting TTCs to schools is a mechanism to improve the relevance of pre-service education. Given that TTCs have a tendency to become overly academic, having a closer interaction with schools would help lecturers at the TTCs to be more up-to-date and practice-oriented, and provide application schools with exposure to a wider range of instructional ideas.	TTC linkage programs struggle to maintain the relationship with schools that drives their existence. Having accountability systems in place that ensure that the interaction is in place are important, as are expectations on the length of the practicum for trainees and the numbers of observations made of trainees during their practicum work.	Indonesia (Sentosa & Arlianti, n.d.), Ethiopia, Cambodia (MOEYS, 2014; Tan, 2007), Uganda (MacNeil, 2004), in emergencies (International Network for Education in Emergencies [INEE], 2015)
	Implications for Cambodia: While connections between TTCs and neighboring schools exist in Cambodia, the relationship must be developed and maintained thoughtfully. Such linkages have been shown to somewhat reduce the academic nature of TTCs, but real care is required to overcome the power dynamics between local teachers (who might be experts) and TTC lecturers (who might not), so that teachers' expertise is appreciated by TTC staff. Similarly, structuring the linkage so that it is primarily beneficial to the linked schools is critical, since other efforts in this area seldom put the classroom first. At the same time, the benefits of the relationship for the TTC must also be valued, to help ensure that training content and methods provided by the TTC are relevant and appropriate for the school and classroom context. Ongoing audits and accountability systems for lecturers and students showing the work trainees do in schools along with the feedback given, are also very important.		
Induction program for newly qualified teachers	Too often integrated support for newly qualified teachers is neglected. Such support can buttress teachers' pre-service training with feedback on teaching and practical activities to support the initial transition. Can extend from 1 to 3 years. Key elements are observations by principals or other teacher educators with focused feedback and practical activities focused on pedagogical improvement. These activities should be demanding so that the result, an inducted teacher, is given the appropriate level of career security. Ideally, this would not result in permanence but an initial period of contractual safety.	Few countries have successfully designed and implemented induction courses, and those that have, have provided little practical support to teachers, thereby reducing the impact.	6 countries in sub-Saharan Africa (Akyeampong et al., 2012), multi-country (Save the Children, 2016), Philippines (World Bank Group, 2016);

Aspect	Features	Impacts	Examples (Sources)
	Implications for Cambodia: Given Cambodia's ongoing demand for an expanded teaching force and the difficulty in rapid and sustained improvement in the quality of pre-service, structuring a practical and low-cost induction course that supports teachers on the behaviors and attitudes shown to have the impact on long-term teacher behavior and quality is a meaningful investment to consider.		

4.2 Teacher career pathways

As Cambodia considers altering its in-service and pre-service education designs, it is critically important that teachers' career pathways for recognition and advancement reflect and support the changes introduced. The conditions under which teachers work and the clarity they have (or do not have) regarding whether engagement in courses, trainings, and instructional improvements are related to their career success and advancement, will affect their level of engagement in these activities.

Considering the teacher career structure within which teacher PD options are offered is essential. Designing an in-service teacher PD course from the outset to ensure that it fits into a teacher's career structure is important. Teachers need to know how this training will support them and how implementing the ideas from the training in the classroom will matter not only for improved learning for their children but also for their overall career as education professionals. Our view is that these considerations are too often ignored as governments design programs to improve teachers' skills.

As noted in the TPAP (MOEYS, 2016), "… there is [currently] little incentive for teachers to participate in INSET because professional development is not linked to promotion or a longer-term vision for teacher career growth. It remains ad-hoc, inconsistent, and unmonitored" (p. 7). At the same time, a paper- or credit-based system of career advancement that is not also linked to demonstrated performance in the classroom is a recipe for costly commitments on the part of the sector that are not likely to produce desired improvements in instructional practice.

In response to these concerns, the TPAP has identified several critical actions relating to teachers' professional development in terms of formalizing and developing the career path. These include:

- Formulating new teacher career pathway (TPAP Action 2.2.1) [13]
- Revising the teaching professional standards (TPAP Action 2.4.1)
- Establishing guidelines for teachers to participate in professional development (TPAP Action 6.3.1); linking PD programs to a clear benefit structure (TPAP Action 6.3.2); and linking INSET credit system to incentives within the overall structure of the teacher career pathway (TPAP Action 7.3.1)
- Developing monitoring and evaluation criteria for classroom teachers, school directors, and teacher trainers, including revising the teacher performance appraisal to reflect the revised teacher professional standards, staffing norms,

[13] A draft of this teacher career pathway document is currently under development, but was not available to the authors at the time of this writing.

job description, job specification, and the teacher career pathway (TPAP Action 9.2.1.1).

Exhibit 8 presents several areas that Cambodia should consider in moving forward with the teacher career pathway actions delineated in the TPAP. In the exhibit, we discuss in turn the critical role of robust performance appraisal to accompany training participation as grounds for career advancement; the special circumstances of teachers with 9+2 or other "below grade" qualifications and possible approaches to their upgrading; and two approaches to incentivizing choices relating to teacher deployment and selection.

Exhibit 8. Considerations for the Teacher Career Path

Aspect	Description	Impacts	Examples (Sources)
Teacher appraisal system	Teachers need clarity on how they will be evaluated, and how the results of evaluation will affect their career advancement. Having a teacher appraisal system that clearly lays out a code of conduct, the instructional behaviors that are desirable, and an accountability system that will ensure that these behaviors will be fairly evaluated is a critical part of an effective education system.	When teachers know what performance is expected of them and how they will be evaluated, this knowledge can have a significant positive impact on their engagement in training and their attention to instructional feedback. Lack of transparency in appraisal and performance evaluation, on the other hand, can create corruption between teachers and head teachers as well as doubt and skepticism regarding the fairness of the evaluation process.	Kenya's new Global Partnership for Education-funded appraisal system (TPAD), Cambodia (Benveniste et al., 2008; Bunlay et al., 2010; MOEYS, 2014; Tan, 2007); East Asia (Arcia et al., 2012), Philippines & Indonesia (World Bank, 2016)
	Implications for Cambodia: Cambodia has taken important steps to develop an appraisal system and revise teacher professional standards. If this work can be accompanied by clear description of the trainings teachers are expected to attend and the instructional behaviors they should undertake, and empowers the principal or other officer required to supervise them, and if it is seen as being a fair method for evaluation, it can make a significant difference in how Cambodian teachers view additional in-service training and the instructional behaviors promoted by Cambodia's reforms. The typical pitfalls in these processes are the lack of follow-through on managing appraisals of teachers, perception of lack of fairness for the evaluations, and the lack of resources to provide teachers with the raises or other inducements they were promised. Thus, careful planning and communication with all stakeholders (including teachers) are key. In all cases, evaluation should be based on both records of active participation in instructional improvement and reform efforts through training, coaching, and other support activities and on direct appraisal of performance in the classroom.		
Particular considera-tions for upgrading 9+2 teachers	Given the urgent need to initially expand the teaching force, many Cambodian basic education teachers were hired on the 9+2 model. To address the "multilevel" teaching force and offer a path for these teachers to upgrade their knowledge, skills and standing on a par with 12+2	Evidence of the impact of upgrading programs on education quality and cost-effectiveness is bleak. Many countries spend significant government or teacher resources to pay for upgrading and then huge sums to pay the newly	Ethiopia (Piper, 2009), Cambodia (Benveniste et al., 2008; MOEYS, 2014; Chhinh, 2002), East Asia (Arcia et al., 2012)

Aspect	Description	Impacts	Examples (Sources)
	teachers an upgrading program could be made available. Such a program would likely be a combination of in college courses mixed with activities and instructional tasks at the school.	upgraded teachers the same as the 12+2 teachers. Without careful design and clear performance standards, resources can be wasted in two different directions.	
	Implications for Cambodia: Any Cambodian upgrading program should be carefully designed. One option is simply to require teachers wishing to upgrade to obtain their high school equivalency at their own expense and on their own time, and take part in an upgrading evaluation process. While lucrative for educational bodies that provide equivalencies, however, upgrading programs that are purely academic have basically no effect on improved learning outcomes for the children in these teachers' classrooms. Instead, a more deliberate approach designed specifically for this group could offer a schedule that permits these teachers to remain on the job and blends subject content with pedagogical content as part of the program. The design should include practice in the instructional reform characteristics that are required by the Ministry of Education, Youth, and Sport (MOEYS) and have a mixed modality to lessen costs. Cambodia could consider an upgrading program with practice teaching, classroom observation and follow-up, and structured access to support group discussions on new methods. The ideal scenario would have these programs specifically targeted at improved teaching in particular subjects so that the practice and feedback could be applied to a specific set of skills. As noted in the discussion of the teacher appraisal system, the conferral of upgraded status related to training undertaken should also be validated through an independent appraisal of the individual's performance in the classroom indicating that it meets the standards of performance required.		
Inducement for placement in rural schools	Where some schools are difficult to staff, countries sometimes provide financial inducements to teachers willing to work in rural and less desirable locations.	Choosing the correct amount of additional remuneration to induce teachers to work in hard-to-staff schools is complicated, and it appears that Cambodia's prior inducements have not been sufficient to increased demand for working in rural schools.	Northeast Kenya, Cambodia (Tan, 2007; Tandon & Fukao, 2015), Latin American and Caribbean (Vegas, 2005); (Benveniste et al., 2008), East Asia (Arcia et al., 2012)
	Implications for Cambodia: Cambodia's past experience with this approach indicates that small or token inducements will not produce an adequate response. A survey could be organized to determine what an attractive inducement could be. Given that Cambodia's teaching salaries are perceived to already be low, it might mean that large inducements are required not only to staff the rural schools that are less desirable, but to encourage high-quality teachers to take advantage of the inducements. This would cost more money but might have larger impacts on learning in rural schools.		
Market-based inducements	Given the large percentage of the overall workforce that teachers represent, considering how to structure the teacher career ladder, including initial salary and yearly increments, is a critical factor in increasing the supply of teachers. A market-based inducement would look	In most cases, increased salary has been unable to improve learning outcomes. In some experiments in the US, there have been effects in increasing the background qualifications of teachers, and at least one study showed increased impact. The	Latin America (Vegas, 2005); East Asia (Arcia et al., 2012)

Aspect	Description	Impacts	Examples (Sources)
	carefully at which skills are most in demand over the next 5–10 years in the Cambodian workforce and increase salaries either initially or permanently for the portion of the teaching workforce that is in demand. Policy governing qualifications of contract teachers and facilitating their utilization to respond to fluctuations in student enrollments at the local level is also worth examination.	amount needed to change the population applying to be teachers was high, and they did not enter the teaching workforce through the normal mechanisms.	
	Implications for Cambodia: Cambodia needs to have a high-quality and motivated teaching workforce. Re-examining the teacher career ladder to determine whether there are tweaks that the unions and the MOEYS could buy into that would potentially be able to utilize incentives to improve the initial teaching force and better target teachers to different portions of the sector (primary vs. secondary, generalist vs. specialist). Finally, if the difficulty of hiring teachers for rural schools persists, the MOEYS could consider that demand and utilize the teacher career ladder to push teachers towards those areas (e.g., by requiring all newly hired teachers to serve some time in hard to staff schools/areas).		

5. Synopsis: Key CPD considerations for Cambodia

This policy brief was organized to provide the Cambodian MOEYS with policy options for improving the quality of teacher CPD in the context of large-scale teacher education transformation. We encourage the MOEYS to utilize this document as a reference to generate discussion, allowing key stakeholders in the sector to review the evidence from other contexts that are relevant for Cambodia and consider how to apply that evidence to Cambodia's current policy situation.

In particular, we suggest that Cambodia's CPD designers keep in mind the following summary of considerations, which are based on the broad range of findings discussed.

5.1 General considerations

Teaching practice is not easy to change. Consider the implications of the Guskey model for supporting instructional practice in meaningful ways, with opportunities for learning both through study and direct but guided practice and experience. It is critical to support the actual change processes that teachers undertake as they determine whether a reform effort is in their interests.

Teachers are active participants in their own development. They will choose to change their behavior, or not, based not only on knowledge obtained through coursework, but on experiential practice. They are more likely to apply what they find to be useful. Providing lengthy general or theoretical training divorced from classroom practice or follow-up seldom translates to better performance in the classroom. Teachers are pragmatic—if

they do not themselves directly experience the value-added of training provided, they are less likely to incorporate it into their own practice.

Educators also tend to teach using the methods by which they were taught. Thus even the training of trainers and teachers should itself employ and model the learner-centered ways of teaching that are desired in the basic education classroom. In addition, training and coaching content is best built on what teachers already know, aiming for their "zone of proximal development." Doing so requires knowing their starting point through needs assessments, classroom observational studies, and other means.

These considerations also point to the importance of building a certain flexibility into the specific modalities of CPD provided, so that they are appropriate for local circumstances (urban-rural, school size, degree of connectivity) as well as teachers' specific needs, while upholding common principles and standards of quality.

Keeping school directors and district officers informed of the content of teacher CPD programs, which may require training and orientation specifically designed for them, is essential for creating the mutually supportive environment teachers need to apply new knowledge and skills.

Whether through formal coursework, peer groups observing classrooms, cluster-based support networks, curriculum coordinators providing consistent and ongoing support, or principals and senior teachers implementing structured instructional leadership, Cambodia has a range of possible options to provide support to teachers as they work to learn, practice, and implement new instructional approaches. It is only after they understand the new methods, attempt them in their classrooms, and evaluate them using their own metrics that teachers will change their attitudes and, more importantly, their practice.

5.2 Considerations relating to upgrading courses and workshop training

While the purposes and length of teacher upgrading courses and other types of intensive workshop training may be quite different, an important commonality is that they typically occur outside teachers' day-to-day context of their own school and classroom. To support the relevance and effectiveness of these events once teachers return to their schools, classrooms, and students, the research base offers a number of useful lessons.

Theory and evidence indicate that teacher training is more likely to lead to actual change in behavior if it provides regular opportunities for teachers not only to learn new pedagogical content and skills, but also to practice the application of their new knowledge and skills, receive feedback on the practice, and come to their own conclusions. Practice sessions can be built into the training itself. Even better, in-service training can be organized into series of short (1–3 day) sessions interspersed with active periods of practice during which teachers return to their classrooms to apply the learnings of a given session and are observed in their efforts to implement the new lesson. They can then bring their reflections on this practice as well as the challenges encountered, to the next session.

Evidence on the best locations for in-service training is related to the nature of the training. Intensive upgrading and longer workshops may be best held in purpose-built and resourced settings such as teacher training centers, while short sessions can be cluster-based, as long as the necessary resources are reliably available to the cluster as a whole and not the host school only. Even when using a cluster-based or school-based program, maintaining active connections between schools and teacher training centers

will be beneficial for both, providing teachers access to the expertise and resources of the center, and fostering lecturers' awareness of the realities of the school and classroom.

In addition, PD courses that focus on subject-specific instruction (such as literacy or numeracy) and are accompanied by related materials (textbooks, teachers' guides) are more likely to produce measurable results and are easier to implement at large scale, than broad ranging, general training.

Finally, it is worthwhile to keep in mind that the decision to confer formal upgrading and enable teachers to improve their status and compensation also represents a real opportunity to foster positive changes in teachers' instructional practice. The most successful programs require demonstration of improved practice, above and beyond course hours attended or diplomas received, as a basis of award of upgraded status or training credits. Cambodia has useful examples of such programs.[14]

5.3 Considerations for mentoring and coaching

Converging evidence strongly points to the importance of combining in-service training courses with related pedagogical follow-up guidance and support to teachers in their classrooms.

Current practice in Cambodia offers several opportunities for implementing such a mentoring/coaching function. A sustainable and affordable mentoring/coaching program could utilize the cluster system, deploying senior teachers from the core school who have the advantage of being close to classrooms in satellite schools as well. Instructional leadership from school principals or technical group leaders at the school can also be mobilized. Both school-based and cluster-based mentors and coaches can be effective; as long as emphasis is placed on instruction, and coaches can see teachers regularly in their classrooms to help them implement new methods. UNICEF's plans to pilot both school- and cluster-based coaching and mentoring with MOEYS can be of great support in building the evidence base for determining which approaches are most appropriate and effective in particular situations.[15]

Specific guidelines for the mentoring/coaching and support aspects of CPD will need to be developed and accompanied by commensurate, specialized training for the mentors and coaches themselves. While the TEPS is silent on provision of training for these roles, delivery by TTC and TEC faculty would be desirable, to help ensure coherence with the pre-service and in-service training provided by these same institutions and foster their deeper understanding of the coaching role.

Devising a coaching modality that is practical in the Cambodian context will also require careful consideration of how a coaching function can fit into the job description of existing local personnel and how the quality of coaches can be continually improved. For example, school principals tend to be heavily occupied with administrative and financial management work. Enlisting them as instructional leaders in a school-based mentoring

[14] Based on communication received from Nick Hinde.

[15] UNICEF and MOEYS plan to test a cluster strengthening system to improve teaching and learning via the introduction of a mentoring program with two full-time mentors at the core school covering Grades 1–3 and Grades 4–6, respectively, to be piloted in 2017 in four provinces. Through a Global Partnership for Education III Variable Grant, school-based mentoring will also be piloted. (Based on communication received from Sokhon Nuom and Rasika Sridhar-Sethi).

or coaching role would require that a workable balance be struck between this instructional leadership role and their management responsibilities.[16]

5.4 Other forms of support to in-service teachers

Recent and growing evidence has shown increased learning outcomes through key combinations of inputs such as the "triple cocktail." Aligned, improved instructional materials for students and teachers, ongoing coaching or mentoring, and structured lesson plans can provide critical scaffolding for teachers to implement new approaches introduced through training courses and workshops. Successful teacher PD programs routinely make use of more than one method to deliver support to teachers.

ICT can be used to buttress or amplify high-quality CPD, but is not a standalone solution for any instructional improvement program: ICT can enhance and support, but cannot replace, training and mentoring or coaching work. Combined with other methods, ICT can reduce costs by providing an avenue for virtual support via SMS and even videos of model lessons delivered through hand-held devices, the costs of which are declining rapidly.

In Cambodia, through the textbook orientation program, a small section providing teacher guidance is now included at the beginning of the primary school textbooks. This provision partially resolves the previously common problem of schools receiving student textbooks but not the teacher guidance materials that were intended to accompany them. Nonetheless, many teachers are apparently still unfamiliar with the content of the guidance provided, and the expectation that parents might also use it to help their children at home has not materialized.[17] It could be useful to explore whether and how teachers are oriented to the new guidance section of the textbooks, whether they find it useful, how it could be improved, and other ways of conveying guidance material to teachers.

5.5 Pre-service and career path considerations

Coherence across pre-service teacher training, in-service teachers' professional development, and their career path options in education is fundamental to building and maintaining an effective teaching force. Compatible content, methods, and materials across pre-service and in-service training, mentoring, and support can be encouraged through intentionally coordinated curriculum design, shared providers as the instructors of pre-service and in-service teacher and coach training, and utilization of common performance standards and performance indicators. Cambodia's current TEPS and teacher professional standards initiatives represent important steps in the right direction in this regard.

CPD design decisions and outcomes are also strengthened when paired effectively with the teacher career structure. Specifically, MOEYS can incentivize teachers' adoption of improved methods by linking their engagement in CPD and their implementation of the methods learned to the process of teacher evaluation, upgrading, and career advancement. Neglecting to do so, by instead upgrading teachers based solely on paper credentials—academic qualifications or training credits—without appraising their actual knowledge and performance, can lead to costly increases to the salary bill with little improvement in quality of instruction or student learning. Many countries have failed to

[16] Based on communication received from Rasika Sridhar-Sethi.
[17] Based on communication received from Nick Hinde.

make the connection between upgrading and practice explicit, and evidence has shown that the wage bill for newly upgraded teachers has increased significantly, but classroom practice has not improved.

It is also critical to provide opportunities and incentives for specialization and advancement within the primary education level, given the importance of early grade instruction as a foundation for later learning. Overly incentivizing teachers to aspire to move "up" to lower secondary or upper secondary positions removes skilled teachers from the primary level, at the expense of deepening needed expertise in primary education.

5.6 The need to continue testing, monitoring, and adapting the CPD system going forward

The need to continue piloting and evaluating different approaches before making wholesale policy or at-scale implementation commitments cannot be understated. A "one size fits all" approach is unlikely to produce an effective teaching force, and in any case the research does not point clearly to one specific formula for CPD. Cambodia's teachers present a broad range of knowledge and skills, qualifications, years of experience, and contextual circumstances. These differences must be taken into account in the development of appropriate CPD programs for them.

Whatever choices Cambodia makes, an approach that incorporates ongoing research, evaluation, and adjustment as needed will be invaluable. Monitoring and evaluation of the actions and outcomes of in-service professional development programs can be organized and coordinated to include baseline assessment, structured piloting of approaches, and careful documentation of adaptations and adjustments made, both to move toward an optimal system of teacher PD for Cambodia, and to contribute to the knowledge base on effective CPD more generally.

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Appendix A. Detailed Assessment of In-Service Teacher PD Options

Delivery Option	Description	Pros	Cons	Examples (Sources)	Implications for Cambodia
Training through college coursework	Creating a career structure with upgrading, promotion or recertification tied to additional coursework has been an important policy change for many countries. In this model, teachers already in service take additional coursework to gain the equivalent of a Bachelor's or Master's degree, allowing them to receive an upgrade, promotion or recertification.	Provides incentives for teachers to remain in the profession; college setting may be conducive to intensive study.	Sadly, the evidence is quite consistent that the additional costs that school systems pay for newly recertified or upgraded teachers is not worth much, since education quality is not found to be higher in these teachers' classrooms.	Cambodia (Benveniste, Marshall, & Araujo, 2008; MOEYS, 2014); Indonesia (deRee, 2015);	If Cambodia wishes to upgrade existing teachers through college coursework, then we suggest that the decision to upgrade be intertwined with a revised teacher appraisal system that it is linked to actual behaviors known to improve achievement. Obtaining a degree or additional education alone seldom makes a difference in instruction or learning, so more carefully linking teachers' upgrading to the behaviors Cambodia wants to see in classrooms will be important. The temptation is to have academics serve as a proxy for teacher quality, yet this is seldom the case.
Training through short courses	Allowing upgrading to depend on in-service training courses rather than paid courses at a university. The program would include an ongoing set of courses and interactions that teachers would be engaged in, with clear requirements for upgrading or recertification. Structuring the in-service program to link to career advancement should incentivize	Teachers remain in the system while upgrading. With careful planning and tracking of teacher attendance in INSET activities, and If the INSET program is interactive, practice oriented, linked to actual subject instructional practice, and clear about the behaviors	Juggling teaching and intensive study can be challenging for some teachers. Unfortunately, few countries have been able to carry out interactive, practice-oriented and subject-focused INSET courses in a meaningful way for extended	Cambodia (MOEYS, 2014), multi-country (Save the Children, 2016), East Asia (Arcia et al., 2012), Philippines (World Bank Group, 2016)	Linking the INSET that Cambodia wants teachers to undertake with a system of upgrading or promotion is one of the strongest ways to create meaningful INSET that does not require significant resources. This would allow teachers to overcome the financial burdens of training at the cluster center if that is the venue selected. To implement this method well, carefully planning and ongoing practice to ensure that the INSET is interactive and practice

Delivery Option	Description	Pros	Cons	Examples (Sources)	Implications for Cambodia
	attendance and engagement.	and performances required for upgrading, you have created a system that incentivizes the behaviors you want.	periods without external assistance.		based is required. Consider developing a multi-modal approach where teachers earn points for school-based reflections, cluster-based discussions and lesson observation, coaching visits and feedback, and cluster- or TTC-based training and linkages with the pre-service site. The frequent, yet low-cost reinforcement system this would create could help establish the high-quality practice that Cambodia needs to improve instruction.
Training delivered through cluster systems	Cambodia has been utilizing a cluster system for 20 years. Clusters have varied in their impact based on the individual leadership within the cluster as well as donor funding. Cambodia's cluster system has an emphasis on planning, but less emphasis on classroom support and feedback from cluster coordinators than other countries	Several studies suggest that the cluster system has been effective in Cambodia when there is individual leadership and external support. This means that some clusters have modest impacts and need more support	If poorly resourced, cluster programs can disintegrate. In the case of Cambodia, the fact that clusters are not recognized officially as structures able to receive state funds or resources seriously erodes their sustainability.	Cambodia (Benveniste et al., 2008; Bredenberg, 2002; Bunlay et al., 2010; Dykstra & Kucita, 1997; MacNeil, 2004; Pellini & Bredenberg, 2015; Vande Walle, n.d.), Ethiopia, Bihar (World Bank, 2014); Japan (Lamie, 1998); Malawi (MacNeil, 2004), Uganda (MacNeil, 2004)	Using clusters as a locus of instructional support in the area of in-service training makes practical sense going forward, if steady funding can be resolved. The cluster is an established structure with strong local belief in its potential efficacy. Clear planning and thought to regularize clusters' status, funding, and functioning are necessary to maximize the effect of clusters. Expanding Cambodia's focus on clusters to be a place for embedded instructional support, feedback and instructional change is a delicate process that will require MOEYS financial support for classroom observational feedback and increased

Delivery Option	Description	Pros	Cons	Examples (Sources)	Implications for Cambodia
					interaction between principals and teachers.
Coaching through clusters	Some countries have chosen to have an overlap between the cluster systems and the coaching reform. This allows those that provide training to the teachers at the cluster level to also be the ones to provide support. This change allows for more effective training on the one hand, since it can respond to what the coach is seeing at the cluster level between trainings, but also creates more effective coaching on the other since coaches are aware of what should be emphasized in the classroom and can focus their feedback and support.	Cluster based coaching shows significant results when implemented well. When the coach can be focused on instructional support rather than administration, and is provided with the logistical support to go to classrooms, it can have a significant impact on learning. Doing cluster based coaching without an integration of the training and the coaching, and not having coaches able to go, has detracted from its effect.	Poorly resourced clusters are unlikely to survive. In Cambodia, the effectiveness of clusters and cluster-based activities has been very dependent on external (development partner) assistance.	Uganda, Rwanda, Malawi, Kenya (Dubeck et al., 2015; Piper & Zuilkowski, 2015), Jordan, Nepal (US Agency for International Development [USAID]/EQUIP1); South Africa (Fleisch, 2016); Cambodia (Pellini & Bredenberg, 2012)	Cambodia has a strong cluster system that can have a coaching model built on top of it. Having clarity on the role of the coach as being supportive, rather than critical or administrative, is an important distinction. Coaching seems to have been a very small part of Cambodia's current cluster system, and provides an opportunity to build a structured coach support system on top of it. This would require political will since there is some risk to making changes within a system accustomed to implementation a certain way. Coaches are most effective when able to give specific subject feedback related to a larger instructional reform.
Coaching delivered at the school	Providing teachers who are learning new instructional methods with coaching on an ongoing basis in their classrooms is a reform that several countries have tried. The coaches are not always formally in place, so different countries have	Coaching, when integrated with the coach's own career structure and when provided with resources to visit classrooms has been shown to have significant effects on learning for	Settings with education staff shortages at the school, cluster, or district level may have a hard time freeing up personnel to fulfill the coaching function. Because	Kenya (Dubeck, Jukes, Brooker, Drake, & Inyega, 2015; Piper & Zuilkowski, 2015), South Africa (Cilliers, Fleisch, Prinsloo, & Taylor, 2016)	Successful coaches require support to know what they should look for and how to give focused feedback that helps to change behavior. Cambodia could consider designing a coaching framework and releasing cluster coordinators from some of the administrative tasks to implement a meaningful

Delivery Option	Description	Pros	Cons	Examples (Sources)	Implications for Cambodia
	overcome that challenge using different methods.	relatively low cost, particularly in contexts where the coaches are already in existence. This will require lower administrative tasks for the coaches who are often doing other things, and not all countries are able to relieve the coach of those additional responsibilities, so the programs suffer.	the coaching role is one of guidance and support rather than inspection, inspectors despite their availability will not be the best choice as coaches.		training. While some countries view the subject specialization of coaches as of paramount importance, not allowing non-literacy-trained coaches to support coaches, Cambodia should consider giving on-the-job training to coaches who can then improve the quality of service delivery in classrooms. Having a system that would allow coaches data collected to be shared for accountability can also help.
Cluster meetings for discussion	Utilizing the cluster system in place in Cambodia, this would create (or expand) adult learning spaces for teachers to discuss their attempts to implement a new instructional reform package.	Cluster meetings work best when they have the structure of a meeting agenda, but the cluster officer allows the teachers to interact, discuss, and even complain, as long as the discussion is around improved instruction and better outcomes.	Programs that depend primarily or solely on cluster-based meetings have not shown to have large effects, but many successful programs include cluster-based discussions as one of the strategies in the package.	Cambodia (Benveniste et al., 2008; Bredenberg, 2002; Dykstra & Kucita, 1997; Pellini & Brederburg, 2012), Ethiopia (Piper, 2009), Bihar (World Bank, 2014), USAID/EQUIP1	Continue using the cluster system as a locus for instructional support meetings. Do not depend entirely on these meetings to improve outcomes but as part of a broader instructional reform, they can serve the purpose of being an outlet at key times for teachers to discuss their challenges in implementing the new instructional package.
School-based meetings for discussion	In this design, the school is seen as a place for instructional training and support. This includes teacher training needs being met at the school	In some contexts, school-based training and support can be very effective, particularly when combined with	There are few examples of large-scale improvements made based on a system that	Kenya, Ethiopia (Piper, 2009), South Carolina (Vanderburg & Stevens, 2010), Philippines (World	Cambodia could consider having school-based classroom observational feedback be part of the instructional reform package put in place. This should not be seen as the

Delivery Option	Description	Pros	Cons	Examples (Sources)	Implications for Cambodia
	and peer-to-peer discussions occurring at the school level.	training and / or coaching.	primarily or solely utilizes school-based discussions.	Bank Group, 2016), Multiple countries (Popova et al., 2016), in emergencies (INEE, 2015)	primary or even secondary intervention, as the spate of school-based instructional reform programs in the 1990s and 2000s that used school-based meetings as the primary intervention showed very little effects over time. The main problem is the lack of incentives to do additional work at the school and the lack of personnel at the school with technical expertise who can push the rest of the colleagues. This can be a supplementary low-cost intervention but not one that you might consider investing heavily in.
Principal as instructional leader	Principals serve as the instructional leader of the school, providing classroom observational support to teachers, and mentoring them with strategies to improve the quality of teaching at the school level.	Effects of these sorts of programs are larger when they are accompanied by a reduction of the number of administrative tasks principals are asked to do.	Programs that have primarily focused on the instructional leadership of the principal have shown very little overall impact. Some principals do wonderfully, but many suffer due to the wide range of activities that the principal is supposed to undertake.	Many (Villegas-Reimers, 2003); Sub-Saharan Africa (Piper, 2009), in emergencies (INEE, 2015)	Providing principals with basic skills to support teachers in the instructional reform can help those principals who are sufficiently skilled and interested to improve their teachers' instruction. Investing in this mechanism heavily without significant oversight and accountability to the principal has not proven to be very effective. Of course, if the system is able to reduce the administrative burden to principals and provide ongoing support to principals learning how to be instructional leaders, it can be more effective, but this is

Delivery Option	Description	Pros	Cons	Examples (Sources)	Implications for Cambodia
					seldom possible in developing countries.
Triple cocktail	Relatively low-performing countries have been able to increase their outcomes by focusing on literacy and numeracy and providing the triple cocktail of 1) structured lesson plans to teachers, 2) training on how to use books for students at a 1:1 ratio that match the lesson plans, and 3) ongoing coaching and support.	Countries that have been able to have a focused on intervention on the triple cocktail have been either successful or very successful at improving learning outcomes relatively rapidly.		South Africa (Cilliers et al., 2016; Fleisch, 2016), McKinsey report (2010), Kenya (Dubeck et al., 2015; Piper et al., 2016), Multiple countries (Popova et al., 2016)	Cambodia already has literacy materials in place, and could consider designing numeracy materials as well. These materials could serve as the practical basis for an instructional improvement package that would include structured teacher PD around a set of behaviors that are intertwined with the teacher career ladder and supported by well paced and capable coaching.

Appendix B. Indonesia's Teacher Professional Development Design

This Appendix presents a short description of how the Indonesian cluster-based teacher PD system has matured over time, including key considerations for how a country like Cambodia interested in improving its teacher PD program could learn lessons from Indonesia. A cluster-based teacher PD system has existed in Indonesia for over 20 years but has largely operated without training materials, trained implementers, funding, or adequate management. As a result, if cluster meetings take place they tend to focus on administrative matters and do not contribute to the improvement of teaching and learning. USAID PRIORITAS and other similar donor projects have attempted to address these issues with some success.

Management of teacher professional development

In most countries, teacher PD must reach large numbers of schools and teachers. It also has to be organized and delivered in or near teachers' place of work in order to avoid large expenditures of time and money. Some countries, including Indonesia, have adopted cluster systems of schools to address this need. However, in order to succeed, such cluster systems need to be adequately funded and properly managed.

Personnel must be identified to manage and run PD activities, and funding and time should be made available so that managers, trainers, and trainees can participate in the training.

In Indonesia, training facilitators (who run activities in the cluster meetings) have been selected from the ranks of capable teachers, school principals, and supervisors. These facilitators are trained in managing cluster activities and the use of the available training materials. Experience has also shown that some sort of official certification by government is needed to empower them to do their work.

One problem encountered has been the need to free both training facilitators and teachers from their daily responsibilities so they can participate in these meetings. As meetings often take place one grade at the time or, in the case of junior secondary schools, one subject at a time, some districts and clusters have addressed this issue by organizing their school timetables to free teachers of certain grades or certain subjects at an agreed-upon time each week or every two weeks so that they can participate in teachers' working group meetings.

Developing a supply of training materials and methodologies

A continuous PD system for teachers can only work if training materials are available. These materials need to be relevant to teachers' teaching needs, focused on improving teaching and learning, and appropriate in how they are packaged and intended to be used. The materials need to be interactive and participative and to be packaged in a way that can be delivered in a 2- to 3-hour teachers' meeting.

Indonesia and possibly many other countries are currently reliant on projects to design or support the design of materials. Ministries of Education may attempt to design materials, but they generally do not have the capacity to do so on their own and are often reluctant to contract the work out to those who are capable. Indeed, in many developing countries, there may be no in-country capacity, and donor projects have to

be relied on to do the job. Some time ago, Indonesia's Minister of Education asked the USAID-funded PRIORITAS project to address this issue by involving teacher pre-service training institutions in the development of training materials. However, this is very much a work in progress, owing to the low capacity of lecturers in these institutions and their lack of experience in schools.

A "lesson study" approach first introduced by the Japan International Cooperation Agency focuses on developing reflective teachers and has proved effective in training through teachers' working groups. Using this approach, groups of teachers plan a lesson that one or more members of the group then teach to a class of students, while the other group members observe. The group then improves the lesson and members take it back to their classes to teach. Subsequently, they report back on the results of the lesson during the next teachers' working group meeting for further discussion and improvement. Such an approach combined with attention to specific instructional techniques (so that the lesson has to reflect those techniques) would be a good way to foster teachers' ownership of the new methods.

Government support

The enthusiasm of teachers in individual clusters of schools cannot be solely relied on to build an effective teacher PD system. The system needs backing from the appropriate levels of government. In Indonesia, this includes the central government (the Ministry of Education and Culture) and local government at the district and sub-district levels. Unfortunately, support is often patchy and dependent on the current political wind. However, where support exists at the district and sub-district levels, the system can and does work. In these cases, local governments support the PD system in some or all of the following ways:

- Express a clear expectation that teachers will take part in regular PD activities, sometimes accompanied by the passing of local regulations to enforce these expectations;
- Ensure that funding is available to support the running of activities, sometimes by providing local government funding or alternatively by requiring schools to devote the portion of their operational funding to support PD and/or individual teachers to allocate a percentage of their professional allowance for this purpose;
- Monitor and support the implementation of PD activities, including ensuring that the results of the activities are implemented in schools; and
- Include a plan and budget for continuing PD (CPD) in district strategic plans for education.

The role of school management

It is crucial that school principals expect their teachers to take part in PD activities, support them in doing so by making sure that time and funding are available, and monitor the implementation of the cluster activities and the application in the classroom of what teachers have learned during training.

School principals' working groups function at the cluster level to oversee and support teachers' working group activities. These principals' working groups vary greatly in their effectiveness. At the school level, 'good' school principals do encourage their teachers to take part in activities and monitor the application of the results of training in the classroom. They generally also supplement the cluster-based training with their own in-

school PD activities. Asking too much of principals can backfire, however, leading to insufficient attention to the core instructional change objectives.

Problems with performance appraisal and competency testing as a basis for CPD

Attempts to base individual teacher CPD plans on the results of performance appraisal and competency testing have not been very successful in Indonesia (or elsewhere). The performance appraisal system set up by the government has not been very useful, as all teachers receive very high marks on all indicators (research in the US also shows that teacher appraisal systems are similarly distorted). The appraisals are conducted by principals or school supervisors, who tend to lack objectivity in their appraisal of teachers. Maintaining good relationships basically ends up trumping objectivity in performance appraisal.

Indonesia's central government has conducted nation-wide online competency testing of teachers, also intended to provide a basis for planning individual CPD programs. This effort has essentially failed for technical reasons, as the tests have been overly theoretical, implementation has been problematic, and it is impractical for the central Ministry to provide training to roughly three million teachers (through a mix of online and face-to-face delivery).

Another problem with these approaches is that they undermine the effectiveness of teacher learning in 'communities of practice' with peers, an approach that develops collegiality, is more affordable and accessible to teachers, and builds strong teams. Individualized assessment and planning of CPD does not fit well with the group learning approach in clusters or school-based CPD.

Finally, talk in Indonesia of linking competency testing and performance appraisal to remuneration – essentially punishing teachers for low scores by cutting their monthly professional allowance – is worrying as it risks immediately corrupting the entire process.

Sustainability and dissemination of CPD

Ultimately, PRIORITAS' aim has been to develop good practices and build capacity so that districts (and the Ministry) can establish and sustain systems for CPD. Every teacher should ideally have access to CPD as a routine. Until now, very few teachers have had access to in-service training and training has generally been of very poor quality and conducted at the district or province level, providing an opportunity for some district officials to make unofficial money by running the training. The result is inefficient and ineffective training. It is far, far better to run CPD in clusters or at the school level, as discussed above.

PRIORITAS has worked with districts to establish such cluster- and school-based approaches, by facilitating planning, policy development, and multi-source budgeting. These efforts have borne fruit, as the basic training provided by the project is highly regarded, and teachers and district personnel have been trained as training facilitators, as described. How many of the districts manage to carry the program out as envisaged using their own funding sources remains to be seen.

Keys to the success of the PRIORITAS approach include the following: (1) using practicing teachers as training facilitators and giving them excellent training through training of trainers sessions; (2) working at the school cluster level in teachers' working groups; (3) ensuring the material is practical and relevant; (4) providing follow-up in-

school mentoring after each training activity; (5) providing a series of training activities, rather than one-off events; (6) working with whole school staffs and school supervisors to generate enthusiasm for change and ensure that everyone is 'on the same page'; and (7) working with districts as partners and helping them to plan and budget for CPD.

However, experience suggests that governments – including districts – often seek ways to reduce or reorient the cost and increase the scope of improvement programs, thereby reducing the effectiveness of the approach. Common risks include the following:

- The number of training days is reduced.
- Follow-up on-site mentoring is not provided.
- The number of participants per event is increased.
- Poorly qualified facilitators revert to lecture-style delivery.
- A cascade model is envisaged but without allocating funds or designing a program for the training to be delivered effectively to the final level.
- Funds allocated for CPD are diverted or 'lost on the way' with the result that programs are only partially completed.