EVIDENCE FOR SYSTEM TRANSFORMATION

PRE-SERVICE TEACHER TRAINING

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1. Background

Pre-service training (sometimes referred to by the acronym PRESET, for pre-service education and training) refers to the training that teacher candidates receive prior to entering the teaching profession. Pre-service training is intended to equip future teachers with the knowledge, skills and competencies to teach effectively—including content knowledge, pedagogical skills, classroom management skills, assessment skills, ability to respond to diverse learning needs and difficult teaching conditions, capacity to reflect, skills to collect data on their students and understanding of how to work within the education system—and to develop their identities as teachers. To this end, it usually includes some combination of theoretical and practical learning (Muzaffar, Rahim, and Jessee 2011; Lewin 2004; Zuilkowski et al., n.d.). The theory of change underlying pre-service training is that student learning depends on teacher quality, which depends in part on their pre-service training (Muzaffar, Rahim, and Jessee 2011). That said, there is relatively limited research linking various elements of pre-service training with student outcomes; where this research does exist, it is mostly from high-income countries (Zuilkowski et al., n.d.).

Box 1. Key terms

Initial teacher education (ITE): any training leading teachers to meet minimal qualifications, either pre-service training or upgrading of existing teachers' qualifications (Bashir et al. 2018).

Mentor teacher: school-based teacher who mentors, supports or oversees teacher candidates during the practicum or other field experiences.

Practicum: teacher candidates' field-based teaching experience during pre-service training.

Qualified teacher: a teacher who meets the requirements for entry into the teaching profession.

Teacher candidate: a pre-service trainee who is being prepared to become a teacher.

Teacher education: the full spectrum of learning opportunities for teachers, from pre-service training to in-service professional development. In the context of this brief, the term refers to pre-service training.

Teacher educator: in the context of this brief, any educator who supports' teacher candidate learning during pre-service training, including trainers delivering pre-service coursework and mentor teachers.

Even as universal primary education has boosted the number of teachers needed, pre-service training in many low-income settings still does not reach all teachers or adequately prepare teachers for the classroom (Muzaffar, Rahim, and Jessee 2011; Akyeampong et al. 2011). Foundational learning programs and sector reform efforts often focus more on in-service training than pre-service training (Zuilkowski et al., n.d.; World Bank 2019a), and GPE's own thematic study in 2019 likewise suggested that GPE funding more often supports in-service professional development than pre-service training.[1] This may be due to a variety of financial and political constraints and to the perception that in-service training can make up for weaknesses in pre-service; World Bank analysis suggests that pre-service is typically viewed as more challenging to influence than in-service, with political economy issues around training institutions and hiring constraints in some contexts (World Bank 2019b). The low rates of qualified teachers and low teacher competency levels in some partner countries, however, underscore the importance of focusing on pre-service training.

Given this, pre-service training is seen as a key area of reform as many countries shift from more traditional didactic, subject-oriented approaches to integrated or competency-based learning (Bashir et al. 2018).

2. Evidence

This brief provides guidance on key features of pre-service training based on the available evidence. The evidence base on pre-service training is relatively small compared to that on in-service training, particularly evidence generated in low- and middle-income contexts. However, even with this constraint, it is clear that some critical factors are required for all features of effective pre-service systems, including alignment between pre-service and the rest of the education system and, relatedly, partnerships with the many different actors involved in the provision of pre-service training. In many low-income country contexts, pre-service training also faces constraints that touch on all aspects of the system: when an education system is weak, it can't produce large numbers of strong teacher candidates, who in turn don't become strong teachers, making it difficult to strengthen the education system. Policy, planning and practice around pre-service training need to account for this reality.

Attracting and filtering candidates: In some contexts, pre-service training often faces the challenge of weak entrants, with long-term implications for teacher competency

[1] For more detail on in-service professional development, see the Evidence for System Transformation Brief "In-Service Teacher Professional Development".

levels. While the top-performing education systems globally are often able to attract strong candidates into teacher education (and thus into the teaching field), many weaker systems struggle to recruit strong candidates. Attracting sufficient numbers of qualified candidates is particularly difficult when the labor pool doesn't have enough competent candidates to match demand for teachers or when strong candidates have better career options. In some contexts, stronger students who are admitted to university or other higher education programs may aim to study other things, and weaker students may enter teacher training programs in higher education institutions with the intention of switching into other disciplines (Wang et al. 2003; UNESCO IICBA 2016; World Bank 2019b).

This challenge is linked both to the attractiveness of pre-service training (and the teaching profession as a whole) and to filtering mechanisms for pre-service. While making the profession more attractive extends far beyond pre-service training to issues related to teacher pay, working conditions, status and other factors, issues around teacher education may also contribute. For instance, pre-service institutions also often lack prestige or sufficient resourcing, which may make these programs less attractive (Zuilkowski et al., n.d.). To try to attract strong candidates into pre-service training, incentives such as scholarships subsidies, or other measures (often conditional on a multiyear commitment to teach) have been put in place in many contexts (Bruns and Luque 2015; Lewin et al. 2016).

Box 2. Attention to targeted pre-service content in Kenya

GPE education sector program implementation grant funding in Kenya (2015–19), which aimed to support the country in improving early grade mathematics, took several strategies, including building teacher competency in early grade numeracy. This work stretched across pre- and in-service training, including raising awareness among teacher educators and leaders of pre-service training colleges about innovations in early grade math and reading, such as relevant learning materials and pedagogical practices (World Bank 2015). This pre-service work was meaningfully targeted to specific skills, aligning the learning of teacher candidates during pre-service with the student learning they are expected to support in their tenure.

With regard to filtering, high-income countries with the highest student achievement are selective in filtering teachers not just in admission to pre-service programs, but also in pre-service graduation requirements and across teachers' careers. That said, countries may be hesitant to impose strict entry and exit requirements where

increased student enrollment has heightened the need for additional teachers (World Bank 2019b). Weak filtering mechanisms may mean weak candidates are able to finish pre-service training and be placed into teaching roles. In some cases, too, especially where regulation and quality of assurance of pre-service training is weak, low entry requirements may mean that more teachers are being prepared by (often low-quality) training institutes than there are teaching jobs (Béteille et al. 2020). Weak entry requirements for pre-service, and the resulting candidate pool, may weaken the status and sense of professionalism associated with teaching (World Bank 2019b; Béteille and Evans 2018). Decisions about timing (at entry, throughout pre-service, at exit from pre-service or during induction), intensity and modality of filtering processes during pre-service depend on the size and quality of the pool of prospective candidates, the system demand for teachers and the system capacity to implement filtering mechanisms. While screening most often looks at past academic performance or knowledge-oriented exams, filtering mechanisms may also want to screen candidates for certain key skills and competencies, though the logistics of such screening can be challenging (World Bank 2019b; Lewin 2004). Decision makers may also consider flexible requirements for priority candidates, such as students from minority ethnic or linguistic groups or hard-to-staff geographic areas, to ensure that such candidates are able to enter pre-service training even if they don't meet all requirements (Zuilkowski et al., n.d.).

Structure and length: Pre-service training varies widely across (and sometimes within) contexts in length, structure and quality. It can be integrated into undergraduate or postgraduate programs at universities, or take the form of college or vocational training (Zuilkowski et al., n.d.; Lewin 2004).

In low- and middle-income countries, pre-service training usually lasts two to three years, but it is sometimes shorter. That said, some low- and middle-income countries are raising their requirements for teacher education to match longer lengths or higher degree levels in well-performing countries, though implementing such changes can be difficult (Zuilkowski et al., n.d.). A shift toward higher degree programs for teacher education (for instance B.Eds in place of shorter teacher certificate or diploma programs) may help professionalize the workforce and attract top candidates (Wang et al. 2003), but the policy making around program type, length and intensity needs to consider costs, demand for teachers (Zuilkowski et al., n.d.) and the realistic capacity of a potential candidate pool.

Coursework: Pre-service coursework is intended to respond to many key learning needs among teacher candidates. The content of pre-service training—including coursework—should be informed by teacher candidates' existing knowledge and skills

(Zuilkowski et al., n.d.). Pre-service curricula often assume that trainees have some basic subject knowledge, but depending on teacher candidates' existing competencies—critically, including their existing skills in the language of instruction—pre-service training needs to fill in and respond to these needs and gaps (Lewin 2004). The extent to which coursework needs to focus on remedial training around language of instruction and subject knowledge will depend both on whether candidates' prior schooling has been strong enough to develop adequate knowledge (Akyeampong et al. 2011) and on the rigor of filtering processes and the quality of candidates attracted and selected into pre-service.

Beyond equipping candidates with the subject knowledge they will teach, pre-service is also intended to support candidate learning on pedagogy, classroom management, assessment of learning, familiarity with the education system and curriculum and the development of other skills and knowledge needed to teach. Often though, pre-service focuses more on content knowledge (knowledge about certain subjects) than pedagogical knowledge (knowledge of how to teach) and pedagogical content knowledge (knowledge of how to teach a specific subject, drawing on both content knowledge and knowledge of subject-specific pedagogies), and even then, it often fails to equip candidates with the sufficient subject knowledge to teach (Zuilkowski et al., n.d.). Critical processes, such as use of diagnostic and formative assessment, or practices like managing large or multi-ability classrooms are often not taught (Akyeampong et al. 2011; Lewin 2004). In many cases, training also does little to equip teachers with the skills to support their students' social-emotional learning and development.[2] In short, while pre-service coursework often has important roles to fill in equipping future teachers with the competencies they will need in the classroom, it often falls short.

Coursework faces challenges not just in content but also in delivery. While many education systems are aiming to shift toward more engaging pedagogies and active or competency-based learning, pre-service training itself often remains didactic, not adequately preparing teachers with the pedagogical skills for current curricular models (Lewin 2004). This may be due in part to teacher educators' limited opportunities to observe and participate in new school-level teaching. Beyond poor or outdated pedagogical skills, teacher educators may have weak content knowledge and pedagogical content knowledge, and these educators need their own

[2] For more details about social-emotional learning, see the Evidence for System Transformation Brief "21st Century Skills".

professional development to build and maintain their skills and knowledge (Zuilkowski et al., n.d.; Muzaffar et al. 2011). Though research on professional development for teacher educators in low-income settings is limited, studies from several contexts suggest that training for teacher educators can improve their knowledge and teacher candidates' knowledge (Zuilkowski et al., n.d.).

Box 3. A comprehensive approach to pre-service reform in the Democratic Republic of Congo

GPE funding in the Democratic Republic of Congo (2017–22) included efforts to professionalize pre-service training by supporting efforts to rationalize the *humanités pédagogiques* (HP; programs during the second cycle of secondary education that train candidates to teach at the primary level), and ultimately shift training to the post-secondary level. In particular, GPE funding supported a study of rationalization of HP; revision of HP curriculum to align with the training that would be provided by the Teacher Training Institutes, which would focus on integrated work study; and construction of teacher training institutes, training of trainers and communication campaigns to build stakeholder engagement (World Bank 2016, 2021). Support for professionalized training and attention to content (with an emphasis on linking theory and practice), along with building training infrastructure and building stakeholder engagement, reflects many of the key needs for pre-service. The project also supported links between pre- and in-service training.

Practicum: The practicum is a field teaching experience that gives teacher candidates the opportunity to develop practical skills to complement the more theoretical learning from coursework. While more empirical evidence on links between the practicum and student learning in low-income country contexts is needed, analysis of Program for International Student Assessment (PISA) data highlights that the practicum is important (World Bank 2019a), and evidence from Latin America suggests that teacher participation in a practicum may be linked to higher student learning (World Bank 2019b). That said, when practicum experiences happen at all, they can vary widely in structure, quality and duration, with implications for their usefulness to future teachers (Akyeampong et al. 2011).

Designing and implementing an effective practicum requires strong relationships between teacher training institutions and the schools where teacher candidates are placed. This is key for the practicum and more broadly for ensuring that teacher expertise and experience informs training (Muzaffar et al. 2011). Placement schools should reflect the reality that teachers will face in their future work, including subject,

level, resourcing and relevant challenges such as large class sizes, multigrade classes or low-resource contexts (Bashir et al. 2018; Darling-Hammond 2014).

While no definitive evidence on ideal practicum length exists, longer periods can allow for more and deeper learning if programs are well designed, and candidates are well supported. Even longer poorly designed programs will do little to enhance candidate learning or skill development (Darling-Hammond 2014; World Bank 2019b). The scheduling of the practicum is also worth consideration in the planning process. While practicum experiences are usually set for the end of pre-service training, candidates have less opportunity to apply their learning from coursework in real time in this timeline (Lewin 2004; Bashir et al. 2018). Scheduling the practicum in tandem with some coursework may be more helpful for candidates to apply and further develop their learning. Sierra Leone requires two four-month practicum periods, one during the second year of pre-service and one during the final term (TSC 2021). Though it is not clear how directly this policy has been translating to practice, it provides a useful example of how the practicum can be scheduled with more opportunity to apply and learn from coursework, and then continue to learn from the practicum throughout the rest of training. That said, as the practicum is often one of the most expensive components of pre-service training because of the subsistence, travel, supervision and assessment costs required (Lewin 2004), its duration and scheduling will need to account for resource and capacity constraints.

Box 4. Cross-cutting pre-service reform in Ethiopia

GPE funding in Ethiopia (2014–19) supported a wide range of pre-service activities, beginning with more rigorous selection of candidates into pre-service. Funding also supported strengthened quality of training, including an improved practicum, professional development for teacher educators, strengthening of English Language Improvement Centers and the establishment of a national center for excellence in teacher education through a university faculty of education and its accompanying cluster of colleges of teacher education (World Bank 2020). This support touches on a several key pre-service areas, from selection to capacity of teacher educators.

Institutional factors: A number of institutional factors need to be kept in mind when thinking about strong pre-service programming. Across policy, planning and implementation, alignment is key. Curriculum, pedagogy and assessment in pre-service training should align with professional standards for pre-service teachers and the realities that future teachers will face in the classroom—for instance, the

curriculum they will be expected to teach and the pedagogies they will be expected to use. Alignment is similarly needed across the actors involved in pre-service training, induction and in-service training to ensure coherence. This requires links between training institutes and schools where candidates are placed for the practicum (Muzaffar et al. 2011). In many contexts, however, the links between schools, teacher training institutes and ministry offices involved in training, curriculum development and other activities may be weak, leading to incoherence, limited relevance or low quality in pre-service training. Weak links between pre- and in-service training programs also mean that pre-service does not respond to the needs and challenges future teachers will face in their work (Béteille et al. 2020).

Quality assurance: Quality assurance of pre-service programs is essential for ensuring quality and alignment within pre-service and across the education system. The Teacher Education and Development Study in Mathematics (TEDS-M) assessment, which mostly included high-income countries, found links between teacher quality assurance mechanisms and teacher candidate content knowledge (Bashir et al. 2018). Quality assurance touches on a wide range of factors for pre-service, including oversight and accreditation of training institutions, regulation of entry and exit screening, and candidate certification and licensure. Quality assurance plays an important role in ensuring the alignment across school curriculum, training content and the realities of the schools that candidates will one day be teaching in, as well as alignment between pre-service programming and teacher certification (Bashir et al. 2018; Muzaffar et al. 2011). TEDS-M data suggest that where accreditation systems are weak, countries have little control over training institutions (World Bank 2019b). In some contexts, such as India, a large number of private training institutes are underregulated, training more candidates than there are available jobs for and often go uninspected due to limited bandwidth. In Pakistan, quality of training institutes can vary widely in part due to lack of standards. In both contexts, efforts to improve accreditation are slow, partly due to inadequate performance data (Béteille et al. 2020).

In contexts where accreditation measures are in place and enforced, weak institutes can be shut down, or even without forced shutdown, candidates may self-select away from low-performing institutions. For instance, after an accreditation review in Chile found that most programs were unaccredited or received the lowest accreditation level, a significant portion of teacher candidate enrollment shifted toward accredited programs (Bruns and Luque 2015), suggesting that where candidates have information about accreditation, it may help inform their decision making in favor of higher quality training institutions. Because training programs need resources to

effectively prepare candidates, standards should exist for infrastructure and resources (like learning materials, furniture and human resources), licensing of both teacher educators and candidates, and institutional accreditation and curricular alignment (Muzaffar et al. 2011). In many cases, such standards should be applied at the policy level, but institutional-level standards may also be useful or necessary. Enforcement and monitoring mechanisms to accompany these standards are also needed, and staff responsible for this work need to be adequately trained and skilled.

Cost considerations: Costing is a key consideration for pre-service education, but little evidence exists on the cost-effectiveness of different pre-service approaches in low- and middle-income contexts. Effectiveness of pre-service is a key value-for-money consideration, so quality considerations like alignment between training and teachers' future work and practical learning opportunities are key for value for money in pre-service (GPE 2022). Cost-efficiency is also a major consideration, and research (albeit somewhat outdated) points to opportunities to improve internal efficiency in pre-service training, including in how human and physical resources are used and with accountability mechanisms that consider cost-efficiency. One challenge is that pre-service is relatively costly compared with upskilling untrained teachers during their teaching service (Lewin 2004), though this can have other implications for quality and the professionalization of teaching (see box 5 for example). Pre-service training faces the challenge, too, of often needing to support candidates' development of basic language skills and content mastery, skills that should be developed in lower levels of education, where training is less costly than at the tertiary level. Ultimately, improving the quality of that learning at lower levels of education or supporting less costly bridging programs between secondary education and pre-service training may be more cost-effective. Alternative modalities of pre-service training could also be explored, though of course effectiveness and quality of training need to be considered alongside cost (Lewin 2004).

Box 5. Training untrained teachers in Ghana

In Ghana, GPE supported the Untrained Teachers Diploma in Basic Education (UTDBE) training program, which used the same curriculum as pre-service training but over a longer period with disadvantaged untrained teachers who were still teaching. An impact evaluation of the program found that teachers who went through UTDBE had similar skill sets to teachers who had gone through pre-service training, but pre-service training had cost 60 percent more (cost per teacher of $2,130 through UTBDE versus $3,409 through pre-service). While these results point to the cost-effectiveness of this model, it is not clear how long skills developed in the program will be maintained or whether they will improve learning (Namit 2017). In weighing these questions with cost-effectiveness considerations, decision makers should also consider how such strategies impact the status and professionalism of teachers.

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