



Pre-service Teacher Education

Introduction

Pre-service teacher education programs are a core element of education systems, providing a foundation of knowledge and skills that new teachers rely on in the classroom.¹ As such, major interventions aimed at foundational literacy and numeracy (FLN) in primary schools in low- and middle-income countries (LMICs) must place more emphasis on pre-service teacher preparation to ensure the sustainability of the quality of the teaching workforce. These interventions have instead focused on the training of current teachers, under the perspective that doing so will lead to faster results at the student level. Consequently, pre-service teacher education programs are frequently disengaged from what is happening in schools, which means that new teachers enter the workforce without the skills that FLN programs require. To avoid this problem, improvements in pre-service teacher education, along with changes in policies related to selection into pre-service teacher training programs and the deployment of graduates into teaching positions at schools, must be considered.

KEY DEFINITIONS

Practicum: full-time teaching practice, usually near the end of the pre-service program.

Selection: procedures and activities used to attract candidates to pre-service teacher education programs.

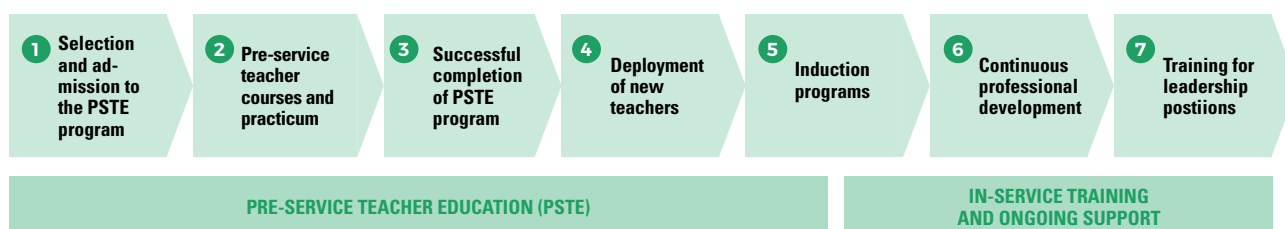
Deployment: the process of placing teachers (both newly qualified and experienced) in schools. This process may be highly centralized or occur at the school or district level.

Induction: in-service training programs used to orient new teachers to practices, policies, and pedagogies used in their new school.

THE PURPOSE OF THIS GUIDE

In this guide, we offer suggestions to policy makers, donors, implementers and teacher educators on how to effectively develop primary-level pre-service teacher education for FLN. We discuss potential solutions for challenges related to the pre-service curricula, the practica (full-time teaching practice), the professional development needs of pre-service program teacher educators, and selection and deployment policies. We present evidence from LMICs and from high-income countries where available and relevant. We show how pre-service teacher education is essential for the entire teacher development continuum. From admission to the teacher education program (step 1) to teacher deployment (step 4) and induction programs (step 5), successful FLN programs should consider the entire range of teacher development. Currently, most FLN programs focus only on steps 6 and 7, meaning that several potential opportunities for influence and improvement are squandered. This guide is accompanied by an in-depth [literature review](#) that critically analyzes the current literature and gaps in existing knowledge about pre-service teacher preparation in LMICs.

FIGURE 1. Teacher development continuum





Pre-service Teacher Education: Structure and Curriculum

The structure of pre-service teacher education differs widely across countries.² High-income, high-performing countries participating in the Program for International Student Assessment (PISA) have pre-service teacher education lengths from three years (Flanders, Belgium) to as long as seven years (Germany).³ In LMICs, pre-service teacher training is often two to three years, as with Zambia's three-year primary teacher's diploma and India's two-year diploma in education. Pre-service training is sometimes shorter, however. In Nepal, a ten-month, upper-secondary training course is sufficient to qualify as a primary-grades teacher, while Sri Lankan institutions offer a one-year diploma in teacher education.⁴

It is common for several types of pre-service training to be available within countries. For example, universities may also offer bachelor's degrees in education, in addition to shorter pre-service programs offered by colleges or vocational training institutions. Bachelor's degrees are more commonly required for secondary teachers than primary-grade teachers, though many middle-income countries, including Jordan, Morocco, Thailand, and Georgia, also require them for the early grades.

In recent years, some LMICs have increased the length and degree levels required for pre-service teacher education to align with teacher preparation standards in high-performing countries⁵ (including Myanmar; see box). The African Union's African Teacher Qualification Framework⁶ states that the minimum qualification for teachers should now be a bachelor's degree in education, though this has not yet been widely implemented in member countries given the associated costs and logistical challenges. Ghana has recently begun offering bachelor of education degrees in its colleges of education; formerly, teachers qualified with a three-year diploma.⁷ Extending the length and level of pre-service teacher education is a complex decision for many LMICs in light of the pressure to produce teachers quickly to fill gaps and the costs incurred with longer programs.

Globally, systems also vary widely in terms of the types of candidates that are attracted to teaching as a profession and to pre-service programs. In Ethiopia, for example, students can enter teacher education programs after completing grade 10 if they do not qualify to continue their upper secondary education, based on their score on the national examination.⁹ These patterns have a strong impact on the types of applicants to teacher education programs and the curricular focus in the programs, as is discussed further below.

Regardless of their length and structure, pre-service programs should be designed to connect theory and practice.¹⁰ While there is no standard curriculum for pre-service teacher training, **new teachers need to understand the content of the subjects they teach (content knowledge), how to teach specific subjects to students (pedagogical content knowledge), and how to teach well in general, including classroom management and student engagement (pedagogical knowledge).**¹¹ The content of the pre-service curriculum must be defined by what teachers in a particular context need to be able to do, and it should focus on high-leverage instructional practices (i.e., basic teaching practices that are essential for improving learning outcomes for all students and advancing teaching skills).¹² The curriculum should be designed to align with any existing national standards for primary-grade teachers. Pre-service teachers in LMICs need to be prepared for large class sizes, multigrade classrooms, overage students, multilingual student populations, and, in many cases, students lacking basic literacy or numeracy skills. To date, there is little rigorous evidence available on the relationship between aspects of the pre-service curriculum and student outcomes in LMICs. However, evidence from high-income countries provides insight into the importance of teachers' mathematical knowledge and its relationship to students' achievement of learning outcomes.¹³

LMICs face many challenges related to the content of pre-service curricula. In most current pre-service programs, coursework prioritizes content knowledge over pedagogical knowledge and pedagogical content knowledge, and focuses on theory rather than practice.¹⁴ Despite this attention to content knowledge, however, pre-service teacher education programs often fail to help pre-service teachers achieve the appropriate levels of content mastery.¹⁵ In many LMICs, pre-service programs typically enroll students who failed to gain admission into more competitive

Strengthening Pre-service Teacher Education in Myanmar (STEM) Project

Myanmar is undertaking a reform of its pre-service teacher education, with financial support from the governments of Australia, Finland, and the United Kingdom and technical support from UNESCO. The country's pre-service education system has been upgraded to a four-year program and aligned with international standards. First implemented in the 2019–20 school year, the new pre-service curriculum includes syllabi, textbooks, and teacher educators' guides. Orientations and trainings have been conducted with more than 98% of teacher educators. Evaluators have found that "teacher educators are using the teacher educator guides to prepare for nearly every lesson."⁸





and attractive post-secondary options.¹⁶ As a result, many pre-service teachers need to do catch-up work on basic subject-specific content knowledge.

An additional challenge is that many primary education systems are moving toward involving students in more active forms of learning rather than absorbing knowledge passively from teachers—often with support from donor-implemented interventions with in-service teachers. While many recent FLN programs in LMICs have been designed to be more interactive and fast paced for learners, pre-service programs remain rooted in a lecture-based pedagogy.¹⁷ **Therefore, pre-service teachers are not given the chance to see and practice effective, engaging pedagogical methods in action and will likely teach the way they themselves were taught.**

SUGGESTIONS

- 1 Prepare pre-service teachers for real classrooms.** The **pre-service curriculum should be directly linked to expectations of what teachers should be prepared to do in the classroom**, particularly in FLN classrooms. As shown in Figure 1, pre-service teacher education is only one step in a continuum of preparing high-quality teachers, and all stages need to be aligned. This means that policy makers must consider the development of national and regional teacher standards, the primary-grade curricula, induction programs for new teachers, and in-service training in general and FLN specifically.¹⁸
- 2 Include core courses in pre-service teacher education curricula.** Primary pre-service **curricula should require basic core courses in FLN content and pedagogical skills** to ensure the teaching of current, evidence-based approaches to FLN. All pre-service teachers of FLN should take courses in universal design for learning. Furthermore, tenets of universal design for learning should be integrated into pre-service teacher education program courses to ensure that beginning teachers are equipped to address the academic and social and emotional needs of the diversity of learners they will encounter. For literacy, core topics should include, at a minimum, foundations of reading pedagogy, application of research-based instructional practices at word and text levels, integration of reading and writing, basic student assessment, and differentiated instruction. For mathematics, core topics should include the study of numbers and operations, algebra, geometry, and measurement and data through an approach that combines content knowledge¹⁹ and pedagogical content knowledge. In addition, pre-service teachers should be prepared to use appropriate technology and selectively choose materials and resources to facilitate learning. Pre-service teacher education programs should also incorporate the actual FLN materials used throughout the country, so teacher candidates complete their pre-service education ready to teach the specific literacy and numeracy programs in place.
- 3 Link theory to practice.** The **curriculum should combine instructional theory and classroom practice** rather than dividing them into separate courses.²⁰ This could involve micro-teaching, video activities, tutoring struggling early-grade students in a nearby school, examining primary student work alongside a teacher, discussing practicum experiences with more advanced pre-service teachers or recent graduates, and observing master teachers who make connections with the national primary curriculum.²¹ These applied experiences can also help in the development of professionalism among pre-service teachers, to be further reinforced during the practicum stage.



Establishing a Quality Teaching Practicum

The practicum is the second stage of pre-service teacher education, in which the pre-service teacher teaches in a school under the supervision of a mentor who is a full-time teacher at that school. The structure, timing, and length of the practicum varies across countries;²² the school placement may be as short as a few weeks or as long as an academic year. Research from high- and middle-income countries has linked effective practicum experiences to teachers feeling more prepared for teaching,²³ developing a professional identity,²⁴ and better understanding poverty



and other contextual challenges in school settings.²⁵ **A strong practicum experience is an opportunity to build professional dispositions, which are “professional attitudes, values, and beliefs demonstrated through both verbal and non-verbal behaviors as educators interact with students, families, colleagues and communities.”**²⁶ If pre-service teachers receive clear guidance during their practicum regarding their behaviors and attitudes, this guidance may follow through to their future teaching positions.

Across LMICs, a series of practicum-related challenges have been identified. First, the duration of practica is often very short,²⁷ with recent studies reporting practica as short as two weeks in a nine-month pre-service program.²⁸ Second, pre-service teachers often experience low quantity and quality of supervision and feedback, both from mentor teachers and teacher educators in their pre-service program.²⁹ Third, practicum experiences are often divorced from the content and skills taught in pre-service courses, with mentor teachers sometimes using approaches that do not align with the methods taught in the pre-service curriculum. Fourth, pre-service teachers are frequently responsible for identifying their own practicum placement, which results in practicum sites being selected out of convenience rather than the quality of school and mentor teacher.

SUGGESTIONS

The evidence-based suggestions below are aspirational targets that pre-service programs in any context can work toward. While full achievement of these goals may take many years, particularly in low-resource contexts, small steps toward them also represent valuable progress.

- 1 **Make intentional practicum placements.** Pre-service teacher education programs should **intentionally place their students** in good-quality, well-run schools³⁰ with mentor teachers who recognize that their role is to provide mentorship opportunities to pre-service teachers rather than use trainees as replacements for teachers. When possible, stipends to support housing and living costs could enable pre-service students to select the best possible school placement, rather than a school that is simply located near their family home.
- 2 **Require a minimum practicum duration.** Countries should **set minimum lengths for the practicum experience and enforce those standards.** A few weeks is insufficient to develop as a teacher. However, there is a trade-off between the length of the practicum and the cost of an extended pre-service program, particularly when there is a shortage of qualified mentor teachers and resources available to house pre-service teachers near the school or provide transportation to and from the school.³¹
- 3 **Scaffold practicum experiences.** The practicum experience must be structured in a way that provides **growing autonomy for pre-service teachers**, allowing them the opportunity to practice what they have learned in their coursework.³² Mentor teachers sometimes have difficulty providing this autonomy if they feel they will have to reteach the material later.³³ However, pre-service teachers should not complete their practicum without having opportunities to teach independently—practicing planning lessons, teaching, assessing students, and evaluating their own performance.
- 4 **Emphasize reflective practice.** Activities should be required during the practicum that **encourage pre-service teachers’ reflection and self-evaluation**, such as journaling and peer discussion.³⁴ These activities are likely to happen regularly if supported by teacher educators and mentor teachers.
- 5 **Ensure high-quality feedback from mentor teachers.** Pre-service teachers need **regular, high-quality feedback from their mentor teachers.** High-quality feedback is feedback that is supportive, constructive, explicit, and probing, leading to deeper teacher reflection and achievement of quality teaching.³⁵ The mentor must be a committed and dedicated teacher willing to undertake the often unpaid and challenging work of supervising a pre-service teacher and giving them feedback on their teaching practices.³⁶ Mentors should receive training on how to fulfill this complex role. In Kenya, the Tusome literacy activity is working with the Ministry of Education to redesign the practicum practice evaluation criteria to better align how pre-service teachers are evaluated with the instructional behaviors required to effectively implement FLN programs in schools.
- 6 **Actively engage with local schools to develop high-quality practicum sites.** In order to achieve Suggestion 1, **pre-service programs must work with local schools to develop mentor teachers**



and plan the practica collaboratively.³⁷ To achieve high-quality practicum sites, relationships between pre-service programs and schools should be two-way; have clear expectations for teachers, teacher educators, mentor teachers, and pre-service teachers; and have benefits for all parties rather than being extractive.³⁸ Additionally, the practicum school must be considered a community of learning, where the whole school—and not just one mentor in one classroom—is involved in supporting pre-service teachers.³⁹ However, these activities will require financial support to be sustainable.⁴⁰

Supporting Teacher Educator and Institutional Capabilities for Pre-service Teacher Education

Teacher educators are central to efforts to improve the quality of FLN instruction in LMICs. Pre-service teachers will model their teaching on the methods they see used by teacher educators in their own classrooms,⁴¹ and the knowledge imparted by teacher educators provides the foundation upon which new teachers build.⁴² As noted above, however, while primary school curricula are becoming increasingly engaging and interactive, pre-service programs remain teacher educator-centered. Teacher educators have limited opportunities to engage with the new pedagogical practices being embraced in primary schools, as many large-scale FLN programs are generally aimed at in-service teachers. This can lead to contradictory beliefs and approaches among new teachers.⁴³

In LMICs, teacher educators often lack content knowledge, pedagogical content knowledge, and pedagogical knowledge related to the subjects they teach and depend heavily on lecturing in their own teaching. Their own preparation may be outdated, and they work in contexts with nonexistent or insufficient institutional budgets for professional development, meaning that many teacher educators do not have current, evidence-based knowledge and pedagogy in their fields.⁴⁴ As pre-service programs increase the length and degree levels of their programs, there is greater pressure to hire teacher educators with graduate degrees.⁴⁵ As a result, teacher educators are increasingly less likely to have primary-grade teaching experience.⁴⁶ Finally, pre-service institutions generally suffer from low prestige and inadequate resources, making it difficult for teacher educators to provide and model high-quality instruction.⁴⁷

While there have been few rigorously evaluated interventions involving training teacher educators in the area of FLN, several studies have shown that this may be a promising approach. Professional development efforts in Nigeria,⁴⁸ Ethiopia,⁴⁹ and Cambodia⁵⁰ have shown that trainings can improve content and pedagogical knowledge among teacher educators; The Nigeria study also documented subsequent increases in pre-service students' knowledge and attitudes related to early grades literacy.

SUGGESTIONS

- 1 Value professional experience in hiring.** Ministries of education and other bodies that have control or oversight of the teacher educator appointment process should **prioritize matching teacher educators' academic training and professional experience with their specific appointment.** Primary pre-service program teacher educators should have a degree in primary education and have several years of primary-grade teaching experience with positive evaluations. Promising candidates without the needed degrees should receive priority access to appropriate degree programs that would qualify them for these positions.
- 2 Support teacher educators' professional development.** **Teacher educators should receive continuous professional development** so that they can model evidence-based pedagogies and impart current knowledge of FLN implementation. One cost-effective way to do this is to involve teacher educators in FLN in-service trainings, alongside primary-grade teachers. While cost may be a barrier to frequent in-person trainings,

Improving Teacher Development in Zambia

VVOB, a Belgian NGO, currently works on teacher development in ten countries. In Zambia, VVOB is working with several pre-service teacher education institutions, including Chalimbana University, Kitwe College of Education, and Serenje College of Education, to embed the following components into the country's pre-service curriculum: (1) group work, (2) classroom management, (3) teaching at the level of learners, and (4) the development and use of locally available teaching and learning resources. These efforts help break the reliance among teacher educators and pre-service teachers of "chalk and talk" pedagogical approaches. VVOB helps teacher educators develop the mentoring skills needed to scaffold and promote these new curriculum components and student-centered pedagogy among pre-service teachers.⁵¹





the use of devices such as phones and tablets may provide greater opportunities for professional development, such as virtual professional learning circles. Distance training efforts have increased in 2020 and 2021 due to the COVID-19 pandemic, and more evidence on their effectiveness may be available soon.

- 3 **Provide adequate teaching and learning materials.** Pre-service teacher education **institutions must be resourced at the level needed to support quality learning and instruction.** These resources should include the current primary-grade textbooks and curricula, children's reading books, math manipulatives (counters, blocks, etc.) for use in FLN instruction, relevant digital technologies, reference books, teachers' guides with lesson plans, and electronic journal access to current research on topics related to FLN.

Improving Teacher Selection and Deployment

Selection and deployment can be thought of as the entry points to the teaching profession, with selection marking entry into preservice teacher education and deployment indicating entry to beginning teaching. **Selection and deployment policies, along with other teacher management policies, affect the quality of teachers attracted to the profession, as well as retention.**⁵² **These policies can affect perceptions of the teaching profession, but are often outside of the purview of pre-service institutions.** Research studies indicate that pre-service teachers who approach teaching as a fallback rather than a desired choice may be less motivated in their pre-service coursework and in their teaching careers and less satisfied with their teaching positions.⁵³ Policies that result in lengthy placement delays or limited consideration of teacher preferences for their assignment may dissuade strong candidates from entering pre-service programs or remaining in the profession after completing their program. Selection and deployment policies also have implications for national budgets, as teacher salaries often make up the largest portion of education budgets in LMICs.⁵⁴

Many LMICs face ongoing tensions stemming from the need to recruit more qualified teachers. For example, Tanzania would need to hire more than 130,000 new primary teachers to meet its official student-teacher ratio of one teacher for every 40 students in standards one through four.⁵⁵ Such high demand for new teachers could impact the ability of pre-service institutions to ensure high standards in both the selection of pre-service candidates and criteria for successful program completion, since they may be under pressure to produce sufficient numbers of graduates.⁵⁶ Budget constraints that limit civil servant hiring also pose challenges for deploying sufficient numbers of teachers after graduation from pre-service.⁵⁷ Teacher hiring in Zambia and Malawi has been limited and slow, lagging several years after preservice program completion.⁵⁸ These policy tensions must be addressed at the highest levels of government to ensure that education goals are adequately funded and that the teacher workforce is sufficient for a country's needs. **Globally, more than 69 million additional teachers will be needed by 2030 in order to achieve the United Nations' Sustainable Development Goal 4, regarding the provision of quality education to all.**⁵⁹

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In response to these pressures, some LMICs, including Eritrea, Mozambique, and Mali, have hired contract teachers in place of permanent teachers.⁶⁰ While this approach reduces costs, it can have negative impacts on prospective teachers' view of the profession and can further reduce the prestige of pre-service programs.⁶¹ Indeed, according to one study conducted across 23 OECD countries, high-achieving 15-year-olds were more likely to be interested in teaching as a career in countries where teachers' salaries were relatively high and teachers enjoyed higher social status.⁶² In LMICs, where teacher salaries are generally low,⁶³ this is a contributing factor to the profession's low attractiveness to high-achieving potential program applicants and can have a negative impact on morale.⁶⁴ We recognize that teacher salaries are a substantial portion of education budgets and we are realistic about how much those salaries can be increased, but teacher selection is affected by not only the salaries offered but the prestige of the profession in the broader labor market.

Countries can experience inequities in teacher deployment even when the overall number of teachers is sufficient, as in Indonesia.⁶⁵ This is due to teacher preferences to work in more urban and better-resourced areas.⁶⁶ Further, female teachers may be more constrained than their male counterparts in their ability to



accept a position away from their families, in hardship areas, or in areas that require living alone.⁶⁷ Moreover, political influence (including influence from teachers' unions⁶⁸) and corruption in deployment practices have been widely documented in LMICs.⁶⁹ This type of influence accelerates the drain of qualified teachers away from more challenging posts, exacerbating rural-urban gaps in the assignment of talented educators and therefore affecting educational outcomes.

Selection and deployment policies can interact with pre-service teacher education in ways that promote access to high-quality education for all children, or in ways that compound disadvantages. In multilingual countries, for example, language of instruction (LOI) in primary schools, LOI in pre-service teacher education institutions, and deployment policies may not be aligned. Though a teacher may understand the importance of explicit literacy instruction, it can be difficult to implement this type of instruction in a language with which the teacher is unfamiliar. Mismatches between teacher language abilities, training experiences, local LOIs, and teacher deployment policies can reduce the quality of education children receive.⁷⁰ (See the [LOI How-To Guide](#) for more details on language-of-instruction issues in FLN.)

Teacher Induction in South Africa⁷¹

The New Teacher Induction to Support Inclusive Teaching program was developed by Inclusive Education South Africa in collaboration with VVOB and South Africa's Department of Basic Education. The 12-month school-based induction program aimed to help new teachers build professionalism, develop inclusive pedagogy, and reduce isolation, with the goal of reducing new teacher turnover. An evaluation of the pilot program with 66 new teachers in 28 schools found that 64% of participants felt that the program had facilitated the transition from their pre-service training and 81% felt motivated to continue as teachers. However, both new and mentor teachers noted that the additional workload of the program was a challenge.



SUGGESTIONS

- 1 **Conduct a national needs assessment.** Efforts to improve selection and deployment policies must start with an **analysis of the national education system's needs and opportunities**. What are the overall and location- and subject-specific shortage areas? How can countries balance the need to have a selective process for enrolling preservice teachers into PSTE programs with the pressures of preparing enough teachers to meet country needs? Regarding deployment of new teachers, how are teachers distributed across regions and levels of disadvantage? What monetary and non-monetary incentives do teachers weigh when making decisions? How are stakeholders—e.g., schools, community leaders, teachers' unions, and political parties—involved in deployment? How can these stakeholders be leveraged to address inequities in the system? And finally, what resources can be committed to address gaps in teacher deployment?
- 2 **Design appropriate teacher incentives.** Information gleaned from the national needs assessment can be used to **inform teacher incentives**, which are a common means of remedying deployment gaps.⁷² These incentives may be monetary or non-monetary, such as housing, support for pursuing advanced degrees, or priority promotions.⁷³ While there is little evidence available on how teachers weigh these various incentives against more challenging working conditions,⁷⁴ pre-service teachers value opportunities⁷⁵ for additional education opportunities. Therefore, free or reduced-cost access to higher education through online or blended programs could be a valuable incentive for teachers to take less attractive posts. Additionally, advanced education could provide opportunities for career advancement for primary school teachers, preparing them for positions such as FLN coaches, where such positions exist.
- 3 **Encourage targeted individuals to enroll in pre-service teacher education programs.** To address specific needs identified in the contextual analysis, **countries should recruit targeted individuals into pre-service programs**. This includes individuals living in rural areas, women, persons with disabilities, and people with specific or multiple language backgrounds.⁷⁶ Such efforts can help produce a more balanced teacher labor market. They can also help attract stronger candidates into pre-service programs, such as through offers of scholarships to strong candidates in exchange for commitments to teach in disadvantaged schools for a period following graduation.
- 4 **Expose pre-service teachers to rural schools.** Pre-service programs can **expose pre-service teachers to rural schools during practicum**. This experience can help dispel pre-service teachers' misconceptions about rural schools, teach them how to handle the challenges in these settings, and lead




them to see the available opportunities and advantages of working in these contexts.⁷⁷ Assuming that the practicum is well managed, students with this experience may be more likely to accept a rural post.

- 5 Develop induction programs for new teachers.** Deployment outcomes may be more successful when **new teachers are supported by a strong induction program**. New teacher induction may be formal or informal and is a form of teacher professional development (step 5 in Figure 1). Formal induction programs have been associated with better well-being among new teachers in Canada⁷⁸ and increased teacher retention in the United States.⁷⁹ In many LMICs, however, induction periods are generally short and do not provide sufficient skills development. High-performing high-income countries and regions—such as Ontario, Singapore, and Shanghai—often have new teacher induction periods of at least one year.

Conclusion

Many of the challenges in pre-service teacher education discussed above are rooted in a lack of resources—pressures to produce new teachers quickly to fill shortages, lack of teaching and learning materials in pre-service institutions, lack of professional development for pre-service program teacher educators, and lack of financial support and development for partner schools and practicum mentor teachers. Some of these gaps could be partially filled by connecting pre-service programs to ongoing and future FLN activities, such as including teacher educators in trainings alongside in-service teachers and providing copies of all new primary materials to pre-service institutions. Others require commitments at the national level to ensure that pre-service programs receive the same degree of funding as other tertiary programs that are perceived as higher prestige. Lastly, some of the gaps require teacher deployment policies to be considered alongside LOI and tertiary education policies and may be low- or no-cost policy changes that can have significant effects.

 **This guide points to the need for more rigorous research on pre-service teacher education globally, and particularly in LMICs (see box below).** Currently, the evidence connecting pre-service teacher education factors (such as curriculum content and practicum length) to student outcomes is scarce and centered in the global North. Producing this type of rigorous research would likely require investment in high-quality administrative data systems that track students and teachers over several years. While this can be done in some wealthy countries,⁸⁰ such data are not yet widely and consistently gathered in most LMICs.

Experimental and quasi-experimental studies in LMICs on aspects of pre-service teacher education would also be welcome additions to the literature. For example, pre-service teachers could be assigned randomly to practicum locations and then followed to their acceptance of a permanent teaching position to examine whether practicum location influences acceptance of a post in a disadvantaged area. Another possibility would be to examine the uptake of pre-service teacher education scholarships by academically strong students, as well as outcomes such as academic performance in the pre-service program, practicum performance as evaluated by the mentor teacher, placement rates, and perceived preparation for teaching. As noted above, there is a need for more context-specific evidence on incentives that could help reduce disparities in the distribution of qualified and effective teachers. Addressing these types of questions would contribute to the development of an evidence base that can inform pre-service teacher education policy development in LMICs.



The Need for Rigorous Research

Rigorous empirical research on pre-service teacher education is needed in countries of all income levels. This includes research which examines the following:

- the effectiveness of teacher education programs
- linking pre-service teachers to in-service teacher performance
- linking pre-service teachers preparation to student learning outcomes

According to a 2020 report on the K–12 teacher workforce in the United States published by the National Academies of Sciences, Engineering, and Medicine:

The field lacks empirical evidence about what [pre-service teacher education] programs are effective, why, and for whom. Most state data systems fail to link preservice teacher candidates to inservice outcomes... The NRC report *Preparing Teachers (2010)* called for research on the development of links between teacher preparation and outcomes for students, but that call has yet to be fulfilled. The problem also has to do with the difficulty in examining the causal effectiveness of teacher preparation programs, given all the confounding variables—including individual teacher traits—that might explain teacher success.⁸¹



TECHNICAL EXPERTISE NEEDED

- **FLN content and curriculum development expertise** for the alignment of national pre-service curricula with current evidence-based practices for FLN.
- **Teacher education pedagogy expertise** for the creation of professional development programs for pre-service teacher educators focused on modeling evidence-based instructional approaches.
- **Expertise related to partnerships between schools and pre-service programs**, including expertise on the development of high-impact practicum programs.
- **Teacher labor market expertise** to evaluate the local context and analyze potential changes to selection and deployment policies, such as teacher incentives.

RESOURCES

Comparative evidence on pre-service teacher education:

https://www.researchgate.net/publication/257243696_Improving_teaching_and_learning_of_basic_maths_and_reading_in_Africa_Does_teacher_preparation_count

Understanding lecturer capacities and experiences in LMICs:



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https://www.researchgate.net/publication/331443088_Reforming_teacher_education_in_Nigeria_Laying_a_foundation_for_the_future
<https://www.tandfonline.com/doi/abs/10.1080/03057925.2019.1582323>

Guides to program and policy development for pre-service teacher education and teacher deployment:

https://pdf.usaid.gov/pdf_docs/PNADZ721.pdf
<https://unesdoc.unesco.org/ark:/48223/pf0000370966>

Key resources from high-income countries on teacher preparation:

<https://www.wiley.com/en-us/Powerful+Teacher+Education%3A+Lessons+from+Exemplary+Programs-p-9780787972738>
<https://www.cbmsweb.org/archive/MET2/met2.pdf>

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