LEARNING FIRST

A new approach: Reforming teacher education

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Learning First is a social enterprise focused on school education policy and system reform.

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1 Introduction

Increasing the effectiveness of teachers is the key to improving our schools, but most systems around the world have only recently focused reform efforts on transforming initial teacher education. The ways in which candidates are prepared to be teachers have a critical influence on what teachers can do and what their students learn, yet very few countries have an effective system for educating teachers. Many programs lack proven practices and are a long way behind the best.

For governments, initial teacher education (ITE) reform is very difficult, partly because the teacher education pathway is complex and not easily controlled. Most ITE programs are housed in autonomous universities, and generally governments do not have direct control over how these programs prepare teachers. Yet governments do exercise great influence over two other dimensions of the teacher education system: the funding of universities and the hiring of teachers into public school systems.

Since government schools are the primary employer of new teachers, it is surprising how little influence and interaction states, districts, or schools have with the providers of ITE. Minimal government oversight combined with this lack of feedback from the main teacher employer means there is little incentive for ITE providers to improve the quality of their programs. Low-quality programs are still able to enrol teacher candidates because of the inattention to training quality across the system. Teacher candidates currently do not have the information to choose programs based on quality. But even if they did, their employment outcomes are not likely to change whether they went to a great ITE program or a poor one because the current employment policies do not differentiate based on training quality.

Improving ITE requires an understanding that reform is needed to influence teacher employers (states, districts, and schools) as well as ITE providers.

Learning First is working with policy makers in a number of systems around the world on improving teacher education. Concerns of declining quality in ITE are widespread across the globe and all are looking for a way forward. A framework is needed that identifies the reform options available, their impact in different forms and contexts, and the governance structures that optimise the impact of reforms. Such a framework is particularly important in ITE, which regularly crosses federal, state and local boundaries and is subject to intervention from all three levels.

The aim of improving ITE is to give beginning teachers better skills to increase student learning. Currently, teachers feel underprepared for the realities of teaching because they often do not graduate with the necessary content knowledge and pedagogical skills. The challenge is to develop the mix of reforms so all actors in the system are working together to achieve this objective.

This requires looking at the teacher education pathway in its entirety, encompassing the selection of candidates, progression within a course, graduation requirements, registration[1] and employment, induction and early career development. If all these stages are recognised as steps along a common teacher education pathway, reform is more likely to lead to effective teacher preparation.

There is a harmful tendency to look at the steps along the pathway in isolation, which leads to less effective reforms. One of the big problems at present is the focus on inputs at a single stage,

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[1] Teacher registration refers to the stage after a teacher completes their ITE course but before they can be employed. Sometimes referred to as teacher certification or teacher licensure. In some systems, this is a multi-stage process where teachers are first temporarily registered and after a few years of teaching are then permanently registered.

particularly the selection criteria of candidates into ITE. While raising the quality of candidates is important, it should not be the main focus of reforms as it will not help drive improvements to the quality of ITE. More effective policy reforms target both teacher candidates and the quality of teacher education providers. They link assessments of teachers at different stages along the teacher education pathway with the quality of the programs training those candidates. Unfortunately, many of these assessments are too weak for meaningful reform. For example, teacher registration is usually too weak to remove poorly prepared candidates and therefore provides little information to the system about which teacher education programs are doing well. Collecting and publishing transparent information about which ITE programs are producing more effective graduates will send clear signals to ITE providers, and will provide evidence about better ways to train teachers.

Effective reforms ensure strong assessments at key parts of the pathway, align those assessments to incentives to increase quality, and increase the information flow between the main teacher employer (schools, districts, or states) and ITE providers.

2   Key problems in ITE

Evaluations in numerous countries have shown serious problems with ITE. These include:

- A lack of evidence-based content

- Inadequate training in subject knowledge

- An insufficient focus on data collection and analysis skills for clinical teaching practice

- Limited integration of theory and practice

In most systems around the world, addressing these issues will be central to reforms to improve ITE and end the pattern of under-prepared teachers turning up in schools.

2.1   Lack of evidence-based content

Evaluations of ITE programs from the US and Australia have shown that some courses are teaching obsolete or ineffective practices and strategies. The impact of this cannot be understated. Reforms should focus on ensuring teachers are using methods known to improve student learning.

In the US, the National Centre for Teacher Quality found that 83% of ITE programs did not cover the five components of effective reading instruction as set by the National Reading Panel more than a decade earlier. It further found that nearly 1000 different textbooks were used to teach reading instruction across 2671 courses, most teaching a variety of methods not supported by any evidence.[2]

The Teacher Education Ministerial Advisory Group (TEMAG) in Australia found that many ITE programs were teaching practices that were not up-to-date, not based on research or not properly understood by those who were teaching them.[3]

Effective teacher preparation programs should model the practices they expect from their student teachers. Teachers need to be up-to-date with the latest evidence on teaching strategies and continually improve and develop their practice (see section 2.3). This is hampered by the ITE that many teachers receive.

2.2   Inadequate subject knowledge training

Some teacher preparation programs do not provide the necessary content knowledge required to adequately teach the curriculum. This is particularly the case for primary teacher training. In the US, 72% of programs teach content that only pertains to a small part or none of the complete primary school curriculum.[4]

One of the biggest deficiencies among primary teachers is in teaching maths. Several studies show primary teachers lack the necessary procedural understanding of the mathematical or scientific concepts they are required to teach, which creates anxiety when teaching these subjects.[5] Research shows that this may have a negative impact on female student achievement. The majority of primary school teachers are female, and the higher a female teacher's maths anxiety, the more likely a female student's beliefs are to fall along traditional gender lines and the worse she is likely to perform at maths compared with her male counterparts.[6]

High-performing education systems place a greater emphasis on subject-specific expertise, particularly content knowledge. In Finland, all teachers are expected to have a master's degree in the subject they will teach. Trainee teachers in Singapore must attain the content knowledge of a specialist degree in the subject, e.g. physics or mathematics.

Whether this advanced level of content knowledge is essential is yet to be proven.

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[2] Greenberg, Walsh, & McKee, 2014
[3] Teacher Education Ministerial Advisory Group, 2014
[4] Greenberg et al., 2014

[5] Thanheiser et al., 2014
[6] Beilock, Gunderson, Ramirez, & Levine, 2010

However, ensuring teachers have a satisfactory understanding of all the specific concepts they will have to teach is clearly a necessity.

2.3 Insufficient focus on data collection and analysis skills

Contemporary education research has highlighted the importance of teachers continually analysing and developing their own practice.[7] Fundamental to this is the ability to assess the impact of their teaching on student learning. Teachers must collect and analyse data on their students' learning (including both formative and summative assessments) and then target their teaching to increase each student's learning.[8] This approach is central to teaching a diverse range of students and selecting appropriate strategies for teaching and learning.[9]

Unfortunately very few ITE programs are equipping beginning teachers with these important skills. The TEMAG report in Australia found that ITE programs were not training beginning teachers to know what data to collect, how to interpret it and how it can be used to improve their own practice.[10] In the US, only 24% of ITE programs were found to include any assignments or coursework that adequately addressed the same issue.[11]

In contrast, trainee teachers in high-performing systems are given the tools to continually improve their practice across their careers. Education research and practice are integrated in a 'teacher-as-researcher' approach. Teachers are trained to evaluate the impact of their teaching on student learning, and use research evidence to adapt their teaching to better meet the learning needs of their students. This approach is fundamental to ITE

and teacher development in Finland, Shanghai and Singapore. In Finland, trainee primary teachers must complete an academic or scientific thesis in pedagogy, which develops their data and analytical skills. Trainee secondary teachers must do the same in an academic discipline.[12]

2.4 Limited integration of theory and practice

The application of education theory to practical classroom teaching is an essential part of a beginning teacher's development.[13] New teachers continually report that their practical experience in a school is the most useful part of their teacher preparation.

It is therefore not surprising that high performing systems integrate a substantial practical component within their ITE to develop classroom management skills and link pedagogical theory and practice.[14] In Singapore, pre-service teachers have 22 weeks of practicum[15] in a school over the four years of their degree. The practicum includes observation, co-teaching and eventually teaching with the assistance of a mentor. The practical components of the degree start in the first year and increase over the duration of the course. In the one-year post-graduate program, 40% of the course is devoted to the practicum. Japanese pre-service teachers spend up to two days a week in one-on-one coaching in their classrooms during their first year of ITE.[16]

This is not the case elsewhere. In Australia there are rising concerns that students are forced to cold call schools in order to find placements with little help from their ITE provider.[17] As practical experience is most effective when it is carefully interwoven with coursework, the disconnect

[7] Griffin et al., 2013; Hattie, 2009
[8] Griffin & Care, 2014
[9] Hattie, 2009
[10] Teacher Education Ministerial Advisory Group, 2014
[11] Greenberg et al., 2014
[12] Tatto, 2013
[13] Barber & Mourshed, 2007
[14] In most other systems around the world, beginning teachers report that their ITE lacks a focus on developing

classroom management skills. Hence, many systems are looking to expand and improve their ITE practicums.
[15] Practicum refers to the practice teaching experience teacher candidates go through during ITE. Sometimes referred to as a school placement or student teaching experience.
[16] Jensen, Hunter, Sonnemann, & Burns, 2012
[17] Teacher Education Ministerial Advisory Group, 2014

between schools and ITE providers is of great concern. It not only raises issues of the duration of the practicum but also of the quality. The National Council on Teacher Quality in the US assesses an ITE provider's practical components against three standards. First is the frequency of observations and feedback provided to the student teacher. Second is the ITE provider's communication to the placement school about the eligibility standards to be a mentoring teacher. The third is the ITE provider's active involvement in selecting the mentoring teachers. In the US, only 34% of ITE providers meet the first standard and only 2% meet all three.[18]

Improving the connection between ITE providers and schools is crucial, since teachers and school leaders have long reported that ITE is failing to adequately prepare teachers for the realities of classroom teaching. In Singapore, the government coordinates feedback between schools, the Ministry of Education, and the National Institute of Education (NIE). School feedback is collected through surveys, focus groups and interviews to ascertain the strengths and weaknesses of trainee and beginning teachers. NIE is then expected to respond proactively. For example, in the mid-2000s, Singapore schools reported that beginning teachers lacked practical classroom teaching skills. In response, NIE radically altered its course by removing subjects such as the history, philosophy and sociology of education and replacing them with a greater focus on more practical classroom teaching.[19]
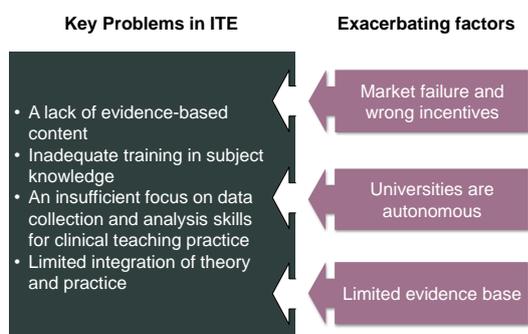
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[18] Greenberg et al., 2014

[19] Subjects that were removed were shifted to the graduate program. See Jensen et al., 2012

3   Issues driving problems in ITE

Systems around the world are struggling with the right mix of reforms to improve teacher education. It is not easy; the nature of ITE means considering stakeholders across universities, state governments, districts, and individual schools. Policy levers that can be successful in school education (K-12) are not useful in reforming how teachers are prepared because of the complicated sector. There are numerous contextual factors at play but a few are critical to understand for effective reform.

Figure 1: Systemic limitations in ITE

Key Problems in ITE
- A lack of evidence-based content
- Inadequate training in subject knowledge
- An insufficient focus on data collection and analysis skills for clinical teaching practice
- Limited integration of theory and practice

Exacerbating factors
- Market failure and wrong incentives
- Universities are autonomous
- Limited evidence base

The problems with quality in ITE programs are exacerbated by a series of systemic limitations.

3.1   Problems with the market: reversing the incentives for quality teacher education

It's usually assumed that competition between providers leads to better programs, but with ITE, many providers do not compete on quality. Providers have financial incentives to run low-cost teacher education, and often teacher candidates also have an incentive to get the cheapest, quickest course they can find, as their course selection has no bearing on their future career prospects.

The structure of these incentives causes many reform policies to be ineffective or have a negative impact. Policy makers need to account for these negative incentives in developing all ITE reforms.

The reason for the misaligned incentives is because of the poor links between:

1. The market for ITE (prospective teachers choosing programs)

2. The market for teacher graduates (employers - states, districts, or schools - choosing graduates from various teacher education courses)

Reform that better links these markets will align incentives to continually increase the quality of ITE. To maximise impact, reforms need to alter incentive structures so universities and candidates are geared to continually improving quality. If poor incentives are not addressed, then virtually all reforms will fail.

In most professions, students choose the university program that optimises their job prospects after graduation. Going to a top law school, for example, means graduating lawyers are more likely to get the job they want and receive a higher salary at a better law firm. In turn, high-quality law schools will attract more students and low-quality courses will lose students because their graduates do not find good jobs.

But in the teaching profession, the employer reaction to the quality of training is often weak. All beginning teachers are generally paid the same regardless of the quality or type of training, and teachers from better programs are not necessarily more likely to get the job they want. There is a tendency throughout the system to see teachers as standard commodities, supplied without differentiation across the market.

For this reason, when prospective teachers are choosing their ITE programs, the incentive is not necessarily to look for the best quality program but to look for other characteristics, such as convenience or low cost.

Figure 2: Two markets in ITE

Prospective teacher selecting an ITE program

School employing a teacher
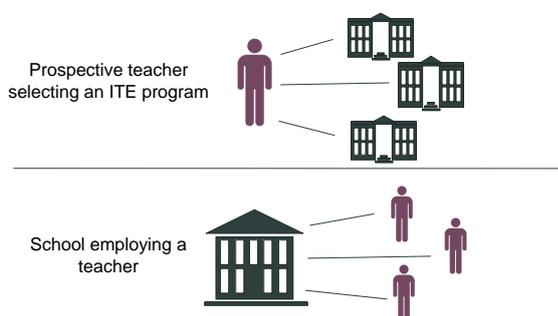
Aligning incentives around continuous improvement in teacher education requires strong linkages between the market for people entering ITE and the market for teachers after they have graduated from ITE. Attempts at ITE reform often neglect the second market – the employer's (as in states, districts, or schools) decision to hire a teacher. How teachers are hired out of ITE affects how prospective teachers choose an ITE program to attend. Currently, prospective teachers have little signal from their desired employer as to which programs are deemed highest quality. They also have little incentive to choose programs based on quality, as it has little impact on their job prospects.

In turn, ITE providers – mainly universities – lack a financial incentive to improve the quality of the ITE they provide. Better quality ITE does not attract more students as it doesn't help them find a job. So the only financial incentive universities have is to reduce costs. This harms quality. Effective reform links decisions in both markets so that people choose the best quality course because it helps them get the teaching job they want. And universities increase the quality of ITE because it increases the number of students they attract.

In turn, teacher education providers, mainly universities, have no financial incentive to improve their teacher education. In fact, the reverse is true. Due to the failures of the graduate market, universities will not lose students if they provide poor quality teacher education. Therefore, there is a financial incentive to provide the cheapest course they can (as it won't affect their revenue – it may even maximise enrolment-based income). The result is poor quality ITE courses that operate with insufficient investment in the practical training required to graduate a properly prepared teacher.

This problem is exacerbated as the marginal costs of additional students are so low for poor-quality teacher education. Many universities have large financial incentives to put as many student as possible through cheap but ill-designed courses.

Box 1: Quality of teacher Master's degrees in the US

In the US, more than 90% of the largest school districts pay higher salaries to teachers with Master's degrees and more than 50% of teachers nationally choose to attain the higher degree. Because every Master's degree earns the same amount of additional pay, regardless of quality or effectiveness, teachers often choose the quickest and easiest program option. It's not surprising then that studies show little to no impact on student learning of teachers having a Master's degree.[20]

3.2 Universities are autonomous institutions

Since ITE programs are generally housed in autonomous universities, government regulation is typically thought of as politically unviable. But government has a clearer role in teacher education than training for other professions since it is the main employer of teaching graduates. In addition, the practicum is often held in a government school, providing another point of intervention.

The combined role of employer and provider of most practicums offers government greater leverage over the content of courses and the qualities of graduates produced. Opportunities for government to influence teacher education include regulating course content, facilitating feedback between schools and universities, and setting strong teacher registration and/or employment standards that graduates must pass. These measures can alter incentives of ITE providers to ultimately enhance school outcomes.

3.3 Limited evidence base

Many systems want to develop a way to evaluate ITE programs but struggle because there are no

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[20] Chingos, 2014; Chingos & Peterson, 2010

clear answers about what great ITE should look like. There are no broadly recognised 'ideal' model programs for teacher preparation. Policymakers can draw on international examples but will be less confident of how to improve programs because of the small research base on ideal teacher preparation.

Despite not having the full picture, there are some broadly agreed principles of good ITE. These provide the basis for the key improvement areas described previously: rigorous training in content knowledge tied to subject-specific pedagogical skills, a focus on formative and summative assessment practices, and a strong practical experience.

Comprehensive evaluation of ITE reforms can significantly add to the base of evidence about what works. We want our teachers to continually assess their impact on students to improve, and this must also be standard practice of ITE providers and system leaders.

3.4 Inputs versus outputs in ITE

In school education, there is a tendency to revert to regulation as the preferred means of reform, with a focus on inputs instead of outputs (e.g. mandating a minimum maths competency for new teachers or regulating the required length of an ITE practicum).

Good policy focuses on the ultimate goal, in this case ensuring beginning teachers are better at improving student learning. Several measurable outcomes can be used to gauge the improvement of the system in terms of:

- **Teacher quality**: Content knowledge and pedagogical knowledge that is directly related to improved teaching and learning

- **Teaching quality**: Classroom observations of teaching performance, student growth data, and student surveys

The focus on the end goal of improved teaching and learning is in contrast to looking at inputs to evaluate improvements in ITE, such as the

number and type of courses required, a candidate's starting point (before they enter ITE), and the length and type of practicum.

Focusing on inputs risks creating unnecessary requirements that do not improve, or even worsen, outcomes. This is a particular problem given the low evidence base of what great ITE looks like. Keeping the focus on outcomes will ensure that the policy reforms are not creating the wrong incentives but are working to improve quality.

3.5 Limitations of minimum standards

Effective policy needs to recognise the difference between using interventions that encourage meeting minimum standards, and policies that push for significant improvement. Most standards-based regulation establishes a quality floor that is useful to bring the worst programs up to a sufficient level, but it does little to move programs from adequate to great. For example, setting a minimum maths proficiency level for teachers and their ITE programs will eliminate any candidates or programs at the low end but it will do nothing to raise the majority of teachers performing above minimum levels. Similarly, setting a minimum practicum length (e.g. 60 days) will not necessarily improve the quality of the practicum.

Minimum standards are important but insufficient for significant change. They are better suited to targeting issues where there is a known deficit in ITE programs, and where evidence can readily show whether or not programs are meeting the standard. For example, ensuring that only evidence-based content is taught in ITE programs. However it is much harder to set minimum standards that ensure teachers have the ability to use data to continually review and develop their own practice, a skill known to be insufficiently taught in current ITE courses.

Figure 3: Setting minimum standards vs raising quality across the board

Setting minimum
standards

Raising quality
across the board

Quality of ITE program
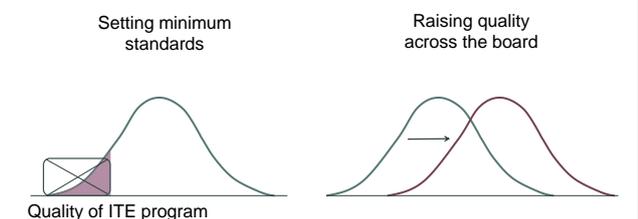
There is a distribution of skills across any group of people. People have these skills before they start ITE and should develop them further during their ITE. Setting minimum standards filters out the poorest quality, but does not impact the majority of potential teachers. Reforms that target all potential teachers raise quality across the whole system. Setting rigorous minimum standards is important, but other interventions like improving incentives or efforts to build capacity will move ITE programs and candidates from good to great.

Interventions like capacity building, direct incentives, and information transparency can be used to encourage program development above minimum standards. A program for performance-based funding, for example, could be designed to give grants to programs that show the greatest improvements in graduate teacher outcomes. Data on the quality of ITE programs can be published to make transparent which programs best-prepare beginning teachers.

Focusing directly on outcomes (e.g. beginning teacher performance) is more likely to be effective than concentrating on inputs (e.g. number of subject courses required).

4   Options for reform: The teacher education pathway

Beginning teachers pass through different phases of a teacher education pathway, from their entry into ITE moving into employment. In most systems, policy intervention can target six different points along the pathway, from selection into a program to the first years of teaching in a school. These points offer opportunities for policymakers to create filters or gateways to assess teachers entering the profession.[21] Raising the minimum standards for admission to ITE courses would be a filter at the beginning of the pathway, while requiring evaluation after the first year of teaching would fall at the end. The assessments must be rigorous to be effective. For example, a registration exam with a 95% passing rate would not be a strong filter.

The pathway should be viewed as a complete system rather than as separate steps.[22] Stronger filters further down the pathway affect not only the quality of the candidate but also reach back to affect the quality of teacher education provided. A tough registration exam will result in high failure rates among graduates from low-quality courses, providing an incentive to improve the programs to ensure teaching students are better prepared. In contrast, setting high admission standards into ITE work solely to filter candidates rather than encouraging any reforms to improve the quality of the program.

Reform options at each step of the teacher education pathway are discussed below.

Filters v ITE regulation

At a basic level, systems have two sets of reform levers: to institute rigorous filters along the pathway or place tougher regulations on ITE content and structure. There are trade-offs; if systems eschew implementing rigorous filters along the pathway (e.g. at teacher registration) then there is a greater need for more stringent regulation of ITE courses.

If systems only register and employ the best graduate teachers, it acts as a strong filter that endorses higher-quality programs and signals to teaching students which are the best courses. Universities are then encouraged to improve the quality of their programs to ensure their graduates will be employed and that they will continue to attract students. In this case, direct regulation of ITE course quality becomes less necessary. Employers (i.e. states, districts, or schools) can strengthen this process by establishing differential hiring practices that give preference to teachers with higher scores in the registration exam or from higher-quality or more selective institutions.

Figure 4: Teacher education pathway

Selection into initial teacher education → Progress through initial teacher education → Exit from initial teacher education → Teacher registration → Hiring → First year(s) of teaching

The teacher education pathway depicts the different stages of beginning teachers' education, from selection into ITE through to their first years of teaching. Effective reform views this pathway in its entirety, reinforcing critical aspects of effective teaching along the development path. In general, reforms that target the beginning of the pathway will impact only prospective teachers. While reforms later in the pathway impact both potential teachers and ITE providers, increasing their impact and enabling a cycle of continuous improvement.

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[21] Goertz, 1984

[22] Wang, Coleman, Coley, & Phelps, 2003

However, if filters toward the later end of the pathway are weak, then a focus on more direct interventions to improve program quality is needed, such as stronger regulation of programs and incentives to improve quality. Low-quality filters towards the end of the teacher education pathway also create a greater need to evaluate and close bad ITE programs, as their graduates are just as likely to be hired as graduates from high-quality programs.

Box 2: International examples of filters further along the teacher education pathway

During ITE in the Netherlands: Students in the Netherlands perform well on international exams, but in recent years there has been concern about the decline of the country's international ranking. More attention to teacher quality prompted an intervention into primary teacher education in 2008: all teacher candidates must now pass an exam of basic language and math skills at the end of their first year of training in order to continue.[23] This creates an incentive for ITE programs to make sure the first year of the program adequately prepares students in these basic skills.

At employment in Japan: After teachers graduate from their course, they must take an employment exam that is administered at the local (prefectural) level where they are hired. The written section of the exam may cover pedagogical subject knowledge (among other topics) and the personal interview component includes a demonstration lesson.[24]

For example, governments looking to improve the subject knowledge of their beginning teachers could tackle this in two ways. They could regulate course providers, requiring them to teach specific content. Alternately governments could set registration exams that test graduates on their content knowledge. Graduates who did not pass would have to develop their content knowledge before becoming registered. Universities would have to ensure that they were teaching the content required to pass the exam otherwise prospective students would be unwilling to attend their universities. The effect would be even stronger if linked to transparency/publication of provider performance data, which governments could also regulate.

4.1 Selection into ITE

Raising admission standards is politically attractive because of its simplicity. While a level of academic ability is important in teaching, focusing on minimum entry scores into teacher education fails to address what happens after admission, namely the quality of training provided. Moreover, reforms focusing on admission standards could have a negative impact in sending the message that the problem is all about the quality of entrants rather than the quality of the courses.

Raising admission standards also impacts the diversity of the teaching profession. Students from diverse and low socio-economic backgrounds are disproportionally affected by admission cut-offs given they attain lower school marks on average. These people could be excluded from teaching even though they may be able to develop the necessary skills during their ITE.

Teacher education data is generally poor. In the example below, little is known about which students are more or less likely to complete their education and get jobs in schools. Given poor data, there is greater uncertainty of the impact of interventions targeting the early stages of the teacher education pathway.

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[23] Hammerness, van Tartwijk, & Snoek, 2012

[24] Department of Education, 2012; Ingersoll, 2007

Box 3: ATAR cut-offs in Australia

In Australia, the debate on how to improve ITE has mainly focused on increasing the secondary school standards for admission into ITE. The Australian Tertiary Admission Ranking (ATAR) is a percentile score awarded to all secondary school graduates that is used as the criterion to get into most undergraduate university courses. Many interested parties including The Australian College of Educators have called for an ATAR cut-off of 70 (i.e. the top 30th percentile) into all initial teacher education courses across the country. This has been the focus of much public debate, but it would have little, if any, impact on the quality of training teachers receive.

Based on 2012 results, a cut-off of 70 would affect 40% of the candidates entering teacher education programs based on their ATAR. However, despite being the main criterion, the ATAR is only used as the basis of admission for 20% of students entering teaching. Many students enter ITE courses through alternate pathways such as VET (vocational) study or transferring into teaching from other university degrees. There has also been a large shift toward post-graduate ITE courses, which do not consider secondary school results for admission.

As a result, only 8% of ITE graduates would be affected by an ATAR cut-off of 70, so there would be little impact on overall quality of new teachers entering the profession. Further, given oversupply, it's likely that a proportion of these wouldn't get recruited/retained anyway, resulting in even less sustained impact.

Attraction matters

Admission standards are one form of selection into teaching but self-selection by school-leavers is another potent lever. Making teaching an esteemed, respected profession will enable it to compete for the best students with law, medicine and other highly regarded professions. Many high-performing education systems that have selective entry requirements into ITE also have made teaching a highly attractive profession. In countries where teachers are paid less than other professions that require equivalent amounts of training, it is harder for the profession to compete

for the best students. Critically, higher pay relative to other professions is correlated with higher teacher skills throughout the OECD.[25] However, other factors aside from pay can influence the attraction of the profession, including good working conditions and high professional status.[26] Without raising salaries, working conditions or the status of teaching as a profession, admission standards will only eliminate the very bottom rather than improve the overall pool of candidates.

Box 4: Selection and attraction in Singapore

In Singapore, prospective teachers are selected into ITE by panels that consider strong academic ability and commitment to the profession. But Singapore also places huge emphasis on making the profession attractive. Student teachers receive a tuition waiver and are provided an additional stipend during training in exchange for a commitment of 3-5 years of service. The Ministry of Education ensures that starting salaries of teachers are adjusted to be in-line with other professions, and teachers have the opportunity to move up career ladders and earn performance pay.[27]

Many high-performing systems have high selection standards, but not because of government regulation. In Japan, Poland and Finland, high admission standards are created by the individual ITE providers, not the government.

In Japan, admission into ITE programs is set at the provider level. All students must have finished secondary school and will have their grades considered when entering their teacher training. They are also considered for admission based on their scores on the National Centre Test for University Admission as well as individual entrance exams for each of the universities they are applying to.[28]

In Poland the minimum requirements for entry into ITE are completion of secondary schooling as well as an external exam called the Matura. However, ITE institutions are individually allowed to set the weighting of particular subjects on the Matura. For example, for entry into lower level (grades 1-3)

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[25] Hanushek, Piopiunik, & Wiederhold, 2014
[26] Schleicher, 2012

[27] Schleicher, 2012
[28] Department of Education, 2012

teaching, only Polish and a foreign language are usually required while for entry into primary mathematics teaching, completion of the mathematics component of the Matura is essential.[29]

Finnish ITE institutions also set their own entry requirements. Teaching in Finland is a highly attractive profession and hence only 1 in 10 applicants are usually accepted into primary education and 1 in 4 into teacher education more generally.[30] For primary education there are generally two stages for entry into ITE. The first narrows the candidates based on matriculation exam results as well as out-of-school achievements and high school grades. The second stage usually involves an interview, a written exam on pedagogy and a clinical observation of a situation replicating a classroom scenario.[31] The weighting of these different requirements is determined by each individual institution.

Quotas for spots in ITE

One option to encourage institutions to focus on the quality of their programs (and the teachers they are producing) is for government to set quotas on places in ITE programs. This is a more targeted approach than bluntly raising admission standards and can avoid the risk of causing shortages. However, to be effective the quotas must be continually adjusted according to demand for different types of teachers, which requires good workplace planning data, which is not always available.

Quotas are more relevant in teaching than other professions because in most cases the employer is ultimately the government. As the employer, government knows approximately the number of

teachers it will be able to employ. This approach is used in Singapore, where the Ministry and the National Institute of Education (NIE) set quotas every year based on the number of expected vacancies.

Box 5: Evidence on raising admissions standards

It is commonly thought that top-performing systems attract teaching candidates from the top third (or better) of prospective students, while the US is primarily attracting teachers from the bottom third.[32] But recent research shows this might not be entirely accurate. A 2014 study shows that Finnish teachers are at the 60th percentile of the college distribution of adult competency in numeracy and Korean teachers fall at the 52nd percentile.[33]

But the same study also shows that higher cognitive ability in teachers is linked to higher student achievement. In other research, a teacher's level of literacy has been shown to affect student achievement more than any other measureable teacher attribute.[34]

The research on ITE selectivity varies in its conclusions. Some early studies found student learning increased when they were assigned teachers from higher-rated and more selective colleges.[35] More recent evidence is mixed. While some studies found a weak or non-existent relationship between college selectivity and teacher effectiveness,[36] others found considerable variation in teacher performance based on the admission standards of the college.[37] Other studies found a positive relationship between college selectivity and the effectiveness of high school teachers[38] but no correlation for middle and primary school teachers.[39] Many of these studies had significant limitations and hence cannot definitively link college selectivity and teacher effectiveness.

Teachers also require placements for clinical practice, similar to intern doctors in hospitals, where training places are commonly capped. Limiting the number of training places would

[29] Ingvarson et al., 2013
[30] Sahlberg, 2010
[31] Sahlberg, 2010
[32] McKinsey, 2007
[33] Hanushek et al., 2014
[34] Wayne & Youngs, 2003; Whitehurst, 2002
[35] Ehrenberg & Brewer, 1994; Summers & Wolfe, 1977; Winkler, 1975

[36] Boyd, Lankford, Loeb, Rockoff, & Wyckoff, 2008; Kane, Rockoff, & Staiger, 2008
[37] Center for Education Policy Research, 2010; State of Florida, Department of Education, 2009
[38] Clotfelter, Ladd, & Vigdor, 2007b
[39] Clotfelter, Ladd, & Vigdor, 2006, 2007a

minimise the problem of student teachers desperately searching for schools to take them on for their practicum.

Quotas still run into the same problem as strict admission standards for only addressing the standard of teaching candidates without creating any impetus for change among the ITE providers. One way to address this is to link quotas to the performance of ITE providers, as is the case in Taiwan. Evaluations of ITE programs determine which providers are offering superior training and they receive a larger quota of teaching places. A variation on this approach would be to offer guaranteed placements at schools for a fixed number of students from particular ITE providers. Linking the quality of the course to the number of students that can be enrolled creates an incentive for ITE providers to improve their programs.

4.2 Progression through ITE

The government can directly regulate program design of ITE, including what courses are required, the type of practicum experience, and any program continuation requirements (e.g. type of exams and assignments). This regulation is often implemented through accreditation and evaluation of programs, which can be attached to incentives and consequences such as changes in funding or loss of accreditation status. Interventions in this area require established standards for ITE so that accreditors know what constitutes an effective versus an ineffective program. Any policy must therefore be careful not to impose unnecessary requirements. Standards for accreditation must be continually adjusted to reflect new research on the optimal ITE.

Program accreditation and evaluation

In Australia, state and territory authorities have responsibility for the accreditation of ITE programs, but refusal of accreditation is rare. Requirements to provide evidence of meeting ITE program standards do not take program outcomes (in terms of teacher effectiveness) into account.[40] In the US, education is one of the only professional fields where course accreditation is not necessary to attract students or for graduates to be employed. Fewer than half of the 1,500 distinct ITE providers in the US have accredited programs.[41]

In contrast, some systems often use rigorous accreditation and evaluation to raise ITE quality. Most high-performing systems have significant regulatory controls on the teaching workforce, closing poorly performing ITE programs and strictly controlling the number of new entrants.

Incentives for improvement

Accreditation and evaluation of ITE programs can provide strong incentives to improve courses. However, there is a difference between ensuring programs are above minimum requirements and developing high-quality programs.

Funding reforms can provide incentives to all ITE providers. Teacher education receives significant public funding in most systems, allowing increases or decreases in funding to be tied to the quality of programs. Incentives can be structured differently for programs based on their starting point: lower-quality programs may have more specific goals to improve along certain standards, while higher-performing programs may be given broader incentives to innovate and share knowledge.

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[40] Teacher Education Ministerial Advisory Group, 2014

41 Greenberg et al., 2014

Box 6: Increasing quality control – international examples

Finland system evolution

Finland is now well known for having an excellent teacher preparation system, but in the 1970s the Finnish ITE system was full of small programs of varying quality, similar to the current US situation. Finland initiated major ITE reforms forcing providers to be more selective and rigorous while closing down small programs in favour of fewer, more respected universities.[42] Finland pushed through the reforms in the face of arguments that they would reduce candidate diversity or that the practical training requirements would lessen academic prestige.[43] There are now eight universities with ITE programs, and each has its own teacher education curriculum that is nationally coordinated for consistency.[44] Every ITE program in Finland now has a detailed and often binding strategy for consistently improving the quality of its programs.[45]

Korean ITE evaluations

Korea has tight oversight of primary teacher preparation programs with quotas for admissions, resulting in a highly selective environment where only the top 5% of graduates are admitted.[46] It exercises significantly less control over secondary teaching programs which can design their own curricula, resulting in considerable variation across almost 400 programs.[47] Secondary teaching courses are therefore not nearly as selective as the primary programs and there is an oversupply of secondary teachers due to the 'proliferation of teacher education institutions'. To improve quality control over ITE, programs are now evaluated every five years by the Korean Education Development Institute and graded on a five-point scale ranging from 'excellent' to 'unsatisfactory'. The Ministry of Education uses this information to make decisions about funding ITE, with extra resources given to high-performing programs. Since 2010, the lowest-performing programs are at risk of closure.[48]

Building capacity of ITE providers

Existing resources, including the experience and knowledge residing in school systems, can be used to help ITE providers design better programs without resorting to heavy-handed regulation. A key way to build capacity is to increase feedback in the market: to close the gap between the training providers and the employers by increasing the flow of information between schools that hire teacher graduates and the institutions that train the teachers. Singapore leads the world in this regard and has a continuous development cycle where schools and new teachers provide feedback to teacher educators on how to improve their course. The government ensures that teacher educators act on the feedback. This addresses the problem of beginning teachers entering the classroom without the requisite content knowledge and skills.

Although not common, another option is to create incentives for ITE providers to forge better links with schools. A unique reform of this type has been introduced in Singapore over the past five years. Academics at the National Institute of Education (NIE), like all colleges and universities, are evaluated and promoted on their publications and, to some degree, their teaching. A focus on academic publications can come at the expense of links to schools and classrooms (that improve children's learning). Therefore, NIE academics are now also assessed on how many schools use their research and practical teaching tools and the impact their methods have on student learning. Again, this relies on feedback and assessments from schools. It is difficult to assess the impact of this policy, but it is believed it better focuses NIE on improving schools rather than other academic pursuits.

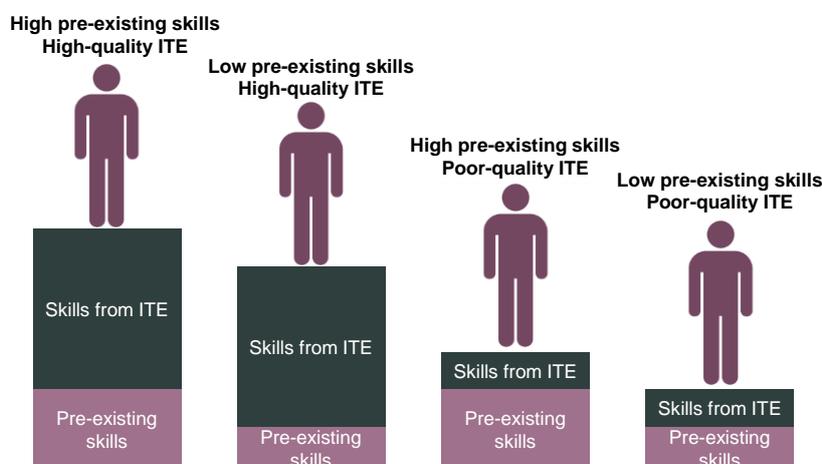42 Ripley, 2014
43 Ripley, 2014
44 Sahlberg, 2010
45 Sahlberg, 2010

46 Bae et al., 2011
47 Department of Education, 2012
48 Department of Education, 2012

Figure 5: Skill development of teachers

High pre-existing skills
High-quality ITE

Low pre-existing skills
High-quality ITE

High pre-existing skills
Poor-quality ITE

Low pre-existing skills
Poor-quality ITE

Skills from ITE

Pre-existing skills

Skills from ITE

Pre-existing skills

Skills from ITE

Pre-existing skills

Skills from ITE

Pre-existing skills

All potential teachers bring a range of pre-existing skills to their ITE. High-quality ITE builds on these skills to develop effective teachers. Policies that target the quality of the candidates entering will not increase the amount of skills developed during ITE. The benefits can therefore be small. Reforms that target improvements in the quality of teacher education courses increase the skills developed during ITE. Comprehensive reform programs do both; increasing the skills developed during ITE and the pre-existing skills necessary to succeed in ITE and eventually become an effective teacher. Attracting strong candidates into well-executed ITE programs should be the ultimate goal.

System leaders directly fund the development of better courses or improved practical experiences based on evidence, or fund research into effective ITE when little evidence exists. The Education Bureau in Hong Kong established the Quality Education Fund (QEF) in 1998 to support priorities for research aligning with curriculum, assessment, and pedagogy reforms at the school-level. The QEF has funded research to improve pedagogical practices in different subjects, which can inform teacher training.

ITE providers may be able to learn the most from programs that are already successful at producing strong beginning teachers, so system leaders can facilitate partnerships to share knowledge. More than a dozen education deans in the US have joined a new organisation called 'Deans for Impact', which aims to transform teacher education. By joining this network, the deans have committed to share data, program designs, and strategies to transform the way educators are trained.

Box 7: Building capacity in Taiwan

In the 1990s, Taiwan eased controls over ITE programs and became concerned about falling quality as more programs were established quickly in the open environment. In response, the government established a two-phase evaluation of ITE programs. The first phase (1997-2004) was used to find information to improve programs and had no consequences for poor performance. In the second phase (2005-present), the government uses the evaluation summaries to raise admissions quotas for excellent programs, and to reduce admissions of (or close) poorer performers.

4.3 Exit from ITE

Exit standards are a useful way of focusing attention on the quality of graduates rather than the quality of entrants into ITE, but exit standards also indirectly affect the quality of candidates enrolled. No university wants high failure rates so it encourages them to admit candidates who have the potential to meet the exit standards.

All countries have exit standards for graduation from teacher training, however, these are usually set at the institutional and not the state level. Currently in the US, 58% of ITE courses evaluated

have grading standards that are far lower than other courses at the same university.[49] This is the risk when completion rates are used as a measurement of the success of a program; it provides the wrong incentive and encourages universities to run easier courses.

Many systems are also limited in their ability to mandate the graduation requirements of private universities. Too much regulation may impinge on universities' autonomy and be undesirable but this must be weighed up against the outcomes desired by policy makers.

Policies need to strike a balance between these competing ideas. In numerous systems, policy makers regulate the duration of the practicum for ITE. In England, all graduating teachers are required to pass a central literacy and numeracy test.[50] Alternatively, registration may be a better option for ensuring particular standards before graduating teachers enter the profession.

4.4 Registration

The registration stage of the teacher education pathway provides an opportunity for governments to intervene without directly interfering in the autonomy of ITE providers. If there are no checks on the quality of teacher candidates at any other point in the pathway, a strong filter at registration is required.

Registration requirements ensure teachers are prepared with the skills and knowledge needed to be effective in the classroom. If the hiring stage of the teacher education pathway has a weak filter – meaning candidates of varied quality have an equal chance of getting hired, and there is no salary differentiation – then it's more important to have a strong filter at the registration stage. If employers (e.g. schools) don't discriminate based on skills and knowledge, then anyone who passes registration is likely to be hired as a teacher. But if schools hire teachers based on quality,

registration requirements can be looser, allowing schools a wider pool of applicants from which to choose the best teacher for their needs.

Requirements at the registration stage will indirectly affect the quality of ITE programs, particularly if there is transparency to inform the public which programs fail to prepare their students to meet registration. Publicly naming the failing ITE programs provides an incentive to universities to improve their training to ensure their graduates meet higher requirements. In this way, registration primarily acts to set a quality floor to either weed out the least effective candidates or force the worst programs to improve their training. Different levels of registration can also be used to distinguish the quality of various ITE programs, with better courses leading to more desirable jobs. For example, different classes of registration (e.g. class A, class B) might be conferred on teacher candidates depending on their results in a registration exam. Tying the different registration classes to higher starting pay or more choice over a teaching placement would create an incentive for universities to improve the performance of all their teaching students - including the best ones - rather than only focusing on the low-scoring students.

> **Box 8: Licensure requirements in the US**
>
> In the US, licensure requirements vary among states but most set a fairly low bar for entry into the teaching profession. In some states, the only requirement is for teachers to take certain courses with no evidence of proficiency required. In states that have licensure exams, most set low scores for passing requirements that eliminate any rigour. Very few states use performance-based assessments, which might offer a more authentic appraisal of preparedness to teach.[51]

4.5 Hiring

Most principals agree that hiring a teacher is the most important decision they make.[52] Research suggests that the initial hire is critical in matching

49 Putman, Greenberg, & Walsh, 2014
50 Wang et al., 2003
51 Cibulka, 2013

52 Pillsbury (2005) and Grove (2009) in Schumacher, Grigsby, & Vesey, 2015

the best teachers with the neediest students.[53] Many discussions about education focus on attracting better candidates to the profession but there is concerning evidence that even when high-quality candidates decide to become a teacher, they are no more likely to be hired than lower-quality candidates. Research has shown that for many schools, applicants from better ITE programs may even fare *worse* in the job market than other candidates.[54] This is in contrast to other professions like law where graduates of selective programs are more likely to get a job and to be better paid.[55]

Box 9: Challenges in rural areas

Teachers are likely to seek employment near the location of their ITE program. However, schools in rural areas may be more likely to end up with lower-quality candidates, regardless of the quality of ITE programs nearby.[56] Rural areas will have more difficulty hiring quality beginning teachers even if rural ITE programs improve.

Many states and districts have begun offering additional pay to encourage teachers to work in rural areas. But if these are blanket policies available for all teacher candidates, they will not work to increase the quality of beginning teachers. Rural employment incentives should be directed only at the best-quality candidates or they risk creating incentives for poorer-quality candidates as well (who may be more likely to look for employment in the region anyway).

In many professions, the incentives for prospective employees to seek quality training come from the employer. For school teachers, the dominant employer is the government, and there is often very little differentiation between candidates in the hiring process either because of policy restrictions or poor hiring resources.

Hiring is a strong filter on the teacher education pathway that addresses many of the key problems outlined at the beginning of this report. Giving preference to quality graduates from high-standard programs gives ITE providers

information about the standard of their teaching graduates compared to the knowledge and skills required in that school system. Moreover, when teacher candidates know that the quality of their ITE determines their job prospects, they apply for training spots only at the best schools. The competitive forces in the ITE market are then driven toward improving quality.

If earlier stages of the teacher education pathway, such as the content of courses, are subject to a high-degree of quality control, then a filter at the point of hiring is not as necessary. But in places like the US and Australia where the autonomy of ITE providers is highly valued, effective hiring is critical and could be the major driver of quality throughout the entire pathway.

There are three issues that commonly prevent schools and governments from effectively hiring teachers:

1. Misaligned priorities

2. Burdensome policies

3. Poor HR capacity

Misaligned priorities

Many systems suffer from poor hiring practices in schools. Teachers are often hired on characteristics such as likeability rather than factors that lift student learning.[57]

For beginning teachers, it is hard to hire based on past effectiveness, but schools still need to look for evidence of quality in their candidates that goes beyond personality characteristics.

Effective hiring criteria include the quality of the training that teacher candidates received, including how well they did in their courses. Preference is given to candidates from selective and quality programs. The interview process includes a sample lesson, a tangible way to obtain

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[53] Fowles, Butler, Cowen, Streams, & Toma, 2014
[54] Ballou, 1996
[55] James et al. 1989; Loury and Garman 1995 in Ballou, 1996

[56] Fowles et al., 2014
[57] Murnane and Steele, 2007, Kersten, 2010, Delli and Vera, 2003, Greenberg and Baron, 2008, Mertz (2010), and Supon and Ryland (2010) in Schumacher et al., 2015

evidence on effective teaching that is rarely used. If possible, candidates submit evidence of their past success in lifting student achievement, and beginning teachers provide student assessment evidence from their practicum experience, along with notes from any of their classroom observations.

Burdensome policies

In some countries, many schools have hiring policies that are subject to union agreement and general public sector guidelines that lead to rules restricting various aspects of hiring. Some examples include vacancy notification requirements, transfer requirements, lack of mutual consent, teacher class restrictions, seniority preference and recruitment restrictions.

Poor HR capacity

When hiring decisions are made at the school level, principals have a greater ability to choose the best candidates, but only when they have enough time and support. Principals are often given many hiring restrictions, but little hiring guidance. States and districts can help schools by offering support during peak hiring times to ensure school leaders can set up an effective hiring process and have access to the best pool of candidates. States and districts also rarely utilise data effectively in hiring. Systems can collect data about teacher performance in the first year and link it to the program they graduated from. Systems can make this data public – to show who is hired, from which program, and how successful they are – to encourage teacher candidates to attend the best ITE programs. This creates a market incentive for aspiring teachers to select the best program, and for institutions to offer the best programs.

Principals in many schools say they are self-taught on best hiring practices while others simply do not use effective hiring processes.[58]

Box 10: Hiring practices in Taiwan

In Taiwan, schools are given the choice to perform their own hiring or to have it centrally organised by the Ministry of Education. About 60% of schools participated in central hiring in 2012. In the first hiring stage, candidates take a written test designed to measure cognitive abilities. In the second stage, candidates are interviewed and perform a teaching demonstration. Selection is by a committee including teachers and principals.

4.6 First year(s) of teaching

Feedback loops between ITE programs and schools are essential to close the gap between theory and practice. Principals regularly report that their graduate teachers are ill prepared for the realities of teaching. However, this does not affect the individual evaluation of their beginning teachers or their teachers in general. In Australia 91% of teachers report that the most effective teachers go unrecognised[59] and 70% report that in their school, teachers with sustained poor performance are not dismissed.[60]

Evaluating beginning teachers at the end of their first year is a useful step in assessing the effectiveness of the individual ITE programs. If beginning teachers are properly evaluated at the end of their first year of teaching, then the quality of the graduates can be tracked back to their ITE program. Reporting on which programs produce the best graduates enables schools to adjust their hiring policies to favour graduates from these courses. This gives training institutions an incentive to improve their ITE programs so their reputation is maintained and they can attract students.

Ideally, ITE programs would be actively involved in the first years of a teacher's training at a school as practical experience is known to be the most effective when it is carefully interwoven with coursework. This is the best way of tackling the current problem that ITE courses insufficiently link theory and practice. The first step is ensuring that

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[58] Lyng (2009) & Popwell (2009) in Hughes, 2014
[59] OECD, 2009

[60] OECD, 2009

the links between schools and universities are strong. Schools provide feedback on the skills their graduates are lacking and the universities are able to shape their programs accordingly. For example, in Singapore, the only ITE provider, the National Institute of Education (NIE) is closely linked to schools ensuring that what is learned in teacher training is directly relevant in a graduate's first years of teaching.

5 Which level of government should intervene?

In determining the most effective mix of reforms, a key question is which level of government should intervene? Too often, this is overlooked or used as an excuse to avoid responsibility in debates on teacher education.

Federal systems obviously determine how to best differentiate federal and state/provincial intervention. But most systems have some form of central versus local decision-making that must be addressed.

There are a number of arguments for centralised intervention in teacher education. The advantages and disadvantages of these reforms need to be considered.

Uniformity in legislation and administration is achieved through centralised reform, especially at the federal level.[61] These benefits have to be measured. Are there benefits to uniform standards for teacher education? Or will uniformity stifle innovation and merely increase compliance?

Efficiencies can be gained from centralised intervention, especially when there are large economies of scale, or where expenses are duplicated when pushed to a lower level. Moreover, centralised administration can provide better outcomes when lower levels of government cannot afford or lack capacity to act on their own.[62] For example, a federal government could intervene to increase transparency when this cannot be achieved in a state level. Related to this is accountability for the use of federal funds and interventions that affect national priorities.

Effective education strategy requires alignment of reforms. This is regularly compromised when different levels of government intervene. The level of government closest to the schools is best suited to intervene in teacher education. If lower levels of administration run schools (or are the employer of teachers), they can intervene in teacher education in a way that is aligned to how schools are run. A recent example in Australia illustrates this point and shows that the public debate rarely considers the importance of interventions from different levels of government.

In Australia, the state of New South Wales has embarked on the most comprehensive reforms of ITE in the nation. It has set new entry standards and established evaluations of teacher education institutions. A recent federal government report on teacher education was roundly criticised for not advocating federal regulations setting entry standards for teaching courses. Many commentators in New South Wales ridiculed the federal report while pointing to reforms in their state. Such criticism missed the crucial point of federal versus state interventions. The reforms in New South Wales have been extensive, so the last thing the federal government should do is introduce another layer of reforms on top. At best, this would have no impact. It is more likely to send mixed signals, and jeopardise the state-level interventions.

This is not to say that all reforms should be local. As discussed, there are many benefits of specific centralised interventions. But the New South Wales situation highlights how decisions about reform efforts must take serious consideration of the right level of government action.

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[61] Burgess, 2006

[62] Fleming & Levy, 2014

6   Conclusion

Our goal is to improve student learning by improving teacher preparation. To make significant change, we must first recognise that teacher education is not a series of separate, isolated events. Rather, teacher education occurs along a pathway that brings together different stages as a system. Actions taken at the end of the pathway affect decisions made at the beginning of a teacher's education, and the quality of the preceding stages of the pathway. Understanding this is critical to thinking comprehensively about appropriate policy interventions.

Some high-performing systems, like Singapore, are known for having more control over ITE providers to ensure programs are well designed and candidates must pass rigorous graduation requirements. Improvement is ensured through increasing links between universities and schools. If systems have high minimum standards for the structure of ITE programs and take action to close down lower-performing programs, they can ensure most teachers who graduate are well prepared for the classroom. If systems are unable to strengthen the quality checks at teacher registration and employment, then expanding oversight of the design of ITE courses is the best path to significantly improve teacher preparation.

Systems like the US and Australia tend to be culturally averse to heavier regulation of university programs, and may have problems ensuring a rigorous evaluation system of ITE programs. Additionally, establishing an appropriate ITE evaluation system is challenging in an environment without definitive evidence of what great ITE looks like. The risk is that systems will set requirements for course components that are unnecessary for improving the quality of beginning teachers.

An alternative is to intervene at a later stage on the teacher education pathway, for example, at teacher registration or employment. At present, teachers with weak training are often just as likely

to be hired by schools as teachers graduating from strong programs. All graduates are likely to receive the same pay regardless of their skills.

Without solid quality control of ITE programs, poor-quality courses proliferate, with incentives in the system to attract more teaching students by offering low-cost degrees or easier graduation standards. Teacher candidates are unlikely to be discriminating in their choice of teaching program if it doesn't affect their employment opportunities. We might want a level playing field in schools, but we need to distinguish the quality of teacher education so that better graduates have better career prospects. Therefore, changing the hiring practices in schools will change the way candidates and programs behave earlier in the teacher education pathway. States, districts, or schools that choose candidates based on quality (and continue to evaluate quality in the first few years of teaching) can report publically on which ITE programs produce the most employable graduates. This will create incentives for ITE programs and teacher candidates to make decisions based on quality rather than cost. Low-quality ITE programs may still exist but they will not live long, and their graduates will be far less likely to end up in classrooms unprepared.

Tightening teacher registration and employment standards have proved to be challenging. Most states in the US and Australia have some registration requirements but they are rarely rigorous enough to prevent even a small portion of teachers from entering the profession unprepared. The employers – whether it is states, districts or schools – want to hire based on quality but are hindered by low HR capacity and inflexible staffing policies.

Any policy should focus on creating rigorous assessment at one or more critical points in the teacher education pathway. Weak assessments and evaluations are not worth implementing. Any policy effort aimed at improving ITE should always be tied back to the overarching goal: better preparing beginning teachers to raise student learning.

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