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Teacher education around the world: What can we learn from international practice?

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ABSTRACT

This article describes teacher education in jurisdictions around the world that have well-developed systems for teacher development. It examines teacher education policies and practices in Australia (with a focus on Victoria and New South Wales), Canada (with a focus on Alberta and Ontario), Finland and Singapore within the context of recruitment, preparation, induction, ongoing professional development and collective improvement of practice. It compares these practices with those in the United States, and evaluates challenges countries face in transforming their teacher development systems.

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Introduction

Teacher effectiveness has rapidly risen to the top of the education policy agenda, as many nations have become convinced that teaching is one of the most important school-related factors in student achievement (OECD). And teacher preparation and development are key building blocks in developing effective teachers. This article describes teacher education in jurisdictions around the world that have well-developed systems for recruiting, preparing, inducting and supporting teachers. Examining their efforts is valuable for a number of reasons. First, they broaden the view of what is possible. Second, international comparisons show how ideas work in practice at the system level.

I draw on research examining teacher education policies and practices in four such jurisdictions – Australia (with a focus on Victoria and New South Wales), Canada (with a focus on Alberta and Ontario), Finland and Singapore – in comparison with the United States. My goal is to gain insights into the issues arising internationally in this field, the strategies used to address these issues, and some of the outcomes of those strategies (see Darling-Hammond and Lieberman [2012¹] as well as Darling-Hammond and Rothman [2015²] and Darling-Hammond et al. [2017³] for more complete case studies of these jurisdictions).

I highlight, first, the way these countries think about teacher education policy and practice. I then describe their practices in the areas of recruitment, preparation, induction, ongoing professional development and collective improvement of practice. Last, I describe the

challenges and obstacles that inevitably develop as policies and practices for changing institutions are put in place.

Perspectives on teaching

While reporters and analysts describe a wave of teacher bashing in the United States (Chaltain 2012; Samsa 2013), and a 'war on teachers' in England (MacBeath 2012, 73), nations that have a strong professional ideal for teaching deliberately celebrate teachers and treat teaching as an important profession with a knowledge base that must be mastered if students are to have equitable opportunities to learn.

For example, Finland's strong press for an equitable high-quality education system has relied substantially on creating a sophisticated profession of teaching in which all teachers hold at least a 2-year master's degree that encompasses both strong subject matter and pedagogical preparation, and that integrates research and practice. Teaching has become the most sought after profession after medicine, and many teachers pursue a PhD and then remain in teaching. In a single generation, Finland leapt from a relatively poorly educated nation to a twenty-first-century powerhouse with a current literacy rate of 96%, high graduation and college-going rates and top scores in all areas on the PISA assessments. It is no coincidence that teachers are highly respected and supported. The Finnish view is that teaching should be a long-term profession where people can grow into leadership positions and develop expertise over time.

Similarly, Singapore has shifted from just *getting* teachers – a key goal during the period of massive growth of its education system after independence in 1965 – to *providing* teachers of quality. In 1997, the *Thinking Schools Learning Nation* reform explicitly redefined the role of teachers. As Prime Minister Gok proclaimed:

Every school must be a model learning organization. Teachers and principals will constantly look out for new ideas and practices, and continuously refresh their own knowledge. Teaching will itself be a learning profession, like any other knowledge-based profession of the future.

This reform has fuelled changes in recruitment, preparation, compensation, status and the professional development of teachers. As in Finland, standards for admission to teacher preparation are stringent, and they include strong demonstrated academic ability and a passion to teach. Also as in Finland, candidates' preparation – which occurs predominantly at the graduate level – is fully paid by the government, with a salary while they train. Recruits are hired when they begin training and are guaranteed employment. Preparation is well-designed and offered only by the National Institute of Education; it is followed by strong induction and professional development. Compensation is high, relative to other occupations.

Singapore has created a career ladder to provide for a variety of different kinds of leadership positions over the course of what is generally a life-long career. This career ladder trains and supports time for senior and master teachers who become cooperating teachers and mentors in the teacher preparation and induction processes, thus strengthening the entire process of connecting theory and practice.

While somewhat less generous than these world leaders, provincial governments in Canada also support teachers financially during their training (again, usually at the graduate level), and compensate them well. Despite occasional debates, teachers have typically been well-prepared, often at the graduate level, and they have plentiful opportunities for learning

throughout the career. Emulating Finland's approach, Ontario recently extended the expectations for preparation to a full two years at the graduate level, with extended clinical practice experiences. Alberta already required two years of graduate-level training or a five-year integrated preparation programme of undergraduate and graduate studies. In both provinces there is a strong oversupply of teachers and slots in teacher education are oversubscribed. As one indication of the value of the profession, a recent survey of teachers in Alberta found that 89% of stated they are very committed to teaching as a profession and that in public they are proud to say that they are teachers.

Although there have been some vocal debates about teaching in Australia in recent years, teacher preparation has also been generally well-supported there (for example, a large number of tuition-free university slots are allocated to teacher education candidates each year), and the vast majority of teachers enter the profession with full preparation and receive ongoing support. A number of teacher education programmes have significant government support to create stronger partnerships with schools for the purpose of teacher training, much like Finland's model schools.

By contrast, in the United States, since the early 1980s, several federal administrations have challenged the idea that there is a knowledge base for teaching, have questioned the role of universities in the preparation of teachers and have characterised the individuals entering teaching as less intelligent and capable than individuals who have entered other occupations, even in the face of contradictory evidence (see, e.g. Darling-Hammond and Youngs 2002; Gitomer 2007). Because of federal and state policies stimulated by these Administrations, there have often been greater subsidies for candidates entering teaching through alternative routes without prior training than there are for candidates who choose to enter pre-service programmes that would prepare them before they enter.

These pathways into teaching that avoid the 'barriers' of preparation have supported the lowering of standards for teachers entering communities that offer fewer incentives to teach – those with needier students, lower salaries and poorer working conditions, which typically serve students of colour from low-income households. Because of inequalities in US school funding, teacher salaries and ongoing supports, those who teach in poorer districts are also less likely to receive ongoing professional development, which further exacerbates inequality in students' access to quality teaching.

Initiatives like Teach for America and Teach for Australia – which are now part of the global Teach for All initiative – recruit candidates who enter teaching in high-needs schools with a few weeks of pre-service training and a commitment of two years to an occupation that is viewed as a waystation en route to a real job. Teach for All programmes have taken root in many countries that have allowed significant inequalities to persist in the conditions of education and the supports for teaching across schools.

Interestingly, nations like Finland and Singapore, with stronger and more equitable investments in the profession and in their schools, do not participate in programmes that create less extensive pre-service preparation. And in Canada, recruits for the Teach for Canada programme – which aims to prepare teachers to teach in remote and indigenous communities – must complete a full pre-service programme before they can enter the programme and gain additional training in community-focused teaching. As Zeichner notes in his case study of Alberta, Canada: 'This unbending commitment to strong standards in initial teacher education is complemented by a generous system of teacher compensation and a focus on teacher learning rather than punitive evaluation'. (in Campbell et al. 2017).

Such commitments are not genetic in nature, but are developed and sustained politically. Ontario, Canada, for example, turned around a teacher-bashing context in 2003, when a new government explicitly set out to rebuild the profession and the public's respect for teachers. A new premier and minister of education came into office at that time with a strong commitment to strengthening public education and the profession of teaching as a key element in improving student outcomes. They set out to spread evidence-based practices throughout classrooms and schools by increasing teachers' and leaders' access to knowledge. Their approach, focused on improvement and capacity building, quickly turned around outcomes. By 2007, all measures of student achievement, including graduation rates, had increased substantially, and teacher attrition had dropped dramatically. That trajectory has continued since, demonstrating the possibilities for sustained improvement built on a strong foundation.

Both Finland and Singapore transformed the context for teaching into a professionally supportive one as part of their nationwide education reforms several decades ago.

Since its independence in 1965, Singapore has had to build a system where none existed. In doing so, prime ministers and other leading officials have frequently emphasised the importance of teachers to the national welfare through speeches, public ceremonies, the media, national competitions and scholarship programmes, traditions and rituals such as the teachers' investiture ceremony and use of the internet to highlight teachers' work and accomplishments. These inducements are on top of generous resource allocations for salaries, training and professional learning supports throughout the career. The Finns also made major changes in the 1970s to professionalise and equalise resources for schools and have continued to provide the same kinds of supports and reinforce their respect for teachers through the actions they take to support them.

Conceptualising teacher development as a system

While the educator development systems of Finland, Canada, Australia and Singapore differ in significant ways, what they have in common is that they are just that – *systems* for teacher and leader development. In the small countries of Finland and Singapore, these systems operate at the national level; in the larger countries of Australia and Canada, they operate at the state or provincial level. In every case, these systems include multiple, coherent and complementary components associated with recruiting, developing, and retaining talented individuals to support the overall goal of ensuring that each school is populated by effective teachers.

The systems in these nations encompass the full range of policies that affect the development and support for teachers and school leaders, including the recruitment of qualified individuals into the profession; their preparation; their induction; their professional development; their evaluation and career development; and their retention over time. Leaders in these jurisdictions recognise that all of these policies need to work in harmony or the systems will become unbalanced. For example, placing too strong an emphasis on recruitment without concomitant attention on development and retention could result in a continual churn within the teaching profession.

That said, each of the jurisdictions has chosen to place its primary focus on particular aspects of the system. Finland, for example, has sought since 1979 to invest intensely in the initial preparation of teachers. To complement the powerful initial preparation, Finland then

provides teachers with considerable support – primarily time to collaborate with their peers to develop curricula and assessments – and considerable autonomy. Alberta, similarly, emphasises extensive pre-service preparation, while Ontario has instituted a comprehensive multi-year induction programme for new teachers, which includes intensive mentoring and professional development, as well as appraisal.

While a number of interesting innovations are occurring in Australia on the teacher preparation front, the nation has in recent years invested considerable energy in supporting in-service professional development. In the recent TALIS survey (OECD 2014), 97% of teachers in Australia reported having undertaken professional development in the last year, as compared to the OECD average of 86%. Much of this work has been organised around individual and school-wide professional learning plans tied to cycles of inquiry examining student learning and teaching practice.

Singapore augments its strong initial preparation and induction with a highly developed performance management system, which spells out the knowledge, skills and attitudes expected at each stage of a teacher's career and, based on careful evaluation and intensive supports, provides a series of career tracks that teachers can pursue. These enable teachers to become mentor teachers, curriculum specialists or principals, thereby developing talent at in every component of the education system.

The systems in all four jurisdictions are continually being refined. Finland's Ministry of Education has become concerned that teachers need more support, so the country is considering strengthening induction and professional development for practicing teachers. Ontario has surveyed teachers and found that there were some gaps in initial preparation, in areas like classroom management and teaching students with special needs, so the province is both expanding the expectations for pre-service teacher education and revamping its induction system to address those areas. Singapore is looking to strengthen instruction in skills such as problem-solving and critical thinking that are increasingly important in a global economy and society.

Standards for teaching as a strategy for profession-building

In the midst of the debates about how to improve teaching quality, an emerging strategy across a number of nations has been the articulation of standards for what teachers should learn and be able to do. The theory of action is that such standards – used to guide licensing or certification of candidates and/or accreditation of programmes – can guide teacher learning and influence entry, continuation or recognition in the field.

The United States has been a leader in this regard, with the creation of the National Board for Professional Teaching Standards in 1987, which not only articulated standards and developed assessments for evaluating accomplished teaching, but also led to revisions of standards for beginning teacher licensing and preparation through the Interstate New Teacher Assessment and Support Consortium (INTASC). Research has found that veteran teachers who meet the National Board's standards are more effective than those who do not (Bond et al. 2000; Cavaluzzo 2004; Goldhaber and Anthony 2005; Smith et al. 2005; Vandevoort, Amrein-Beardsley, and Berliner 2004) and that the process of becoming Board-certified helps teachers improve their practice (NBPTS 2001).

In recent years, the creation of a performance assessment for evaluating new teachers has also taken hold, with more than one thousand educators across the country having

collaborated to create a national version of an assessment that can inform initial licensure and provide leverage on improving teacher preparation. Educator preparation programmes in more than 30 states have piloted this teacher performance assessment (Darling-Hammond, Newton, and Wei 2013). A similar assessment in California has been found to measure teachers' later effectiveness and to produce improvements in teacher education in that state (Darling-Hammond, Newton, and Wei 2013; Pechione and Chung 2006). If such high-quality performance assessments can be tapped, they could create an entry standard that puts to rest the futile arguments about the quality of various traditional and alternative routes and set a meaningful benchmark for all programmes and candidates to meet.

The strategy of setting standards for teaching has had growing currency around the world. In keeping with Singapore's commitment to 'evidence-based curricula informed by research', educators study other countries' efforts to keep pace with educational innovations. Thus, it is not surprising that Singapore adapted the concept of INTASC's standards – which are expressed as knowledge, skills and dispositions – in its Values, Skills and Knowledge (VSK) criteria that followed the 2005 re-design of initial teacher preparation. In line with the focus of *Thinking Schools, Learning Nation*, the VSK model emphasises 'Innovation, Independent Learning, Critical Thinking, Commitment and Service'. As described in the standards document:

Key to [the VSK framework] is the belief that the learner is the center of our teacher education mission. This framework is premised along three value paradigms: learner-centeredness, teacher identity, and service to the profession and the community. Learner-centeredness puts the learner at the heart of teachers' work, while the paradigm of teacher identity outlines the clear attributes the teacher must possess in order to bring about strong learning outcomes in a rapidly changing world. Service to the profession and the community spells out teachers' commitment to their profession through active collaborations with members of the fraternity and striving to be better practitioners with a view of benefitting the community as a whole. Finally, the skills and knowledge spelt out in this framework refer to key skills and knowledge competencies that 21st Century teaching professionals require in order to bring about 21st century literacies and learning outcomes.

In Canada, teacher preparation, certification and practice are also guided by standards set a professional body in each province. These emphasise ideas similar in many respects to those of Singapore. For example, the Ontario College of Teachers as established Standards of Practices which include a set of competencies that guide ongoing practice. New teachers are evaluated on 8 out of 16 competency statements based in three domains (Commitment to Pupils and Pupil Learning, Professional Knowledge and Teaching Practice). Alberta has similar framework, stated in their Teaching Quality Standards Applicable to the Provision of Basic Education.

Most recently, in Australia, the Australasian Teacher Regulatory Authorities (the association established by the teacher registration and accreditation authorities across Australia and New Zealand) began developing a new national professional standards framework for teachers, a cornerstone of the TQNP programme. It outlines what teachers, at all levels of responsibility, know and do across the domains of professional knowledge, professional practice and professional engagement. Since taken up and furthered developed for both teachers and leaders by the Australian Institute for Teaching and School Leadership (AITSL), the standards define an architecture within which expectations for preparation, registration and career development are articulated. These are aligned, importantly, to the new national curriculum for students.

The states in Australia, which had previously developed standards (like those of the Victoria Institute of Teaching, for example) contributed to the development of the new national standards for students, teachers and principals, and will be charged with implementing them. AITSL is now working with states to implement an accreditation or approval process for teacher education as well as processes for appraising teachers at different points in their careers and recognising increasing levels of accomplishment.

In Finland, standards for teaching operate in two ways, through the shared framework that guides the teacher education curriculum across the eight universities that provide preparation programmes, and through the entrance examination that primary school candidates must take to be considered for teaching. The teacher education curriculum aims to prepare teachers as researchers and research users, as well as skilled practitioners who attend to the needs of the whole child, deeply understand child development and learning, have a strong repertoire of content pedagogical strategies and can differentiate supports and instruction.

In line with these aspirations, the VAKAVA examination for prospective primary teachers, which was first administered in 2006, is based on a set of educational research articles from peer-reviewed journals, selected each year. In 2013, for example, the VAKAVA included seven articles – among them a study that examined children's discourse in mathematics classrooms, and research that investigated children's use of social media and how they portrayed themselves to others. These are released as a book in March each year so that candidates can prepare for the exam in May in which they need to demonstrate an understanding of the research and analyse its implications. Even those who pass the VAKAVA with a high score are not guaranteed admission, since they must also demonstrate the dispositions to teach. In 2012, at the University of Helsinki, for example, the faculty chose 360 students who achieved the highest scores on the VAKAVA and then identified about half for the next step in the admissions process: a set of individual and collective interviews. This past year, Finnish faculty accepted just under 2% of those who took the VAKAVA.

The critical question for the teacher standards movement, where it is emerging, is how the standards will be used, how universally they will be applied and how they may leverage stronger learning opportunities and a more common set of knowledge, skills and commitments across the profession. Robust standards weakly applied can be expected to have much less effect than those that are used, as in other professions, as an effectively endorsed expectation for candidates and institutions to meet.

Entry into the profession

Recruitment

Countries that are focused on building a strong profession understand the interdependence among standards, preparation and supports. Whereas, in the US, teachers are most likely to be on their own for funding their education, unless they pursue a subsidised alternative route, these countries provide significant financial support to offset the costs of teachers' training. This, in turn, allows them to be highly selective in choosing candidates and to insist that all candidates complete a comprehensive, rigorous programme of preparation.

Thus, in Finland, preparation is fully funded by the government, and candidates earn a living stipend or a salary while they are in training. All candidates receive uniformly

high-quality preparation. Among young Finns, teaching is the most desired profession, and competition for slots is severe, with only 1 in 4 applicants to teacher training accepted overall, including only 1 in 10 for primary school teacher preparation.

Similarly, in Singapore, generous support for teaching candidates (the equivalent of \$30,000–\$50,000 per year in salary, plus tuition, books and laptop computers) is part of a bond with the government to teach for 3–5 years, depending on the kind of programme completed. If the service requirement is not fulfilled, this funding must be repaid. This structure, along with the supportive induction programme, enhances retention as well as recruitment. Salaries are commensurate with other fields like engineering, law and business.

In Australia and Canada, a major portion of candidates' cost of teacher preparation is underwritten by the government. Canadian applicant numbers are so high that there is a strong demand for places in teacher education programmes and this has enabled teacher education institutions to maintain high admission requirements. Virtually all require high grade point averages, and some also require interviews, portfolios and volunteer work in the schools. Canadian reforms aimed at more explicitly supporting teachers have dramatically reduced attrition from teaching and made recruitment both less necessary. Prior to 2004, due to high teacher turnover, Ontario added additional spaces to university teacher education, but since 2008 the province has had low attrition and a significant surplus of teachers (even though many new positions have been created) and these additional spaces have not been necessary. There is, however, a move in Ontario to attract more diverse candidates from the under-represented populations and minority groups in order to increase diversity in the teacher population. Teacher candidates who can bring knowledge of Aboriginal issues and connections with Aboriginal communities and students into their teaching practices are a priority for support.

One might think that greater recruitment supports would be offered in countries where teachers' salaries are relatively less competitive with other occupations, in order to offset the wage disincentives. However, the nations that pay higher teacher salaries also offer more support for training, as illustrated in a recent OECD report comparing teacher salaries to those of other college graduates. The report included three of the nations under discussion here. At the top of the salary rankings were Australia and Finland, where teacher salaries are, on average, nearly equivalent to those of other college-educated workers, followed at some distance by the United States, with a ratio of only 60%, one of the lowest rates in the survey (OECD 2011, 13). Other data show that salaries for teachers in Singapore and Canada compare favourably with those of other well-paid professionals at the beginning of the career.

Initial preparation

While common and uniformly high-quality preparation for teachers is a very explicit goal in Finland – where teachers all complete a 2–3 year masters' degree before they enter teaching, there is more variability in pathways in the other countries we studied, and a broader range of quality in many of them. All of the others offer some combination of undergraduate and graduate-level programmes for candidates who enter at different junctures in their studies.

In Canada, Australia and the United States, standards governing certification or registration for teachers, as well as accreditation for programmes, create some regularities across university-based pre-service programmes, even when other pathways offer substantially

different levels and kinds of preparation. In Singapore, there is only one institution offering teacher education – the National Institute of Education at Nanyang University – which offers both undergraduate and graduate programmes, guided by the same set of competencies.

Although variability in the kind and quality of preparation is much greater in some countries than others, all of the places we studied have some excellent programmes that are offering high-quality preparation and are innovating in interesting ways. In this section, I highlight some of these programme features across various countries. Recurring themes for improvement in nearly all of these countries include strengthening connections between theory and practice and developing teachers' capacities to teach diverse learners, as nations deal with growing immigration and growing expectations of teachers.

In Finland, teacher education aims at balanced development of the teacher's personal and professional competencies. Particular attention is focused on building pedagogical thinking skills that enable teachers to manage the teaching process in a diagnostic manner, using research as a base and conducting action research as a guide. In addition to studying child development, learning and pedagogy in the content areas, each student completes a master's thesis in which he or she takes up a problem of practice and studies it in a rigorous way. There is a strong emphasis on learning to teach students who struggle to learn, on the theory that if teachers can understand and respond to these students' unique needs, they will be able to teach all children successfully.

Clinical learning takes place in special Teacher Training Schools, governed by the universities, which have similar curricula and practices as normal public schools, but which are committed to training beginning teachers and staffed by teachers who are especially selected for their teaching skills. These teachers are well prepared in supervision and teacher professional development and assessment strategies. Teacher Training Schools are also expected to pursue research and development roles in collaboration with the Department of Teacher Education and, sometimes, with the academic faculties who participate in teacher education. These schools can, therefore, introduce alternative curricular designs to student-teachers. Some regular public schools (called Municipal Field schools) serve the same purpose. These schools also have higher professional staff requirements, and supervising teachers have to prove that they are competent to work with student-teachers.

The Finnish approach has been spreading to other leading universities around the world. The University of Toronto in Ontario, Canada has recently created a two-year master's degree programme that significantly extends the clinical experience for candidates and deepens their coursework to teach diverse learners, with the result that studies have found its teachers feel much better prepared for the challenges they face in the classroom. Ontario has recently increased its teacher education requirements to require the equivalent of a two-year graduate programme within the 13 universities accredited by the Ontario College of Education. Programmes are expected to reflect current research in teacher education and to integrate theory and practice. This move brings the province's programmes more closely in alignment with those in Alberta and other provinces. Alberta institutions offer either two year post-baccalaureate programmes or five-year dual-degree programmes in education plus a content area. Rather than many requirements for specific courses and credits, the emphasis is on ensuring that the programme is aligned with the knowledge, skills and attributes that are outlined in the professional Teaching Quality Standards.

Around the world in Australia, the University of Melbourne has also dramatically reformed its teacher education programmes by creating two-year clinical Master of Teaching degrees

for early childhood, primary and secondary teachers. These programmes now enrol more than 1200 candidates and are in high demand. Launched in partnership with the Department of Education and the Catholic Education Office in Victoria, the two-year Master of Teaching is designed as a research-based clinical programme that integrates academic study with practical work in collaborating partnership schools. It is designed to develop graduates who have the professional capabilities to meet the needs of individual learners using data to plan and implement teaching interventions. Studies have found that more than 90% of these Master of Teaching graduates feel well prepared for teaching, as compared to about half as many new teachers nationwide.

In Victoria, there are several major initiatives under way to create new models of preparation featuring strong partnerships between universities and schools. The Victoria Department of Education and Early Childhood Development (DEECD) has funded the School Centres for Teaching Excellence (SCTE), which funds seven university–school clusters comprising 6 universities and 50 schools. The SCTE is transforming clinical placements for pre-service teachers, so that they are more closely integrated with teacher education courses and with the life of the school. These more immersive residency models involve university faculties' working with teams of teachers and student-teachers in schools – undertaking curriculum planning, school improvement strategies and research, much like professional development school models launched in the United States.

Another one of Victoria's ambitious initiatives to strengthen clinical preparation of teachers is the development of the Charles La Trobe Teaching School. As part of an agreement between the DEECD at Charles La Trobe P–12 College and the teaching faculty at La Trobe University, the new partnership will fully redesign the Charles La Trobe College (CLTC) teacher education programme and introduce a school-based residency model – ultimately including 15 schools – which will be tightly connected to the university, so that new teachers can learn evidenced-based clinical practice through an inquiry approach to preparation.

Singapore has also made a strong commitment to high-quality education for prospective teachers, delivered through both undergraduate and graduate pathways at the National Institute of Education, the nation's only teacher training institution. Standards for entry and continuation in preparation are equivalent and rigorous in both pathways, as is coursework and clinical work. There is a strong emphasis on mastering both content and content pedagogy – with academic subjects and curriculum studies courses not only aligned, but taken concurrently and designed to be mutually reinforcing. In a reflection of the national quest to deliver a twenty-first-century curriculum that infuses technology and favours project-based learning and collaboration, all student-teachers must take a course in 'Interactive computer technology for meaningful learning' and, in another course, must work collaboratively with peers to complete the Group Endeavours in Service Learning Project, which demands 20 hours of direct service in the community, beyond project design, planning and presentation.

Partner schools are increasingly developed as sites for clinical practice. School–university collaboration also takes place through shared decision-making about student-teachers, and opportunities for teachers to serve at NIE and for NIE faculty to serve in schools through a 'school attachment' opportunity.

As these examples suggest, in many parts of the world, student-teachers now spend more time in schools during their initial teacher preparation programmes than they did a decade or two ago. This additional time has usually been accompanied by greater attention to the

quality of that in-school experience – the quality of the cooperating teachers selected, their training for the role and the creation of something beginning to resemble a clinical curriculum – an intentional set of experiences and learning during the clinical part of the programme.

In the United States, more attention is being paid to the development and assessment of clinical practice in the national accreditation system, and a number of universities have developed year-long clinical experiences and relationships with professional development schools. This has not been the result of government action or encouragement, but the enhanced clinical emphasis is reinforced by the development of structured performance assessments for novice teachers, tied to professional standards, which are being used in a growing number of states as a means for leveraging both individual candidate learning and institutional learning for teacher education programmes. Interest in such strategies has also grown in Australia, where portfolios and performance assessments for evaluating beginners' capacity to teach are receiving more emphasis.

Most would agree that the greater attention to clinical preparation has been a net benefit to teacher preparation. Yet there is a long way to go to spread these advances to most programmes in these and other countries. Finding the right balance between theory and practice, creating truly integrated forms of preparation and ensuring adequate resources for the task will continue to be a challenge in many programmes for some time to come.

Continuing in the profession

Of course, teacher learning is not complete when teachers leave pre-service preparation. In many ways, the most powerful learning is just beginning as teachers enter their first classroom assignments. And many societies have begun to provide much more organised support for teachers as they enter and continue in the career.

Induction

Preparation is not complete when candidates graduate from their university training. Well-developed systems also support systematic induction and mentoring for novice teachers. Perhaps the most comprehensive supports for new teachers are offered in Singapore, where mentor teachers, who are trained through the National Institute of Education and recognised and compensated through the nation's career ladder, have an explicit mission to support new teachers in their first two years of service. Novices receive a package of supports, including mentoring, in-service courses and a buddy system. During the structured mentoring period, beginning teachers teach a reduced load (about two-thirds that of an experienced teacher) and attend courses in classroom management, counselling, reflective practices and assessment offered by National Institute and the Ministry. In addition to their experienced mentor teacher, new teachers are assigned a buddy – a peer teaching the same subject, plus a supervisor (usually the department head) to help them learn and acclimate.

In Ontario, a recently enacted New Teacher Induction Programme provides a range of supports, including orientation, mentoring, and professional development focused on key areas of need identified by new teachers, including classroom management, communication with parents, assessment and evaluation and work with special needs students. First-year teachers receive with extra release time so that they can plan with their colleagues and

engage in these seminars. The Toronto District School Board has expanded on the provincial supports to create a four-year model of induction that includes:

- Job-Embedded Learning Initiative for first-year, second-year and newly hired long-term occasional teachers.
- Job-Associated Mentoring for third- and fourth-year beginning teachers.
- Demonstration classroom learning: focused observations, debriefing, action planning and co-teaching opportunities in various grades and subjects.
- Summer orientation for new hires, including curriculum-based professional learning.
- Professional learning for mentors.

As a sign of the effectiveness of this approach, over the years from 2005 to 2010, the TDSB has hired almost four thousand beginning teachers and, throughout that period, the district retained over 98% of first-year hires annually (Darling-Hammond, Newton, and Wei 2013).

In Australia, most states initially offer teachers a provisional registration upon graduation from an approved teacher education programme and then full registration after a period of 12–18 months, during which time the beginning teacher must provide evidence that they have achieved the standards of professional practice required for full registration. This time usually involves an induction programme including school-based mentoring and workshops and other professional learning opportunities. Induction programmes are usually state or employer run and mentors are sometimes given classroom release time to carry out their mentoring role.

In Victoria, the DEECD and the Victoria Institute on Teaching collaborate to support early career mentoring. New teachers have two years to become fully registered by meeting the VIT's Professional Standards of Practice. Their progress is supported and documented by mentor teachers, who can themselves receive training and support through the Teacher Mentor Support Programme – a joint initiative of the DEECD and VIT. Generally mentor support is provided for the new teacher's first year, but it is expected that the support will be continued as long as teachers need it. In Victoria, as in New South Wales, beginning teachers receive reduced teaching loads. In New South Wales professional learning for teachers, mentors and school leaders is offered both in person and online. This is important for the large number of rural and remote settings where there are a disproportionate number of early career teachers.

A similar structure of two-stage certification is now common in the United States, and most states now require some form of induction, including mentoring, for beginning teachers in their first year or two of teaching. Nearly 75% of beginning teachers now receive induction support, although only 5% receive the combination of supports – regular coaching and mentoring, shared planning time and a reduced teaching load – that are common in some other nations (Wei, Darling-Hammond, and Adamson 2010).

In Finland, the development and support of new teachers during the induction period is the responsibility of local schools and municipalities and the methods and extent of support have been variable. Some schools have adopted advanced procedures and support systems for new staff, whereas other schools have done much less. However, interest in more structured induction programmes has resulted in an initiative to partner with the New Teacher Centre in the United States to create models that can be used more systematically across the country.

Around the world, the idea of new teacher induction has taken hold much more widely; however, implementing the most powerful approaches routinely across communities is still a work in progress in many countries.

Ongoing professional development

Enabling teacher to continue to grow, learn and be excited about their work depends on both ongoing high-quality learning opportunities and career opportunities that enable them to share their expertise in a variety of ways. Around the world, job embedded forms of professional learning are taking greater root, often organised around teachers' work with curriculum development through collaborative planning, lesson study and action research of various kinds. Also increasing in many countries are opportunities for teachers to share their expertise with one another.

Embedding learning in teachers' work and roles

In Finland, teachers take responsibility for curriculum and assessment development, as a major part of their professional role. Since the national curriculum offers very lean guidance and there is no external standardised testing, teachers are expected to work collectively to develop the work that occurs at the school level. Teachers engage in joint curriculum planning and approve the school-level curriculum. The importance of curriculum design in teacher practice has helped shift the focus of professional development from fragmented in-service training towards more systemic, theoretically grounded school-wide improvement efforts.

Because Finnish teachers take on significant responsibility for curriculum and assessment, as well as experimentation with and improvement of teaching methods, some of the most important aspects of their work are conducted beyond traditional teaching roles. Teachers take on many of the roles conducted by educational consultants and specialists in other countries, but because teaching is highly professionalised, diverse responsibilities are handled within the teaching role, without teachers leaving teaching or being placed in more hierarchical, better compensated roles. Although the career structure is not bureaucratic, experienced teachers earn much more than their peers in the United States.

In addition, teachers are encouraged and supported to continue to study, and most engage in both school-based and university-based learning opportunities. Many Finnish teachers earn a PhD in educational studies and continue to practice in the classroom. According to a recent national survey, teachers devote about seven working days per year on average to professional development on their own time and that provided by the system; some teachers reported spending as much as 20–50 days. The state has increased its annual budget for professional development of teachers and school principals to about 10–15 million Euros per year, and is aiming to organise more of the learning around successful professional networks and strategies that exemplify the most successful forms of sustained, embedded professional learning.

Singapore offers extensive job-embedded time for teachers to plan and work collaboratively, and the NIE supports teachers in learning and practicing action research. Along with lesson study and other tools for productive collaboration on curriculum, action research is

generally implemented in grade-level and department teams. The government also supports about 100 hours of professional development time (more than 12 days) each year.

In addition, Singapore has perhaps the most well-defined career ladder providing leadership opportunities for teachers within as well as outside the classroom. Through a well-developed evaluation process that provides extensive feedback to teachers – and that attends to collaboration and leadership skills as well as teaching skills – teachers are encouraged to develop their interests and talents. With government support for additional training and compensation, they can pursue a pathway as a master teacher who will take on roles as a mentor and coach to others, a specialist who will engage in curriculum and assessment development work or a school leader who will move into administrative roles at the school level or, eventually, the regional level or ministry.

As part of another effort to re-establish trust with teachers, Ontario's new government in 2003 reached out to teachers' unions as part of its agenda to professionalise teaching. The unions have received substantial government funding to offer professional development sessions to teachers as a way of recognising and strengthening the role of unions in promoting good professional practice. As one example, the federations developed the 'teacher leader learning programme', which encouraged teacher leaders in and across schools to engage with leading experts and each other to strengthen teaching practices.

The province's extensive professional development efforts also focused on schools and districts, seeking to avoid one-shot workshops in favour of job-embedded learning through coaching, mentoring and other strategies. The Province added two professional development days to the school calendar and required that districts, in consultation with the Ministry, decide how best to use those days to support their own goals and strategies. Every school and every district created a leadership team for literacy and numeracy in elementary schools and a leadership team for student success in secondary schools. These teams create and support the local strategy for improvement, in collaboration with the principal.

Professional learning in Victoria, Australia is embedded in the day-to-day work of teachers and is connected to student outcomes. Teachers commonly assess a wide variety of student learning evidence, locate student learning needs and target their professional learning towards addressing these areas. This evidence-based professional learning cycle provides a shared rationale for professional learning between policy-makers and practitioners.

The content of learning activities undertaken by teachers both individually and collectively is informed by the goals and targets set forth by schools in their development plans, and thus varies across schools depending on their particular student population and learning needs. Much of the professional development is school-embedded and makes frequent use of peer observation and coaching. Professional learning commonly takes the form of class observation and subsequent professional conversations to identify problems and improve practice. Observation may also be used as a follow-up to see that teachers are incorporating elements of professional learning into their classroom teaching. Some schools make use of coaches in regional networks to help teachers incorporate new strategies into their teaching.

The conceptualisation of ongoing professional learning as being part of a collective effort, rather than only an individual undertaking, is the next emerging horizon for teacher learning – and, for that matter, the learning of school leaders as well. As we describe in the next section, some governments are developing new conceptions of school improvement that are rooted in professional learning that is designed to be profession-wide.

A profession-wide approach to the collective improvement of practice

In a number of countries, including Finland and Singapore, teachers and leaders are encouraged to visit other schools to look at and share practices. In Australia, as part of Literacy and Numeracy initiatives, networks of schools have been formed to support cross-school learning. Perhaps the most extensive investment in this approach has taken place in Ontario, Canada, which has taken the idea of professionalism to a system-wide level, by investing in the spread of knowledge across classrooms, schools and the system as a whole. As Levin explains,

We were confident that almost everything that needed to be done in our schools was being done somewhere among Ontario's nearly 5000 schools. If we could find and share good practices, we could have an organic process of improvement led by educators, which is necessary for sustainability.

The improvement of collective practice took many forms. In addition to teacher and principal professional development, these strategies included: helping districts and schools set reasonable and ambitious goals and work towards them; setting up and supporting learning networks across the Province to share practices and outcomes; providing intellectual resources, from curriculum support documents to web casts to DVDs of good practice, so that schools could readily access knowledge. Successful 'Lighthouse Schools' are publicised and given additional funds to share their good practices with other schools. The Ontario Focused Intervention Programme provides additional supports and advice to struggling or coasting schools, which are then networked for mutual learning with similar schools that have had greater success. The government funds Student Success Leaders in every district to lead the effort to improve high school graduation rates. These leaders meet regularly to share their learning.

So as not to support a never-ending set of pilot projects that produce results and then fade away, Ontario funded learning projects in a wide range of schools to support experimentation with various approaches to improvement. Then, the number of new projects was steadily reduced in favour of wider implementation of those found to be most effective. As Levin notes, 'The goal of experimentation is to learn, and to use what we learn across the system, an approach that has been sadly lacking in education in many places'.

The work exemplifies what some US leaders have called 'top down support for bottom-up reform'. Responding to district initiatives, the Ministry of Education supported a network of 20 districts that wanted to work together to improve outcomes for Aboriginal students. Ontario's directors of education (its local superintendents) also led a major effort, financed by the Ministry, to strengthen the capacity of teachers to work with more diverse students, thereby reducing rates of referral to special education.

One element in the government's strategy was to increase the use of research across Ontario schools. The Ministry embedded research elements in all major strategies, giving public profile to high-quality research and implementing an education research strategy to increase capacity and strengthen partnerships among researchers, school districts and schools. As one example, the annual Ontario Education Research Symposium, which brings together all these partners, started in 2005; it is now one of the most oversubscribed events in the annual education calendar, always having to turn away participants to maintain a reasonable size. It has now been replicated by several universities at a regional level, a further

sign of success and impact. That educators and researchers could work together to advance learning and improve practice is, ultimately, the goal of a well-functioning profession.

In Alberta, in addition to paid professional development days, teachers are funded to pursue learning opportunities aligned with their individual professional growth plans as well as school priorities. The Alberta Teachers' Association offers and refers teachers to a substantial number of professional development workshops for individuals, administrators and schools in a document entitled Professional Development Programmes and Services Guide. Professional development opportunities are also provided by regional centres and within school catchment areas for teachers in the schools in an area, by the school jurisdictions and within individual schools. These settings allow for sharing of practice and learning across schools.

In New South Wales, the guiding framework for professional learning and professional development is outlined within the NSW Professional Teaching Standards. In 1995, the NSW Department of Education and Communities introduced a professional learning and leadership development strategy to build the capacity of teachers and school leaders at each stage of their career. The strategy was articulated in a professional learning continuum that mapped professional learning requirements from teacher preparation to school and system leadership.

Since 2005, the NSW Department of Education and Communities has provided a fully devolved system of professional learning and leadership development, while closely evaluating the success of different regional and local approaches. With a wide array of options for learning available, all teachers are required to complete professional learning aligned to their performance management and development plan and are responsible for determining their professional learning within the context of their professional and career development needs and the priorities of their school. The Department has concluded that the programmes that appear to have the greatest impact on teacher learning are those that have a clear focus on quality teaching, involve active learning over a semester and engage teachers and leaders in shared learning.

Leading practices and challenges

Looking across these many examples, there are some practices that stand out as promising strategies for the improvement of teacher learning and teaching, including:

- Recruitment of highly able candidates into high-quality programmes by ensuring competitive salaries, financial subsidies for training and greater commonality in the design and quality of preparation, as Finland and Singapore have done and as Canada and Australia are in process of doing.
- Connecting theory and practice through both the design of thoughtful coursework and the integration of high-quality clinical work in settings where good practice is supported. Programmes in Finland, as well as a growing number of institutions in Canada, Australia and the United States, have created new models for student-teaching, often in 'training schools' or professional development schools.
- Using professional teaching standards to focus attention on the learning and evaluation of critical knowledge, skills and dispositions as illustrated in the United States, Australia, Canada and Singapore.

- Creation of teacher performance assessments, based on professional standards, that connect student learning to classroom teaching. As developed in the US and under construction in Australia these assessments leverage improvements in both candidate competence and programme improvement.
- Establishing induction models that support beginning teachers through skilful mentoring, collaborative planning and reduced teaching loads that allow time for in-service seminars and careful building of a repertoire of practice, as organised in Singapore, Australia, Ontario (Canada) and some parts of the United States.
- Supporting thoughtful professional development that routinely enables teachers to learn with and from one another, both within and across schools and universities, as Singapore, Australia, Canada and Finland have done.
- Profession-wide capacity building, like that underway in Ontario, Canada and Singapore, which creates strategies for wide sharing of research and good practice, recognises successful classroom and school practices and enables expert teachers and principals to provide leadership to the system as whole.

Taken individually, these examples might sound familiar to American ears. Many districts and states have programmes in place that reflect at least some of them. They have instituted programmes to recruit highly capable individuals into teaching and prepare them effectively; provided ongoing support and development along with career paths for veterans, and they have invested in high-quality leadership. However, as promising as they are, these efforts do not yet add up to a system in most states and communities. While some states may be viewing teacher development systemically, many initiatives are tackling the issue in a piece-meal fashion. As the examples from high-performing nations suggest, a systemic approach can provide a much-needed framework to ensure that quality teaching is supported in all schools and classrooms.

The teaching challenges posed by higher expectations for learning and greater diversity of learners around the globe will likely be better met if nations can learn from each other about what matters and what works in different contexts. These efforts can benefit from researchers, practitioners and policy-makers building a deeper understanding of the possible strategies for making major improvements in teachers' learning opportunities and a clear theory of change for how to bring these strategies about. While there are many different roads to the same ends, they should ultimately be judged by the extent to which they demonstrate potential to build powerful and equitable learning systems for students and teachers alike.

Notes

1. The case studies were completed by the following authors: Pasi Sahlberg (Finland); A. Lin Goodwin (Singapore); Diane Mayer, Raymond Pecheone and Nicole Merino (Australia); Linda Darling-Hammond (United States).
2. Case studies of teaching policies were developed by Pasi Sahlberg (Finland); Lay Choo Tan and Linda Darling-Hammond (Singapore); and Carol Campbell (Ontario, Canada).
3. Case studies for the study of International Teaching Policy are published as Burns and McIntyre (2017), Campbell et al. (2017), Goodwin, Low, and Darling-Hammond (2017), Hammerness, Ahtianinen, and Sahlberg (2017) and Sato (2017). The cross-case volume is published as Darling-Hammond et al. (2017).

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