

PROFESSIONAL DEVELOPMENT: Ensuring a Return on Your Investment



By Metiri Group

Commissioned by INTEL (2010)

Professional Development

Executive Summary

Countries such as Singapore, Finland, and Korea had the foresight early on to see radical changes in their education systems would be necessary if they were to remain economically viable in a world defined by globalization, innovation, and participatory cultures. Today, students in these countries are the top performers on international tests. Critical to these high performing systems are teachers who are well prepared and who are committed to the practice of inquiry-based learning for themselves and their students.¹

Innovation fuels today's global economy. Increasingly 21st Century Skills, such as creativity, self-direction, collaboration, multi-modal communication, and information, communications, and technology (ICT) literacy, are being integrated into learning standards of school systems across the globe. The new national resources that countries are beginning to mine are human ingenuity and creativity. The good news is these natural resources are malleable and renewable – but it necessitates schools that ready students for the complexities of the world today.

It is imperative that education shifts practice in order to prepare graduates to thrive in today's highly collaborative, innovative, high tech society and workforce. The stakes are high. A recently released research study by a Stanford University professor linked highly cognitive teaching and learning in elementary and secondary schools directly to economic growth and health of states and nations.³ The lynch pin to such learning is highly effective teaching. And that necessitates engaging teachers in sustained, high quality professional development, both as individuals and as a part of effective teams.

Many of the international, high-performing countries – as determined by scores on the Programme for International Student Assessment (PISA) assessments – recognized this chain of logic a decade or more ago. These countries revamped their systems for recruiting, developing, sustaining, and retaining high quality teachers – while simultaneously creating learning communities within schools that engaged teachers in thoughtful professional learning that advanced teacher and school effectiveness.

For example, Singapore has created learning communities within its schools that recruit its best and brightest students into the teaching profession. The students are then provided with extensive formal and informal professional, collaborative learning opportunities to ensure continued growth and commitment.¹ Their professional learning is in the context of a culture of inquiry in which education professionals dedicate time within every school day to professional growth as they design, review, critique, and refine lessons, curricula, instruction,

Professional development can make a difference

Sustained, targeted professional development of 30-100 hours over a period of 6 months to a year can yield gains of 21 percentile improvement for the average student.²

and assessment strategies. In addition, Singapore provides over 100 hours of professional development for teachers beyond the school day.



Many education policymakers are finding success with a five-pronged approach to building and advancing effective teaching. A systemic approach that addresses all of these interdependent recommendations will provide the greatest return on a country, state, or district's investment in professional development.

Recommendation 1: *Position the school as an innovative learning community that engages students, teachers, administrators, and community in 21st Century Learning.*

Recommendation 2: *Use data and research to drive the design of professional development programs as well as to ascertain the effect of such programs on the system goals. Then, use that information to inform continuous improvement of the professional learning offerings.*

Recommendation 3: *Provide time, resources, incentives, and requirements, which engage all educators/teachers in formal and informal professional learning that meets high quality, established standards and is aligned to system goals.*

Recommendation 4: *Provide options in the type, duration, pedagogy, location, medium, and formality of professional development, and differentiate within professional development offerings to meet teacher participants' needs, while also achieving system goals.*

Recommendation 5: *Establish and support teacher engagement in both local and global professional learning communities.*

This article is intended to provide insights into current trends, research, and best practices in professional development for elementary and secondary teachers, internationally.

While professional development, as discussed here, is a critical design element for education transformation, it must be considered interdependent with changes in policy, curriculum standards and assessment, information and communications technology, and research and evaluation.

The Context

Innovation is fueling today's global, knowledge-based society. The combination of human ingenuity and emergent technologies is disrupting conventional norms of communication, work, economics, politics, entertainment, and time. The challenge is intensifying, making it difficult for education to keep pace. Today's students and teachers must be prepared to think and act critically and creatively, collaborate and communicate effectively, and navigate and learn successfully in an interconnected, technological world. Education reform movements around the world are setting ambitious goals for student learning, with increasing emphasis in complex, higher order thinking and inquiry. Regurgitation of content is irrelevant in a world where content is immediately accessible at our fingertips. Changes of the magnitude envisioned will require a high-quality system of ongoing professional learning for teachers.⁴

Early on, countries such as Singapore, Finland, and Korea made radical changes in their school systems in response to a world defined by globalization and participatory cultures. They recognized the essential role that effective teachers would play in a school system that needed to ready students for a world driven by innovation and creativity. Students in these countries are now the top-performers in the world on international tests. These high performing systems are defined by teachers who are well prepared and who are committed to the practice of inquiry-based learning for themselves and their students.¹

These countries transformed their systems by investing in the teaching profession. They systematically established and continue to support a highly effective system of teacher recruitment, teacher preparation, professional learning, and communities of practice (see sidebar). The mindset in these high-performing countries is one of innovation that is grounded in sound pedagogy, and supportive of student-centric learning that prepares students for the complexities of society today. The results speak for themselves.^{1, 5}

Empowering professional teachers to innovate allows them to find new ways to improve learning.

Teachers should not be seen as technicians whose work is to implement strictly dictated syllabi, but rather as professionals who know how to improve learning for all.

- Finnish Government Official¹

What Is Professional Development? Why Is It Important?

Formal systems for ongoing professional learning were central to the transformation of today's high-performing countries. These systems included structures and resources to support recruitment of the best and brightest into the profession; high quality teacher preparation programs; and ongoing, collegial professional learning, often embedded in the school day and in professional learning communities. Also central to the transformation was openness on the part of educators for growth and change within the profession. This was fostered, in part, by a school culture that actively engaged teachers in a professional learning community focused on continuous improvement. These elements speak to the critical importance of leadership and a systems approach to effecting change.

In this article one aspect of such school transformation is described: professional development – the support of practicing teachers’ professional learning. While the professional learning of administrators and other school leaders is also central to such transformation, it is beyond the scope of this publication.

Definitions of professional development differ somewhat across regions and institutions or organizations. Some focus directly on the development of the teacher, others on the changes

Definition: Professional development among teachers is defined as the activities that develop an individual’s skills, knowledge, expertise and other characteristics as a teacher.⁷

in the classroom that result from the experience, and still others on the resultant student outcomes.⁶ For the purposes of this article, professional development for teachers is defined by the Organisation for Economic Co-operation and Development (OECD) as: “Activities that develop an individual’s skills, knowledge, expertise and other characteristics as a teacher.”⁷

In general, professional development builds the capacity of teachers to advance the goals of the education systems. As such, the literature on teacher effectiveness informs both the purpose of professional development, and the metrics by which professional development is measured.

Teacher Effectiveness

Current reports from researchers indicate that the way teacher effectiveness is defined and measured varies by culture and country. In some, it is defined by an assessment of the teachers’ expertise in working with a team of colleagues to implement practices considered by the profession to have merit in advancing student learning.¹ In some, teacher effectiveness is discussed directly in terms of the teachers’ impact on students’ academic achievement, and in others it is a combination of teacher knowledge, practice, and impact on student performance.⁸

In the U.S., research has demonstrated that differences in the effectiveness of teachers is the single most important factor accounting for differences in students’ academic growth from year to year.⁵ Researchers have shown that students who have three effective teachers in a row in grades 3 through 5 score 50 percentile points above students who have three ineffective teachers in a row.^{9,10} Researchers have also found that the effects of a single ineffective teacher are enduring enough to be measurable at least four years later.⁹ Using data from student test scores from the Iowa Reading and Vocabulary Tests during 1971-75, Stanford researcher Eric Hanushek found the difference between an effective and ineffective teacher can be a full grade level of achievement in a single year.¹¹ Similarly, Robert Marzano found students assigned to a highly ineffective teacher had only a 9% chance of passing a high-stakes test. The same students assigned to a highly effective teacher had a 91% chance of passing.^{5,12}

In a 2007 summary of the behaviors and characteristics of effective teachers, Stanford professor Linda Darling-Hammond reported that, while teacher education, certification, and experience matter, research has not yet revealed – with one exception – specific teacher

characteristics or behaviors that directly impact student learning. The one exception, she reports, is “a recurring positive relationship between student learning and teachers’ flexibility, creativity, and adaptability.”^{13,14}

Effective teachers think on their feet. They use a range of learning strategies that enable them to adjust, adapt, and differentiate to meet student needs, learning goals, topics, and methods.¹³ This speaks to the value of involving teachers in field research, where they collaborate with colleagues to investigate and reflect on innovative practices they are using in their classrooms. Russ Whitehurst, the former director of the U.S. Institute for Education Sciences, confirmed this in his 2002 speech at the U.S. White House Conference on Preparing Tomorrow’s Teachers, where he summarized the research on the effectiveness of teachers. His summary of the relative strength of indicators of teacher effectiveness found cognitive ability to be the top indicator followed by focused training, experience, and content. Certification, master’s degrees, and workshop attendance were found to have a lesser effect.¹⁵

A qualification to this research on the effectiveness of teachers is the significant influence school culture and practice have on such effectiveness. Darling-Hammond suggests a number of factors influence the effectiveness of teachers, including: the alignment of the teaching assignment to the teachers’ preparation; class size; pupil loads; planning time; opportunities to collaborate with colleagues; curricular supports; and alignment of curriculum, instruction, and assessment.¹⁶ All of these factors speak to the key role school leaders play in establishing the type of learning environment that promotes teacher effectiveness.

Researchers cite a variety of factors impacting student achievement. Marzano¹² found 43% of the variance in student achievement is based on teacher qualifications, 49% on home and family, and 8% on class size. Whitehurst had a slightly different perspective, based on the work of Scheerens and Bosker.¹⁷ He reported researchers found that roughly 20% of the differences in student achievement are associated with the schools children attend, another 20% are associated with individual class-rooms and teachers, and the remaining 60% are associated with differences among the children in each classroom, including the effects of their prior achievement and their socioeconomic background.¹⁵

The bottom line is the individual teacher, the collective teaching staff, and school leadership play a significant role in each student’s learning trajectory. While the research is mixed regarding the impact of professional development on student learning, studies do suggest, with sufficient time, fidelity, and focus, professional development by teachers individually and collectively, matters.

Effective Professional Development

The effectiveness of professional development is determined, in part, by what definition of professional development is adopted. While all have an eye on the subsequent impact on student learning, there are basically three levels of success indicators. First, those that build on a definition such as the one noted earlier by OECD might define effectiveness as the degree to which the professional development experience develops the individual’s skills, knowledge, expertise, and other characteristics as a teacher.⁷

Second, those who use a systemic definition of teacher effectiveness might gauge effectiveness of professional development by assessing the degree to which it shifts classroom practices and/or school cultures. The Singaporean Teacher's Network (see sidebar) serves as an excellent example of embedded professional development that is systemic in nature. The Network includes six interrelated elements: learning circles, teacher-led workshops, conferences, well-being program, web site, and publications focused on reflection, dialogue, and action research.

And third, educators might look to see if the professional development has a direct impact on student learning, achievement, or engagement. This definition is often employed when the professional development is experienced collectively by a group of teachers from a school system (e.g., multiple staff from a school, district, or system; multiple staff from a specific grade band; multiple staff who are collectively implementing the same curriculum or instructional strategy; multiple staff who have similar teaching assignments, etc.). In all cases, the effectiveness of the professional development might be gauged by changes in teacher practices that have been shown to increase student learning, add value to students' educational experiences (e.g., relevancy, real world applications), or increase students' attainment of 21st Century Skills (e.g., collaboration, self-direction, etc.).

Increasingly, states and nations are defining teacher effectiveness as a combination of knowledge and expertise, changes in classroom practices, and impact on student learning, thus professional development must address all of these critical elements.

Design Elements of Professional Development

The professional development literature includes many perspectives on characteristics of effective professional development. For example, Ingvarson, Meiers, and Beavis identified five *opportunity to learn* measures of effective professional development: 1) content focus, 2) follow-up, 3) active learning, 4) feedback, and 5) collaborative examination of student work.¹⁸

The Teacher's Network in Singapore

The Singapore Ministry of Education has established The Teacher's Network as a vehicle for ongoing, job-embedded professional learning. This whole-school model is led by professional development officers who facilitate co-learning among teachers in collegial, intellectually safe environments. Through learning circles and teacher-led workshops, teachers share learning theories, experiment with innovative practices, and share and discuss successes and challenges. Teachers work with professional development officers in transferring their tacit knowledge into explicit knowledge in ways that facilitate collegiality and co-development of knowledge grounded in the everyday practice of the classroom.⁶

Those authors found the most effective professional development:

- Is highly rated by teachers across all five *opportunity to learn* measures (see above);
- Provides opportunities for teachers to focus on what students are to learn and on how to deal with problems students might have in learning that subject matter;
- Focuses on research-based knowledge about student learning of content;
- Includes opportunities for teachers to examine student work collaboratively – and in relation to standards for what the students in question should know and be able to do;
- Leads teachers to actively reflect on their practice and compare it with high standards for professional practice;
- Engages teachers in identifying what they need to learn, and in planning the learning experiences that will help them meet those needs;
- Provides time for teachers to test new teaching methods and to receive follow-up support and coaching in their classrooms as they face problems of implementing changes;
- Includes activities whereby colleagues can provide feedback to teachers, with the anticipated outcome that teachers will become more open and collaborative in their practice.

Other authors support these characteristics. Darling-Hammond identified five key elements of effective professional development: 1) sustained over time, 2) content based, 3) embedded in professional learning communities, 4) focused on concrete tasks in teaching, assessment, observation, and reflection, and 5) modeled in authentic settings. Darling-Hammond cites research indicating that effectiveness is rooted in modeling student learning with teachers. This advances the deep understanding and engagement by teachers in the inquiry and content investigation they want for their students. Such modeling is most effective when teachers' design for and pilot lessons with their respective students, when teachers collectively discuss such models with colleagues, and when the resultant student work and work samples are jointly critiqued.¹

Each of the aforementioned attributes of effective professional development can be augmented through technology. The range of technology uses for professional learning include:

- **Online Communities of Practice (OCoP).** Online communities of practice provide virtual environments in which teachers with similar interests, teams of teachers, and whole schools can work, communicate, and exchange ideas. Teachers often seek out and join multiple OCoPs based on interest, professional needs, and teaching assignments. At times, schools facilitate formal interactions aimed at advancing school targets. At other times teachers interact with peers more informally, asking questions, seeking out advice, resources, peer review, and access to experts when they need it. The OCoP provides online collegiality, mentoring, coaching, guidance, advice, exchange of ideas and resources, discussion of issues, and professional

affiliation. Examples include: Ning, Moodle-based sites, Drupal-based sites, SharePoint, Tapped In, etc.

- **Virtual Learning.** Many formal courses, classes, institutes, and workshops are now offered virtually. This increases the breadth and depth of professional development offerings for all teachers. Through such systems, teachers can register online and sign into synchronous (real-time) or asynchronous (just-in-time) sessions of their choice. Some teachers are online working toward advanced degrees; others participate to gain knowledge and understanding in preparation for new assignments or redesigns in curriculum and instruction; while others are working in face-to-face teams and simply take their whole team online to augment their local work. Formal virtual courses often provide interactive features that enable communication among participants, experts, coaches, mentors, and others.



- **Learning Objects.** Learning objects are small, self-contained units of learning such as a short clip of a science inquiry class with debriefing by an expert, an interactive graphic that shows the Pythagorean Theorem, or a demonstration of how to create an audio podcast. These units of learning are typically used in just-in-time situations where a teacher needs specific information, how to do something, or a refresher on a process.
- **Web 2.0 Interactive Tools.** Web 2.0 is a category of Internet tools that enable active participation in – not simply consumption of –online media. This isn't just a set of "geek toys;" Web 2.0 resources give everyone a voice through interactive communication tools, provide tremendous opportunities for social and professional

networking, and enable collaboration and participation. The suite of web tools enables teachers to:

- **Search, research, browse, and access resources** through search engines such as Google, browsers such as Safari and Firefox, readers such as PDF, metatag locators, and RSS feeds for facilitated access.
 - **Publish, comment, and disseminate** through wikis, blogs, microblogs such as Twitter, video networking sites such as YouTube, texting, instant messaging, RSS feeds that enable teachers to disseminate information, and tagging tools such as Delicious that enable users to find specific content in online resources through key word searches. For example, teachers might use Twitter to comment in real-time on sessions they are attending at a conference. Multiple twitterers linked to a host of sessions at the conference provide a “back channel” as to what conference participants are gleaning from the sessions. Groups of teachers can use this back channel during a school day as a running dialogue with their colleagues down the hall or across the globe.
 - **Network and build communities** through social networking and professional networking sites such as Ning, Facebook, LinkedIn, Moodle-based sites, Twitter, etc.
 - **Collaborate** through co-authoring or commenting on material posted on wikis, blogs, or online documents such as Google Docs; asynchronous discussions via social/professional networking sites; and synchronous (real-time) interactions via chat rooms, instant messaging, texting, and video conferencing with a medium such as Skype.
 - **Digitally compose and produce** through podcasts, digital video capture and editing, slide presentations, word processing, etc.
- **Blended Learning.** The blended model is a hybrid professional development that involves both face-to-face (F2F) and online learning. The online features often are similar to online communities of practice as described above. In addition, blended learning may include real-time videoconferencing sessions and libraries of learning.

Each of these types of technology and learning can be used strategically to augment professional development among teachers.

Approaches to Professional Development

The approaches to teacher professional development vary according to purpose, context, and available resources. Table 1 indicates the range of purposes and associated approaches to professional development made available to teachers.

Table 1: Purposes of and approaches to teacher professional development

PURPOSE	APPROACH (Approaches are aligned to primary purpose, and may not be limited to a single purpose.)	DESCRIPTION
<p>Construct Knowledge</p> <p>Teachers deepen their understanding of content and teaching practices.</p>	<ul style="list-style-type: none"> • Workshops, institutes, courses, and seminars 	<p>Virtual or blended learning (combination of face-to-face and virtual), focused on the transfer of specific knowledge or skills.</p>
	<ul style="list-style-type: none"> • Immersion in the world of business, and/or academic content 	<p>Extended, intensive experiences, where teachers apply knowledge and build expertise through immersion in real-world situations (e.g., Internships, temporary jobs, and six-week workshops).</p>
	<ul style="list-style-type: none"> • Immersion in inquiry in academic content 	<p>Extended, intensive experiences where teachers are immersed in content and skill development related to their academic content.</p>
<p>Transfer Knowledge into Practice</p> <p>Teachers draw on their knowledge base to plan instruction and improve their teaching.</p>	<ul style="list-style-type: none"> • Curriculum development and adaptation 	<p>Teams of educators develop or adapt existing curriculum for future use in their schools. Often involves piloting and revision cycles.</p>
	<ul style="list-style-type: none"> • Mentoring 	<p>Teachers receive special support (related to classroom practice) over time from a colleague who has particular expertise to share.</p>
	<ul style="list-style-type: none"> • Partnerships with business, industry, universities/colleges 	<p>Teachers work on projects and in programs in collaboration or cooperation with professionals in business, industry, or universities.</p>
	<ul style="list-style-type: none"> • Data-driven decision making 	<p>Individually and collectively, teachers gather, review, analyze, interpret, and report data to inform instructional decisions, resource selection, etc.</p>
	<ul style="list-style-type: none"> • Lesson study 	<p>Groups of teachers systematically conduct studies of lessons through collaborative lesson design, teaching, observing, and critiquing the lesson, and then repeating process to improve quality.</p>
<p>Practice Teaching</p> <p>Teachers learn through using a new approach with their students.</p>	<ul style="list-style-type: none"> • Curriculum implementation 	<p>Teachers learn about new curricula and then work in CoPs as they implement the curricula, using lesson studies to ensure high quality.</p>
	<ul style="list-style-type: none"> • Curriculum replacement units 	<p>Teachers learn about replacement units and then work in CoPs as they implement the curricula, using lesson studies to ensure high quality.</p>
	<ul style="list-style-type: none"> • Coaching 	<p>Provision of school-based support for teachers as they begin to implement skills and strategies learned in training.</p>
	<ul style="list-style-type: none"> • Individual learning 	<p>Using school improvement goals and student data, teachers personalize their professional development to accommodate needs, schedules, and interests.</p>
<p>Promote Reflection</p> <p>Teachers assess the impact of the changes on their students, and think about ways to improve, by reflecting on others' practice and adapting ideas for their own use.</p>	<ul style="list-style-type: none"> • Study groups 	<p>Groups of teachers are organized around a common interest—usually improving student learning.</p>
	<ul style="list-style-type: none"> • Case discussions 	<p>Educators join collegial discussions to analyze, interpret, and reflect on case studies, applying aspects of the practices to their situations.</p>
	<ul style="list-style-type: none"> • Action research 	<p>Educators conduct studies with their classes to collect baseline data, track the impact of innovations on students, and report results.</p>
	<ul style="list-style-type: none"> • Examining student work 	<p>Groups of teachers review student products, to improve analyses skills in the context of standards, develop and improve rubrics, gain common understandings of desired student outcomes, and improve lessons.</p>
	<ul style="list-style-type: none"> • Professional networks 	<p>Professionals with common interests interact to share insights and seek new solutions to problems of practice, (e.g., local interest groups, professional organizations, virtual CoPs, etc.)</p>

Based on Dunne;¹⁹ Loucks-Horsley, Hewson, Love, and Stiles;²⁰ and the Indiana Professional Development Committee for Learning and Technology & Metiri Group.²¹

Often teachers, both individually and collectively within professional learning communities, engage in a combination of these approaches to professional development simultaneously. Teachers engage in professional development on their own, to pursue a degree or licensure requirements, or to meet requirements for salary increases. Simultaneously, professional development may be facilitated or required by their schools or districts, with the intent of effecting desired changes within the system (e.g., changes in curricula, assessments, and/or instructional approaches; shifts in learning goals; alignment to new standards; etc.). In most countries, certification is considered an important milestone in the professional development of teachers.

Professional development is increasingly facilitated through technologies – old and new. For example, teachers often participate in professional learning communities through virtual environments. Virtual access provides them with continuous access to colleagues and experts from their locale and beyond their city, state, or nation. The follow-up to professional development, which is so critical to the transfer from professional development to practice, is also now possible virtually.

Research on Effectiveness of Professional Development

In general, professional development approaches focused on content relevant to the participants' classrooms, embedded within a professional learning community, and which involve sustained, ongoing transfer from theory to practice, have the most impact.¹

Time has been the focus of numerous studies on professional development. Some have found professional development opportunities offered over an extended period of time yield better results. A 2007 systematic review of more than 1300 studies on the impact of professional development by researchers from a U.S. Regional Educational Laboratory yielded nine high-quality studies that reported causal impacts, all of which were conducted with elementary school teachers. The researchers found short-term professional development experiences of 14 hours or less appear to have no effect on teachers' effectiveness, while a variety of well-designed, content-specific learning opportunities averaging about 49 hours over a 6- to 12-month period of time were associated with sizable gains: students of participating teachers gained about 21 percentile points over other students on the achievement tests used to evaluate student learning.²

The reports on current levels of participation and intensity of professional development from OECD countries indicate, on average, nearly 90% of teachers participate in 15-20 hours of professional development each year. The comparisons found significant variations by country. In Singapore, the government requires and supports 100 hours of professional development by each teacher annually, in addition to any professional learning time embedded in the school day.⁷ In contrast, the majority of teachers in the U.S. averaged less than 8 hours annually, and most do not have professional development during the school day.²² A recent evaluation study commissioned by the U.S. Department of Education on the U.S. Elementary and Secondary Act (ESEA) found “most teachers report that their professional learning experiences (regardless of funding source) do not reflect the research-based characteristics of professional development.” That study found only 6% of elementary school teachers reported spending more than 24 hours of professional development focused on mathematics and only 14% reported spending 24 hours of professional development on

reading, despite the significant investment of funds by the U.S. Government on professional development.²³ {U.S. Department of Education, 2010 #1093}

Although extended time dedicated to professional development can make a difference, studies generally confirm the amount of time teachers spend in professional development is less significantly relevant to student achievement than the academic *content* of the professional learning experiences.²⁴ In a study of 200 teachers, researchers found professional learning related to instructional techniques accounted for four times the variance in increased teacher performance than did professional learning that focused on subject-matter knowledge.²⁵ Similarly, research by Calhoun (1993) indicates professional development that is short, episodic, and disconnected from practice has little impact. Calhoun (1993) found teachers, even with extensive training, only adopted 10% of practices learned in professional development, unless the training was followed by coaching or action research.²⁶

There is every indication a systemic approach to professional development can advance the professional knowledge, expertise, and effectiveness of teachers' practice, and can advance the work of whole systems of education. This is provided the approach meets the following effectiveness criteria of being:

- Focused on instructional technique
- Focused on content the participants are teaching
- Designed to increase the adaptability and creativity of teachers in their practice
- Sustainable over time
- Designed to maintain elements of collegiality within a professional learning community
- Designed to include feedback
- Capable of involving teachers in concrete, experiential learning

This systemic approach inherently implies strong, informed leadership.

Leadership and Policy Implications

Leadership at the school and district level plays an important role in orchestrating professional learning that results in highly effective teaching and learning. This section will look at a range of policy levers and then discuss the role of school leadership in implementing such policies with fidelity and purpose in order to achieve the intended impact.

Two categories of policy levers are typically used to maximize the impact of professional development to reach established learning goals: individual and systemic. The first category is aimed at teachers as individual professionals. The intent of these policy levers is to increase the knowledge, skills, and expertise of teachers. These typically take the form of incentives such as merit pay, salary increases, bonuses, career advancement, opportunity for grant funds, or increased opportunities to learn; or mandates such as learning standards, licensure, or certification requirements.

The second category of policy levers is aimed at system changes, and includes professional development as one of many catalysts for change. This second category also includes incentives and mandates, but with a stronger focus on whole school or at least widespread change. In this category, teachers are often required (mandated) to attend professional development, or they are provided incentives of increased resources for their classrooms if they attend professional development.

The literature suggests both categories are advantageous. The OECD Teaching and Learning International Study (TALIS) found tremendous variations in teacher quality and effectiveness both across education systems and within schools. This indicates a strong need for differentiation of professional learning.⁷ To accomplish this requires the active participation by teachers individually and collectively in the selection, presentation, facilitation, and assessment of their professional learning.

Unfortunately, the type of professional development exemplified by the Singaporean Teacher's Network is more the exception than the rule. The authors of the OECD report found 42% of teachers surveyed in the 23 countries said there was a lack of suitable professional development to meet their needs. Furthermore, teachers in the TALIS study report the opportunity to learn from colleagues remains largely untapped.⁷

The authors of the OECD TALIS report found that 42% of teachers surveyed in the 23 countries said there was a lack of suitable professional development to meet their needs.⁷

In the past, these two categories of policies (individual and systemic) were seen as distinct. Today it is clear both are needed to transform systems of education and they can be integrated successfully. System wide professional development will be necessary to shift entire schools and districts. Yet within those schools and districts, teachers will need some aspects of professional learning to be personalized and differentiated. The reality is one size does not fit all.

That's where school leadership comes in. A strong, systemic program differentiates and personalizes professional development in two key ways. First, the system expectations for continued professional growth require the teacher to build a personalized professional learning plan targeted at key milestones related to professional certifications and career advancements. Second, the district provides opportunities for personalization within mandated professional development, with choice as to the type, focus, application, and timing. The professional learning must be facilitated in ways that motivate and engage teachers, and target long-term change with the ultimate goal of increasing student learning. Guskey points out the majority of professional development programs fail because they fail to pay attention to two key factors.

- **What motivates teachers to engage in professional development?** Guskey suggests teachers are attracted to professional development to increase their effectiveness with students, advance their professional careers, and expand their skills and knowledge. Most teachers are seeking practical, concrete approaches to innovate and improve their everyday classroom practices.

- **The process by which change in teachers typically occurs.** Guskey suggests there are generally three outcomes for professional development: changes in teachers' beliefs and attitudes, changes in teachers' classroom practices, and changes in student learning outcomes. He suggests such changes occur in the following order: first changes in practices, followed by changes in student learning outcomes, and finally changes in teachers' attitudes and beliefs. In order for the intended change in teacher practice to become institutionalized, teachers must reach that final stage of change in attitude and beliefs, and school leaders must continue to support them, and begin to make the shift in practice scale to other schools and districts.²⁷

The research literature suggests there are often considerable gaps between policy and practice. That is, when policy makers provide funding for professional development, they typically have very specific intent in mind (i.e., increasing literacy levels, decreasing dropout rates, etc.). However, the implementation of that policy often falls short of achieving that intent, despite meeting procedural requirements established by program administrators. For example, governments may provide funding for specific amounts and types of professional development, but the results are dependent on the depth of planning, context, and quality of the resultant professional development programs.

One of the most critical elements in the new systems of professional learning among high achieving nations is the universal mindset of inquiry – for teachers as well as students. Teaching has been established as a profession with high standards, accompanied by an alignment of the policies, resources, and practices, which together support teachers individually and collectively in achieving these high standards. Again, this is where district and school leadership matters. School leaders set the tone and culture of the school learning environment. Establishing a culture of innovation and inquiry is critical if teachers are expected to use the professional development to shift their classroom practices.

Policymakers would do well to pay attention to the list of characteristics of effective professional development and ensure all large-scale professional development programs embody that profile. That said, it would also be important that such professional development be personalized and localized, while maintaining quality and integrity.

According to Darling-Hammond, in top ranked nations, a comprehensive framework for developing effective teachers and innovative school cultures is used to transform schools. The framework includes the following and should be considered by policymakers seeking to improve the return on the investment in professional development:

- Universal high-quality teacher education, typically 3 to 4 years in duration, completely at government expense, featuring extensive clinical training as well as coursework;
- Mentoring from expert teachers for all beginners, coupled with a reduced teaching load and shared planning time;
- Ongoing professional learning, embedded in 15 to 25 hours a week of planning and collaboration time at school, plus an additional 2 to 4 weeks of professional learning time annually to attend institutes and seminars, visit other schools and classrooms, conduct action research and lesson study, and participate in school retreats;

- Leadership development that engages expert teachers in developing curriculum and assessment, mentoring and coaching others, and leading professional development, as well as pathways that recruit strong teachers into programs that prepare them as school principals who are instructional leaders;
- Equitable, competitive salaries, sometimes with additional stipends for hard-to-staff locations, which are comparable with those of other professions.¹

According to Chris Dede, a Harvard professor, school and district leadership is critical to effecting such change, especially if that change is large scale and systemic.²⁸ An example is a school district interested in increasing science inquiry in the middle grades. Dede suggests to effect such change requires that leaders must start by thoughtfully identifying the core elements of the innovation they want adopted. In the case of inquiry science, the core elements might be: engaging students in content through open-ended essential questions, collaborative groups engaged in elaborated communication, and authentic student products.

Those leaders must then establish those core elements as the non-negotiables in the change expected of all middle school science classrooms, while also recognizing each school and classroom teacher will undoubtedly implement those three non-negotiables in very different ways. The effective leader recognizes “cookie-cutter” approaches don’t work, and such localization is necessary if the innovation is to spread to large numbers of classrooms. The highly effective leader goes a step further and identifies those core elements, provides ongoing professional learning that maintains focus on those three core elements, yet allows districts, schools, and classrooms to assume ownership of the innovation through localization. The key is to institute expectations and assessments that ensure those three core elements are present, thus allowing variations and differentiation at each building and in each classroom.

To accomplish this, Dede recommends the following five elements in scaling up innovations through policy and leadership:

- **Depth.** Changing classroom practice, teachers’ beliefs, norms of social interaction, and pedagogical principles as enacted in the curriculum.
- **Sustainability.** Maintaining those changes over time.
- **Spread.** Diffusion of the innovation to large numbers of classrooms and schools.
- **Shift.** Districts, schools, and teachers assuming ownership of the innovation and spreading its impact.
- **Evolution.** Ongoing revision of the innovation by those adapting it.²⁸

Successful scaling up will depend on the capacity of leaders to first ferret out what is absolutely core to an innovation and what is superfluous. That enables leaders to then scale a successful innovation by mandating those core elements, letting go of other elements that aren’t critical, thus encouraging local adaptations of the innovation that lead to ownership and sustainability. Successful implementation is further advanced when instituted within the checks and balances of a professional learning community, while conducting accountability measures that orchestrate an alignment to the new vision of teaching and learning.

Scaling up requires commitment on the part of district and school leaders. Because educators negotiate the intent of policy as they implement, policymakers would do well to consider Dede's stages, and the role of professional learning, school culture, and effective leadership in the change process.

Policy Recommendations

The following recommendations for providing professional learning opportunities represent an analysis of research on the attributes of professional learning that advance effective teaching. The intent of these recommendations is to increase the return on states' and nations' investment in professional development.

Recommendation 1: *Position the school as an innovative learning community that engages students, teachers, administrators, and community in 21st Century Learning.*

Establish the teachers' work environment – the school – as a learning community focused on student-centered instruction. Integrate 21st Century Skills into the system's learning standards. Ensure the school culture promotes collaboration and openness to innovation and 21st Century Learning.

Recommendation 2: *Use data and research to drive the design of professional development programs and to ascertain the effect of such programs on the system goals. Then, use that information to inform continuous improvement of the professional learning offerings.*

Stay current with emerging research and use such research, along with data from your own school system and from teachers to develop a long-term professional development plan. Establish and support teacher participation in a sustained professional development program aligned to core school principles and school and district improvement plans. Set expectations as to the long-term and short-term outcomes for professional development, linked to changes in schools, classrooms, and student learning. For example, if a school district has adopted the principle of student-centered learning, then the professional development should be designed to advance that core principle. School systems should monitor all aspects of formal and informal professional learning (e.g., participation, quality, alignment, participant feedback, impact on classroom practices, etc.). That data should then be used to inform continuous improvement.

Recommendation 3: *Provide time, resources, incentives, and requirements, which engage all educators/teachers in formal and informal professional learning that meets high quality, established standards and is aligned to system goals.*

States and nations must provide incentives to ensure the full engagement of teachers in the professional learning community. Such incentives should include professional development

In many countries, education is still far from becoming a knowledge industry in the sense that its own practices are being transformed by knowledge about the efficacy of its own practices. In many other fields, people enter their professional lives expecting their practice to be transformed by research, but the patterns of participation in professional development and in the evaluation of teachers and their practices hint that this is not yet the case in education.⁷

intended to assist teachers in advancing student learning, but could also take the form of increased compensation, movements on the salary schedule, or classroom resources for achieving and staying current with established teaching certifications and licensures. School policies should also include district and school leaders involvement in teacher professional development. This ensures collegial interactions among administrators and teachers on critical issues, and common vocabulary and understanding of core elements in reaching the long-term goals. Such policies should also ensure all professional development meets the criteria for effective professional development (e.g., content-focused, instructionally-focused, models of good practice, focused on concrete tasks related to the participants' classrooms, etc.).

Recommendation 4: *Provide options in the type, duration, pedagogy, location, medium, and formality of professional development, and differentiate within professional development offerings to meet teacher participants' needs, while also achieving system goals.*

States and nations should support hybrid professional development programs that offer teachers multiple formal and informal options (e.g., courses, institutes, virtual learning, mentoring, coaching, blended learning, book study, analysis of student work, mentoring, coaching, curriculum development, blogging, twittering, etc.), resourced through the school system. While the teacher professional development program remains aligned to district/school goals, leaders must allow for differentiation and choice for schools and teachers. And, they must ensure teachers and school leaders are actively engaged in monitoring and assessing their (and their team and school's) progress toward interim milestones (individual and collective) as well as monitoring progress toward long-term district/school goals.

Recommendation 5: *Establish and support teacher engagement in both local and global professional learning communities.*

Virtual, face-to-face, and hybrid professional learning communities should be established. These should support teachers with a platform that encourages a teachers' active participation in their professional growth. Participation in professional learning communities requires the establishment and facilitation of a limited number of online communities of practice (OCoP) (e.g., communities created for and focused on district, school, program, content, grade level, etc.). Support for educators to initiate and facilitate their own communities is equally important. These OCoPs should be designed to align to district/school goals, yet differentiate for individual schools and teachers.

Long-term, high-quality, targeted professional development represents the key to transformational reform in education. For most school districts, the five interdependent recommendations listed above frame a radical departure from their current system of professional development. Professional development no longer means a few days a year of workshop participation, conference attendance, or all-staff releases. Instead, professional development is a daily commitment to excellence and effectiveness in teaching. It is grounded in a policy framework that ensures all teachers are fully engaged in a robust program of formal and informal experiences within virtual, hybrid, and face-to-face communities of practice.

People who are successful in today's fast-paced, high tech society are those who are self-directed, adaptable, inquisitive, and thoughtful learners. Schools that excel at preparing today's learners to thrive in such a society must also be highly innovative and adaptive. That translates into a teaching staff that is continually learning, and thus the need for the type of professional development outlined in the five recommendations listed above. In order to maximize the impact of professional development investments, these recommendations should be implemented within a system of transformational reform that also addresses policy, curriculum standards and assessment, information and communications technology, and research and evaluation.

References

1. Darling-Hammond, L. (2010). *The flat world and education: How America's commitment to equity will determine our future*. New York, NY: Teachers College Press.
2. Yoon, K.S., Duncan, T., Lee, S.W.Y., Scarloss, B., & Shapley, K.L. (2007). *Reviewing the evidence on how teacher professional development affects student achievement* (Issues & Answers Report, REL 2007–No. 033). U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest.
3. Hanushek, E.A., & Woessmann, L. (2009). *Do better schools lead to more growth? Cognitive skills, economic outcomes, and causation*. NBER Working Paper 14633. Accessed on September 23, 2010 from www.nber.org/papers/w14633.
4. Borko, H. (2004). Professional development and teacher learning: Mapping the terrain. *Educational Researcher*, 33, 3-15.
5. Wright, S.P., Horn, S.P., & Sanders, W.L. (1997). Teacher and classroom context effects on student achievement: Implications for teacher evaluation. *Journal of Personnel Evaluation in Education*, 11, 57-68.
6. Darling-Hammond, L., Wei, R.C., Andree, A., Richardson, N., & Orphanos, S. (2009). *Professional learning in the learning profession: A status report on teacher development in the United States and abroad*. Accessed September 24, 2010 from [www.srnleads.org/resources/.../pdf/nsdc_profdev_short_!^\]\[!d.pdf](http://www.srnleads.org/resources/.../pdf/nsdc_profdev_short_!^][!d.pdf)
7. Organisation for Economic Co-operation and Development (OECD). (2009). *Creating effective teaching and learning environments: First results from TALIS*. Accessed on September 23, 2010 from www.oecd.org/edu/talis/firstresults .
8. Learning Pointe Associates (2010). *Evaluating teacher effectiveness: Emerging trends reflected in the state phase 1: Race to the Top applications*. Naperville, IL: Author.
9. Sanders, W.L., & Rivers, J.C. (1996). *Cumulative and residual effects of teachers on future student academic achievement*. Knoxville, TN: University of Tennessee Value-Added Research and Assessment Center.
10. Jordan, H., Mendro, R., & Weerasinghe, D. (1997). Teacher effects on longitudinal student achievement: A report on research in progress. In *National Evaluation Institute*. Paper presented at the CREATE Annual Meeting, Indianapolis, IN.
11. Hanushek, E.A. (1992). The trade-off between child quantity and quality. *Journal of Political Economy* 100, 84-117.

12. Marzano, R.J. (2000). *A new era of school reform: Going where the research takes us*. Aurora, CO: Mid-continent Research for Education and Learning. Accessed on September 24, 2010 from www.mcrel.org.
13. Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Education Policy Analysis Archives*, 8, 1-50.
14. Lin, X., Schwartz, D.L., & Hatano, G. (2005). Toward teachers adaptive metacognition. *Educational Psychologist*, 40, 245-255.
15. Whitehurst, G.J. (2002). Scientifically based research on teacher quality: Research on teacher preparation and professional development. Paper presented at the White House Conference on Preparing Tomorrow's Teacher, March 5, 2002.
16. Darling-Hammond, L. (1997). *Doing what matters most: Investing in quality teaching*. New York, NY: National Commission on Teaching & America's Future.
17. Scheerens, J., & Bosker, R.J. (1997). *The foundations of educational effectiveness*. Oxford England: Pergamon Press.
18. Ingvarson, L., Meiers, M., & Beavis, A. (2005). Factors affecting the impact of professional development programs on teachers' knowledge, practice, student outcomes & efficacy. *Education Policy Analysis Archives*, 13, 10.
19. Dunne, K.A. (2002). Teachers as learners: Elements of effective professional development. Accessed on September 24, 2010 from http://scholar.google.com/scholar?q=Dunne,+K.A.+%282002%29.+Teachers+as+learners:+Elements+of+effective+professional+development&hl=en&as_sdt=0&as_vis=1&oi=scholar
20. Loucks-Horsley, S., Hewson, P.W., Love, N., & Stiles, K.E. (1998). *Designing professional development for teachers of science and mathematics*. Tyler, TX: Corwin Press.
21. Indiana Department of Education. (2001). *Eight steps to highly effective "next generation" professional development for learning and technology – Public Law 221 and beyond*. Indianapolis, IN: Indiana Department of Education. Retrieved on September 24, 2010, from <http://www.metiri.com/8steps/>.
22. Stoel, C.F., & Thant, T.S. (2002). *Teachers' professional lives: A view from nine industrialized countries*. Washington, DC: Council for Basic Education.
23. U.S. Department of Education (2010). *Great teachers great leaders*. Washington, DC: Office of Planning, Evaluation, and Policy Development, p. 4.
24. Garet, M.S., Porter, A.C., Desimone, L., Birman, B.F., & Yoon, K.S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal*, 38, 915-945.

25. Ferguson, P., & T Womack, S. (1993). The impact of subject matter and on teaching performance. *Journal of Teacher Education*, 44, 55.
26. Calhoun, E.F. (1993). Action research: Three approaches. *Educational Leadership*, 51, 62-65.
27. Guskey, T.R. (2002). Does it make a difference? Evaluating professional development. *Educational Leadership*, 59, 45-51
28. Dede, C. (1998). The scaling-up process for technology-based educational innovations. In C. Dede (Ed.) *Learning with Technology*, pp. 199-215. Alexandria, VA: ASCD.

About the author:



Cheryl Lemke is President and CEO of the Metiri Group. Ms. Lemke specializes in public policy for K20 educational technology and 21st Century Learning. She is best known for her expertise and experience in systems thinking, from the policy level – with governors, legislators, superintendents, business leaders – to the school and classroom – with administrators, teachers, students, and parents. She brings 25 years of experience in the public sector—as a teacher, technology director, policy expert at a national education laboratory, and cabinet member at a state education agency.

To cite this publication:

Lemke, C. (2010). *Professional Development: Ensuring a Return on Your Investment*. Commissioned by Intel, Inc.