Chapter 5 Professional Learning: Empowering Educators to Transform Learning and Teaching

Chapter Introduction by Anjlee Prakash, Ph.D.

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"Teachers, supported by the relevant technology tools and the right professional learning, can make magic in the classroom."

Teachers are in constant search for tools that can make their classrooms more engaging, more dynamic, richer, and more fulfilling. Technology tools add value to education across the spectrum, from elite private schools to single-teacher village schools. Teachers, supported by the relevant technology tools and the right professional learning, can make magic in the classroom. At Learning Links Foundation, we understand the potential of technology and the needs of teachers, and it is through our customized professional learning offerings that we empower teachers to use technology to help improve student learning.

It is often said that teachers teach the way they were taught, but given how fast the world is changing, we need new approaches. We all need to be learners, and we need to create school cultures that embrace that. This means that principals, teachers, curriculum coordinators, librarians, and others need professional learning to support them as they move forward.

Professional learning should be ongoing, relevant, and meaningful to each individual's needs, just as the student experience should be personalized for each child's needs. Professional learning must enable teachers and others to acquire the skills, perspectives, and confidence to use technology with new pedagogical approaches to prepare students for the modern world and empower students to achieve the goals they have for their lives. It should build teachers' expertise with new teaching and assessment strategies, including the use of data analytics to improve instruction.

Defining a more collaborative and innovative school culture is a joint responsibility of principals, teachers, and other stakeholders. Principals need professional learning to develop the skills they need to lead the implementation of new approaches and move the whole school forward. In contrast to the traditional isolation of teachers in their classrooms, the learning culture must make it safe for teachers to try new approaches, collaborate in new ways, and ask for help when they need it.

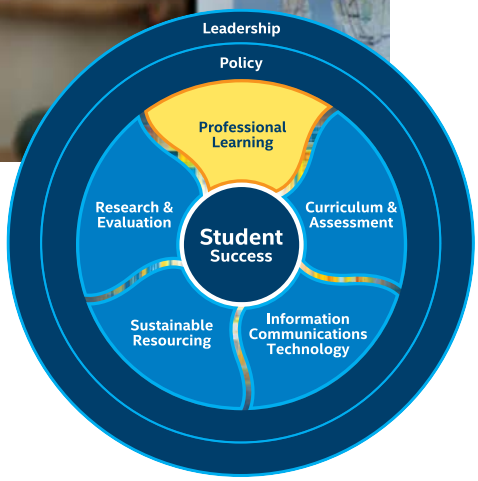
High-quality professional learning enables educators to cope with and ultimately embrace the rapid pace of change. Just as doctors have continuing education to keep up with their professions, ongoing professional learning can help teachers stay relevant and up to date. Professional learning should provide teachers with a career path, allowing them move ahead as their skills grow.

Meaningful and effective professional learning transforms what students achieve and produces an economic impact. Recent analysis by scientists from Harvard University, Columbia University, and the Brookings Institute found that students with good teachers earn more over their lifetimes.[13] Good teachers are worth their weight in gold—literally. Empowering teachers through professional learning and other supports may also reduce burnout and improve teacher retention.

Teachers do great work. If they see the value in using technology to achieve their goals and are equipped with the skills and supports they need, they will use technology in ways beyond what we could imagine—and our children will be the better for it.

Anjlee Prakash, Ph.D.

As head of Learning Links, Dr. Prakash leads a global foundation that works with public and private organizations to develop sustainable educational policies and solutions in India and around the world. She has collaborated with organizations such as UNESCO and the Brookings Institution to define educational goals and effective methods of achieving and assessing them. She has a Doctorate in Education and 24 years of experience in the field of education, training, and educational technology.



Teacher Success, Student Success

Transformative change brings opportunities and challenges for teachers, principals, policymakers, and societies. How do we:

- Increase equity while raising expectations for every student?
- Meet curriculum standards while igniting each student's creative spark?
- Improve student outcomes by incorporating technology into rigorous, student-driven learning experiences that are relevant to real-world problems?
- Honor the art of teaching while empowering teachers with the science of new, analytics-based assessments?

Professional learning is pivotal to mastering these challenges, taking advantage of the opportunities, and making sustainable improvements in student learning. Ongoing, high-quality professional learning for teachers, educators, and administrators can help:

- Empower educators to develop competence and confidence in working with new learning models, curriculum resources, assessment methods, tools, and technologies
- Enable students to benefit from a student-centered, 21st century education
- Ensure that technology investments are used to achieve the program's goals

Project RED found that giving teachers time for professional learning and collaboration at least once a month and training school leaders in how to facilitate second-order change are best practices of successful education technology programs.[14]

This chapter discusses:

- How teachers' jobs are changing
- What professional learning needs to cover
- Strategies for implementing a professional learning program

New Learning Models, New Roles: Professional Learning for Teachers

Professional learning must empower teachers to apply the capabilities of a data-rich, technology-infused learning environment, apply new learning strategies, and deliver a personalized education for each student. Effective professional learning also prepares teachers to take on transformative new roles. More than traditional dispensers of knowledge, or even enablers or supporters of student learning, teachers become directors and activators, igniting each student's unique learning path. Reflecting the rapid growth of new knowledge, teachers act less as all-knowing experts, and more as lead learners and confident explorers.

Fullan[15] and others identify three new roles that teachers take on in a transformed environment:

1. **Designers of personalized learning experiences.** Teachers collaborate with students to co-design challenging learning activities that move each student toward the curriculum objectives. Teachers know their students well enough to co-create experiences that are relevant to each student's cognitive needs, content knowledge, and interests.
2. **Sources of human, social, and decision-making capital.** Teachers are continuous learners and innovators. By building personal and organizational capacity and expanding their networks, they increase their own and others' ability to design effective learning experiences for their students.
3. **Partners in learning with their students, accelerated by technology.** Teachers incorporate technology into new pedagogic strategies that build on meaningful, creative relationships between teachers and students. They co-create knowledge, using modern technologies to activate 21st century learning and not simply to deliver traditional content electronically.

Successful professional learning also enables teachers to build mastery of new assessment methodologies, both standards-based assessments that align with curriculum changes, and formative assessments that teachers can use to improve instruction in real time. With digital content providing more data and formative assessments and standardized tests evolving, professional learning can enable teachers to:

- Choose and use the appropriate assessment tool for the purpose
- Make effective use of test results, whether they come from classroom quizzes, standardized assessments, formative tests built into digital content, or artifacts and projects that students create to demonstrate their mastery
- Design new ways to assess students' development of 21st century skills

The International Society for Technology in Education (ISTE) Standards for Teachers provide a useful summary of teacher requirements (Table 5-1).

ISTE Standards for Teachers[16]

Focus	Requirements
Facilitate and inspire student learning and creativity	Use their knowledge of subject matter, learning, teaching, and technology to facilitate experiences that advance student learning, creativity, and innovation in face-to-face and virtual environments
Design and develop digital age learning experiences and assessments	Design, develop, and evaluate authentic learning experiences and assessment incorporating contemporary tools and resources to maximize content learning in context and to develop the knowledge, skills, and attitudes identified in the ISTE Standards for Teachers
Model digital age work and learning	Exhibit knowledge, skills, and work processes representative of an innovative professional in a global and digital society
Promote and model digital citizenship and responsibility	Understand local and global societal issues and responsibilities in an evolving digital culture and exhibit legal and ethical behavior in their professional practices
Engage in professional growth and leadership	Continuously improve their professional practice, model lifelong learning, and exhibit leadership in their school and professional community by promoting and demonstrating effective use of digital tools and resources

Table 5-1

Leading Transformative Change: Professional Learning for School Leaders and Administrators

School leaders, principals, and other administrators need professional learning to support their roles as change agents and provide them with the skills to:

- Inspire and manage large-scale change
- Establish a culture of continuous improvement
- Lead teachers in incorporating technology in to their practice and using it to enhance learning outcomes

Project RED's research identifies effective change management and school leader training as characteristics of schools and school systems that achieve the greatest impact from technology-enabled transformation initiatives. Table 5-2 summarizes areas that ISTE identifies as critical for educational administrators.

ISTE Standards for Educational Administrators[17]

Focus	Requirements
Visionary leadership	Inspire and lead development and implementation of a shared vision for comprehensive integration of technology to promote excellence and support transformation throughout the organization
Digital age learning culture	Create, promote, and sustain a dynamic, digital-age learning culture that provides a rigorous, relevant, and engaging education for all students
Excellence in professional practice	Promote an environment of professional learning and innovation that empowers educators to enhance student learning through the infusion of contemporary technologies and digital resources
Systemic improvement	Provide digital age leadership and management to continuously improve the organization through the effective use of information and technology resources
Digital citizenship	Model and facilitate understanding of social, ethical and legal issues and responsibilities related to an evolving digital culture

Table 5-2

Implementing Professional Learning Programs

Effective professional learning follows the same personalized, learner-led approaches that are so powerful with students. As you develop or expand your professional learning program, aim for a blend of face-to-face, online, and blended courses, along with mentoring and coaching, social media, and professional learning communities of practice.

- **Personalized.** You may want to start with some required introductory sessions, but most professional learning can be conducted via a personalized, learner-driven approach. Self-paced professional learning respects teachers as professionals who understand their own learning needs and how to meet them. Concentrate on providing the right combination of resources, support, and accountability, and empowering teachers to create their own learning path.
- **Blended.** Successful professional learning generally involves a mix of face-to-face and digital resources. Online resources are cost-effective, and can be accessed as needed. Face-to-face discussions, mentoring, and coaching are invaluable, particularly when they include opportunities to try a new approach, reflect on it, and debrief with a peer or mentor. The state of Pernambuco, Brazil is using a blended approach to help science teachers learn how to design and incorporate virtual experiments into their pedagogy. *See Case Study: Transforming Science Education in Pernambuco, Brazil.*
- **Collaborative.** On-site coaches and mentors, either full-time or on a regular basis, can offer welcome support, direction, and modeling. Online communities of practice can provide equitable access to human and information resources that may not be available locally. These virtual communities use networking technologies to increase communication, collaboration, and support among teachers, administrators, researchers, and other related professionals and stakeholders. Project RED found that in-class mentoring is one of the most effective types of professional learning for teachers.
- **Supportive.** In successful transformations, school leaders support teachers as they try new approaches, and the school culture balances risk-taking and innovation with results and accountability. Online communities of practice enable teachers with similar interests and professional needs to share resources and ideas formally and informally. Principals and team leaders model an attitude of, "We're all learning together. We're all accountable, but we're courageous in venturing into new areas. We accept that mistakes are a valuable part of learning."
- **Ongoing.** Professional learning cannot be a one-time experience. Refine your program by asking for feedback and conducting classroom observations and evaluations. Provide time and opportunities for teachers to practice, share, reflect on, and deepen what they're learning.

Professional Learning Implementation Checklist

Key Tasks

- Improve learning outcomes by empowering teachers, principals, and others with ongoing professional learning that is personalized, supportive, and collaborative

Steps to Success

Design professional learning for teachers to cover:

New roles and learning models

- Embracing change, becoming role models for innovation
- Raising expectations for all students
- Activating students for independent learning

Curriculum, content, and lesson planning

- Understanding and applying new learning models and teaching strategies
- Designing and managing student-centered learning environments, personalized learning experiences, inquiry-based projects, etc.
- Choosing and using high-quality digital resources and content to engage students in active learning, provide deeper learning experiences, and meet diverse student needs

Assessment

- Using new data sources and assessment tools to optimize student outcomes, including methods of self-evaluation, evaluation by peers and experts, and summative and formative assessments
- Developing student-centered assessment strategies
- Aligning teaching practice with evolving assessment standards and new learning models
- Developing methods to assess student output of collaborative learning, project-based learning, etc.

Tools and solutions

- Creating online workspaces for students to collaborate, analyze complex information, pursue investigations, and solve problems
- Using learning management systems, classroom management solutions, and other tools to improve educational productivity and results

Provide professional learning to help principals and other administrators:

- Build expertise in large-scale change management, including communicating the vision of transformation and working collaboratively with teachers, the community, and other stakeholders to implement change
- Provide instructional as well as operational leadership
- Lead in creating a school culture that raises expectations for all students, reduces teacher isolation, and inspires creativity, innovation, and accountability
- Ensure that teachers have the time, resources, and support to engage in meaningful, ongoing professional learning
- Ensure that professional learning covers all relevant aspects of education transformation
- Understand new methods of assessment and increase everyone's expertise in evaluating new forms of evidence
- Increase data literacy and use new data sources to enhance teaching practice and learning outcomes
- Implement new approaches to teacher evaluation that reflect the teacher's expanding role

Preparing for an Educational Technology Initiative

- Gather and use data to design your professional learning program. Start from your program goals, curriculum framework, and desired learning outcomes, and work backward. Identify the skills needed by teachers, principals, and others, and conduct a needs assessment to identify gaps.
- Work with teachers, curriculum specialists, principals, educational technology experts, and other stakeholders to develop an integrated, ongoing plan for professional learning. Create specialized modules that are relevant to the various stakeholders, and use a mix of methods.
- Start early. Provide teachers with laptops and get your professional learning program well underway before deploying devices to students.
- Work with policymakers to ensure teachers have time, both initially and on an ongoing basis, to evaluate new curriculum approaches, choose content and resources, and develop expertise in using digital resources for greatest educational impact.
- Start with school-wide or system-wide professional learning, and move to smaller-scale activities for departments, teams, and individuals. Consider a three-step ladder where teachers learn new tools and technologies, learn how to integrate them into their lesson plans, and then have ongoing opportunities to work with colleagues and mentors to refine and expand their expertise.
- Identify teachers who are enthusiastic adopters. Use them as mentors and coaches, and have them demonstrate new resources and lesson plans.
- Invest in a solution for managing human capital. Well-designed human capital management (HCM) systems can help you build teachers' strengths and track their professional learning progress. These systems may also be useful in reducing the impact of teacher shortages and optimizing teacher placement to increase student learning.

Evolving Professional Learning as the Initiative Moves Forward

- Align technology usage with curriculum goals and requirements. Conduct technology-related professional learning within the context of curriculum, content, and assessment strategies.
- Ensure teachers have the resources and support they need to succeed. Have principals, technology/curriculum specialists, and others stay in close touch with them.
- Continue to offer a variety of professional learning options. Focus on just-in-time professional learning in which teachers drive their own learning.
- Monitor the results of your professional learning programs, and use the feedback to increase success. Are teachers using what they've learned and applying it in the classroom? If not, what additional support, incentives, or resources do they need?
- Create teams of expert teachers, curriculum specialists, instructional technology specialists, and others who can serve as mentors. Implement team-teaching assignments that pair hesitant teachers with those who are more confident.
- Implement a system of recognition and incentives. Use staff meetings and team meetings to highlight successes and innovations. Provide successful innovators with opportunities to present their work and gain recognition beyond the immediate school environment.
- Inspire culture change and innovation by modeling an attitude of openness, exploration, and excitement. Ask "what if" questions, and don't be afraid to admit when you don't know the answers.
- Adjust teacher evaluations to encourage the effective use of technology and adoption of new learning strategies. Develop plans to rectify shortcomings as needed.

CASE STUDY

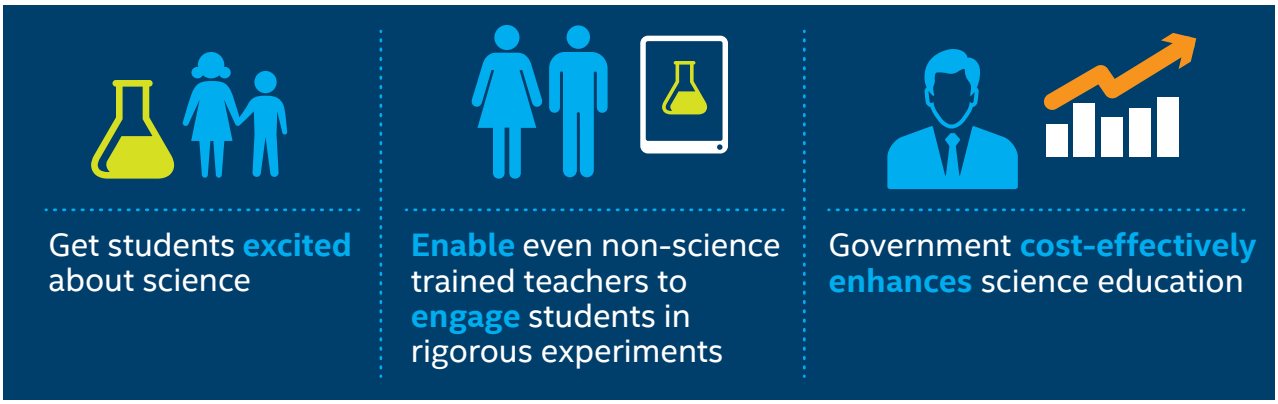
Transforming Science Education in Pernambuco, Brazil

The state of Pernambuco in northeastern Brazil has a population of 9 million people in an area of almost 99,000 sq km. Pernambuco's government has made a broad commitment to transform education as a means of advancing social and economic progress. Pernambuco has distributed more than 176,000 Intel® classmate PCs to high school students within the state, and is using Intel® Education Lab Camera by Intellisence as part of Pernambuco's comprehensive, multi-year, BRL 1 million effort to modernize pedagogy and curriculum and align it with technology.

Professional learning is part of Pernambuco's plan to gain the full educational value of its technology investment. Pernambuco is providing science software training to 800 high school physics teachers, as well as to undergraduate physics students at the Federal University of Pernambuco (UFPE) and to all physics students in undergraduate teaching courses in Pernambuco institutions.

By using the Intel Education Lab Camera together with modern pedagogic methods and mobile computers, teachers can engage students in rigorous experiments quickly and easily, without the need for expensive equipment. Students can control their experiments and bring them to life, which helps learners grasp scientific concepts and increase motivation. The government gains a cost-effective way to enhance science education, improve teacher productivity, and expand the value of its investments in mobile computing and infrastructure.

"We are changing the way we educate our students and use technology as an enabler for the student-centered learning focus of Education 3.0," says Anderson S. L. Gomes, former State Education Secretary (2011/12), Governor Special Advisor for Education, Science and Technology (first semester 2013) in Pernambuco, and now back full time as Associate Professor in the Department of Physics at UFPE. "We are taking a holistic approach and moving to the 21st century. We are changing the technology we provide our students, the way we train our teachers, and the curriculum we adopt. This will be more efficient than using old-fashioned tools, and it will develop 21st century skills for our students."



Citations

13 See Measuring the Impacts of Teachers I: Evaluating Bias in Teacher Value-Added Estimates, and Measuring the Impacts of Teachers II: Teacher value-added and student outcomes in adulthood, both by Raj Chetty, John Friedman, and Jonah Rockoff, NBER working paper 19423 and 19424, September 2013.

14 T. Greaves, J. Hayes, L. Wilson, M. Gielniak, and R.F. Peterson, *Project RED: The Technology Factor: Nine Keys to Student Achievement and Cost-Effectiveness,* MDR 2010. Available for download at http://www.pearsonfoundation.org/great-learning/research-reports-and-surveys/project-red-the-technology-factor.html.

15 Michael Fullan and Maria Langworthy, *Towards a New End: New Pedagogies for Deep Learning, Collaborative Impact,* 2013.

16 http://www.iste.org/docs/pdfs/nets-t-standards.pdf

17 http://www.iste.org/docs/pdfs/nets-a-standards.pdf

Resources

- The UNESCO ICT Competency Framework for Teachers (ICT-CFT) project provides training modules and implementation guidelines to help advance teachers' expertise in using ICT to improve the quality of education, reduce poverty and inequity, and raise standards of living. See Version 2.0, 2011, of the framework: http://www.unesco.org/new/en/unesco/themes/icts/teacher-education/unesco-ict-competency-framework-for-teachers/
- Intel® Education offers proven, professional teacher development courses and activities for 21st century skills, and is the largest, most successful program of its kind: http://www.intel.com/education/teach.
- Teachers Engage is Intel's online community offering classroom resources, online courses, and active dialogue within a global network. Participants collaborate and interact with other educators, creating private learning spaces and hosting or attending in live webinars. Join the community at: http://engage.intel.com/community/teachersengage/
- The professional learning association ASTD offers training and resources for educators and others: http://www.astd.org/Education/About/ASTD-Education
- Connected Educators (ConnectED), an initiative of the US Office of Educational Technology, offers resources to support educator learning and collaboration through online communities of practice and social networks: http://connectededucators.org/briefs/online-communities-of-practice-for-educators/
- Michael Fullan and Katelyn Donnelly provide a guide to identifying which digital content solutions offer the greatest potential for transformation: *Alive in the Swamp: Assessing Digital Innovations in Education,* Nesta and NewSchools, 2013. For more about teachers as activators and other new roles, see Michael Fullan, *Stratosphere*, Pearson Canada, 2013.
- The New Media Consortium (NMC) Academy, founded by ISTE with dozens of universities and NGOs in 15 countries, offers free, online courses and other resources for teachers of students in grades 6 through college: http://academy.nmc.org/
- For an overview of professional learning for school leaders, see eLead, *Principal Professional Development: Goals, Processes, Content & Design:* http://www.e-lead.org/principles/principal.asp