Teachers as Learners: Elements of Effective Professional Development

Kathy A. Dunne

In this age of standards, a primary focus in education has become establishing benchmarks for knowledge and skills for all students and the adults in schools who serve them. National content standards, state and local curriculum frameworks, teaching standards, standardized assessments of student learning, and measures to determine teacher licensure and teacher quality are among the myriad benchmarks to which educators are being held accountable. These measures of teaching and learning, and reports of the results of these measures, are center stage in the press, national and state political agendas, and local community conversations. Often what is missing in this national dialogue is an emphasis on the critical need for effective professional development for educators as a key to ensuring high-quality education for all students and their achievement of rigorous standards.

Education leaders—teachers, administrators, and curriculum coordinators—recognize the importance of continuous growth and learning for adults in schools. Unfortunately, they often lack the support and resources to implement effective professional development in their own schools. All too often, there is an overemphasis on expending available resources on professional development that is a "one-size-fits-all" experience. Professional development that is most relevant for teachers is focused on teachers' real work, provides teachers with opportunities to make choices about their own learning, happens over time, and contributes to building a professional culture of collaborative learning. In many schools and districts across the country, this kind of professional development is happening. However, the need to "scale up" these efforts is paramount so that educators, regardless of where they teach and lead, will be provided with high-quality professional learning experiences.

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This is an ambitious agenda requiring that we critically examine and respond to several key issues. This presentation will focus on two of those issues:

> ▶ principles of effective professional development; and

> ▶ professional development design and the use of videotape to promote effective professional development.

Principles of Effective Professional Development

Through its work with science educators throughout the country, the National Institute for Science Education has highlighted seven principles of effective professional development (Figure 1) (Loucks-Horsley et al., 1998). These principles apply to the design and facilitation of all teacher learning, regardless of content area or teacher certification area.

Figure 1
Principles of Effective Professional Development

- Driven by a vision of the classroom
- Helps teachers develop the knowledge and skills to create vision
- Mirrors methods to be used by students
- Builds a learning community
- Develops teacher leadership
- Links to the system
- Is continuously assessed

Driven by a vision of the classroom. Two important ideas converge to both describe and make the case for the importance of vision of the classroom as central in effective professional development. The first idea is that the intersection of student learning, academic content, and instructional practice become the content anchor of professional development for teachers. The second idea is that professional development is most relevant when it focuses on teachers' real work. Examining new knowledge in light of one's own students and classroom can provide a bridge that links what is only interesting to teachers to what is relevant to them.

Helps teachers develop the knowledge and skills to create vision. Benchmarks for student learning and achievement cannot be met without a clear image of how those measures of success will come to life in actual classrooms. As facilitators of learning, teachers need opportunities to create and act on their vision of high achievement for all of their students. Effective professional development experiences enhance teachers' content knowledge and content pedagogy within the framework of a teacher's vision for his or her classroom.

Mirrors methods to be used by students. Teachers need to be provided with the learning opportunities they are expected to provide students. For example, if the expectation is that teachers will implement a particular curriculum, then the teachers need to learn about the curriculum by experiencing the lessons/units. Professional development often stops at the explanation phase of new learning—the antithesis of what we want teachers to do with and for students.

Builds a learning community. There is a vital link between the growth, development, and learning of children and the growth, development, and learning of adults in schools. When students see their teachers talking about and being excited by learning, that experience positively affects how students think about their own learning. Additionally, when teachers have opportunities to learn with and from one another, a culture of collaboration and possibilities can emerge that often does not otherwise.

Develops teacher leadership. Leadership is a role that applies to all educators within schools. Typically, leadership is thought about as something that pertains only to those in formal positions of authority, e.g., directors, principals, or superintendents. However, when opportunities for leadership exist for teachers as well as administrators, the culture of schools and what those schools create and provide can be enhanced dramatically. Professional development can play a crucial role in developing and sustaining teacher leadership.

Links to the system. Professional development is not a panacea in and of itself. It is part of a larger system and when explicitly linked to that system yields a greater potential for positive impact. One of the ways to create these links is to gather and analyze pertinent data to make decisions about where a school "is" and what needs to happen next. Examples of pertinent data include student achievement data (including standardized and other assessment data that are analyzed in both aggregate and disaggregate forms); district and building goals for teaching and learning; student and teacher needs assessments; and results of current and past professional development initiatives. Through data-driven decision making, curriculum, instruction, assessment, and the related professional development can be better aligned.

Is continuously assessed. The expenditure of time, funds, and other resources for professional development needs to be justified through data that indicate positive results. The cry is often heard, "The only professional development that counts is that which makes a difference in student learning." While greater student learning is the primary goal of professional development, there are several levels of evaluating professional development programs that must be considered together in order to ultimately impact

greater student learning (Guskey, 2000). In his book *Evaluating Professional Development,* Thomas Guskey describes five levels of professional development evaluation (Figure 2).

Figure 2
Evaluating Professional Development

Evaluation Level	Questions Addressed
Participants' reactions	• Did they like it? • Was their time well spent? • Did the material make sense? • Will it be useful? • Was the leader knowledgeable and helpful? • Were the refreshments fresh and tasty? • Was the room the right temperature? • Were the chairs comfortable?
Participants' learning	• Did participants acquire the intended knowledge and skills?
Organization support and change	• What was the impact on the organization? • Did it affect organizational climate and procedures? • Was implementation advocated, facilitated, and supported? • Was the support public and overt? • Were problems addressed quickly and efficiently? • Were sufficient resources made available? • Were successes recognized and shared?
Participants' use of new knowledge and skills	• Did participants effectively apply the new knowledge and skills?
Student learning outcomes	• What was the impact on students? • Did it affect student performance and achievement? • Did it influence students' physical or emotional well-being? • Are students more confident as learners? • Is student attendance improving? • Are dropouts decreasing?

In spite of what many would agree are essential principles of effective professional development, paradoxes continue to exist. What is espoused is not always what is implemented (Figure 3).

Figure 3
Paradoxes in Professional Development

| What We Say	What We Do
• Teacher learning is at the center of change.	• In-service a couple of times a year on the innovation "du jour"
• Teaching is a complex process designed to address a wide range of learner needs.	• Staff learning that assumes all teachers learn in workshops
• We need independent, self-directed learners.	• Give teachers little input into the content and process of their learning
• Everyone is unique.	• One-size-fits-all professional development
• People learn through active engagement.	• Send teachers to lectures on active learning

Examining our context and current practices is one of the first steps in transforming principles of professional development into an effective professional development design.

Professional Development Design

While we have developed a deep knowledge base about what constitutes effective professional development, we are just beginning to understand what it takes for whole systems and organizations to learn and set up ongoing mechanisms for learning. In *Designing Professional Development for Teachers of Science and Mathematics* by Susan Loucks-Horsley, Peter Hewson, Nancy Love, and Kathy Stiles, the idea of professional development as a design task is brought to life. The authors and many other contributors looked across several national, long-term science and mathematics professional development initiatives and concluded that effective professional development is a function of design versus the attempt to replicate a particular model. Any given model may function very differently from one context to another. Consequently, these authors created an image of professional development design that includes a generic planning model and moves beyond that process by adding explicit attention to key inputs: *knowledge and beliefs, context,* and *critical issues* (Figure 4).

Figure 4
Professional Development Design Framework
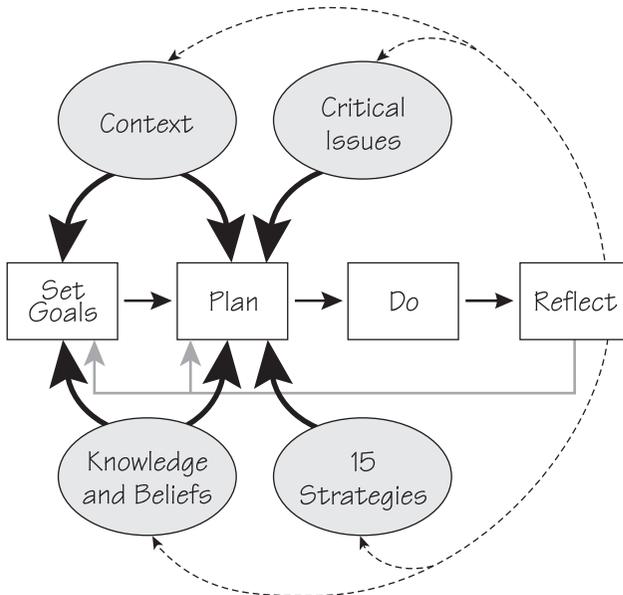
This framework suggests that as the professional development purposes are established and goals are set, three major factors must be considered before strategies are determined: *knowledge and beliefs, context,* and *critical issues.* The foundation of effective professional development design should reflect knowledge and beliefs about learners and learning, teachers and teaching; standards within the different subject areas; principles and standards of professional development; and the change process. With knowledge and beliefs as a guidepost, any professional development that is planned must be filtered through the context in which it will take place. Designers of professional development must consider contextual factors such as their students; the knowledge and experiences of teachers; current practices, curriculum, instruction, assessment and the learning environment; state and local policies; available resources; the organizational culture and structures; and the history of professional development in that school or setting. The third input for professional developers to consider is how they will handle critical issues such as ensuring equity, building professional culture, developing leadership, building capacity for professional learning, scaling up resources, garnering public support, supporting standards and frameworks, evaluating professional development, and finding time for professional development. Finally, depending on the purpose(s) and desired results of the professional development effort, professional development strategies are selected that address the stated purposes: *constructing knowledge, translating knowledge into practice,*

practice teaching, and *reflection.* This framework begins by encouraging educators to consider the intended results, the context, and what will work before deciding on a particular professional development strategy. This is a far cry from professional development planning that starts out with "let's have an in-service day!"

Figure 5 illustrates the relationship between specific purposes of professional learning and professional development strategies that best serve those pur-poses.

Figure 5
Aligning Purpose with Professional Development Strategies

	Purposes of Professional Development			
	To Construct Knowledge	**To Transfer Knowledge into Practice**	**To Practice Teaching**	**To Promote Reflection**
Strategies Aligned to Purposes of Professional Development*	• Workshops, institutes, courses, and seminars • Immersion in the world of business, science, mathematics, and/or other academic content • Immersion in inquiry in science, mathematics, and/or other academic content	• Curriculum development • Mentoring	• Curriculum implementation • Replacement units • Coaching	• Study groups • Case discussions • Action research • Examining student work

* See Appendix for a more detailed description of these strategies.

Images of Strategies in Action

Providing professional developers with real-life images of several of the pro-fessional development strategies *in action* is a primary goal of the *Teachers as Learners* project.

Teachers as Learners: Professional Development in Science and Mathemat-ics was funded by a grant from the National Science Foundation. WestEd, WGBH, the Museum of Science in Boston, the Education Development Center, and Horizon Research, Inc., collaborated to develop a 17-videotape library that provides images of K–12 science and mathematics professional

development. By examining the videotape images, professional developers can uncover some of the powerful subtleties of professional development design and implementation as they construct their own professional development programs and initiatives. The following describes a clip from one of the tapes, entitled *Examining Content and Student Thinking.*

A Verbal Video Clip—Examining Content and Student Thinking

Background

Jeremiah E. Burke High School is one of two schools in Boston collaborating with TERC, a nonprofit education research center based in Cambridge, Massachusetts, around the Urban Calculus Initiative (UCI). A primary goal of UCI is to prepare students to study calculus by the twelfth grade. To help reach this goal, teachers at participating schools meet monthly with researchers to reflect on classroom practices and ways of understanding and teaching mathematical concepts. Through collaborative, hands-on professional learning opportunities, teachers deepen their own mathematical content knowledge and content pedagogy.

About the Video Clip

In the second section of the tape Examining Content and Student Thinking, a group of teachers participates in an afternoon study group. Mweusi Willingham, a high school mathematics teacher at Jeremiah Burke, facilitates a study group session where teachers look at several student responses on a standardized assessment item. Some of the questions they explore include:

- What is this problem assessing?
- What can we expect to find out about students' knowledge and skills from their responses to this problem?
- What are some implications for how we teach for deeper mathematical understanding and problem solving?

Through a teacher-led discussion, this group of secondary mathematics teachers looks critically at the power of understanding student thinking and how analysis of student work and assessment can deepen that understanding.

Conclusion

Creating the conditions for teachers to teach and teach well is a crucial factor for greater student learning and achievement (Darling-Hammond, 2000). Effective, engaging, and relevant professional development experiences can help teachers provide all students with experiences that lead to greater learning and achievement. We need to take what we already know about how to promote learning in the classroom and apply this knowledge, through purposeful design, to professional development programs for all educators. When adults and children in schools learn and grow together, we create positive school cultures and committed learning communities.

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Appendix

Aligning Strategies with Purposes of Professional Development

If the primary professional development purpose is to construct knowledge, then consider:

Workshops, institutes, courses, and seminars—structured opportunities outside of the classroom, for educators to learn from others with more expertise than they have. They provide teachers with a chance to focus intensely on topics of interest, often over time.

Immersion in the world of business, science, and or mathematics—intensive immersion in the day-to-day work of a content-knowledgeable professional often in a laboratory or museum, with the teacher fully participating in research activities.

Immersion in inquiry in science and mathematics—engagement of teachers in experiencing what they are expected to practice, i.e., inquiry-based science investigations.

If the primary professional development purpose is to transfer knowledge into practice, then consider:

Curriculum development and adaptation—teachers work individually or in teams to identify and/or develop new curriculum materials that are aligned with the teachers' new knowledge or approach.

Mentoring—teachers work with a mentor, defined as an experienced adult who guides a less experienced adult. The work is focused on improving teaching and learning and includes a variety of activities including coaching, modeling, supporting, etc.

If the primary purpose of professional development is to practice teaching, then consider:

Curriculum implementation—emphasizing curriculum as the focus of conversations among teachers about teaching. Teachers use curriculum in their classrooms, report on what happens, and talk with other teachers about the strengths and weaknesses of the curriculum. Through the process they learn about their teaching and their students' learning. (Ball, 1996.)

Replacement units—teachers select and implement special student learning activities that address one topic or concept and are written to elicit thoughtful, investigative problem solving from children. Replacement units give teachers a chance to use new teaching practices without replacing their entire curriculum and experience trying new approaches to teaching.

Coaching—peer coaching is a teacher-to-teacher interaction aimed at improving instruction. There are many other professional development

approaches called coaching—technical coaching, collegial coaching, cognitive coaching, etc. The practice focuses on a coach observing teachers and engaging in reflection, analysis, and problem solving to enhance teaching. (Showers and Joyce, 1996)

If the primary professional development purpose is to promote reflection, then consider:

Study groups—a regular collaborative environment or mechanism through which teachers examine new information, reflect on their practice and outcome data, and share ideas. Study groups are often used to support implementation of a new program or curriculum, to institutionalize, refine or extend existing programs and/or practices, and to learn about recent educational research. (Makibbin and Sprague, 1991)

Case discussions—opportunities for teachers to examine narrative stories or videotapes of classroom teaching or learning situations. This strategy is focused on changing teachers' beliefs about teaching and learning, providing opportunities to discuss teaching situations, and encouraging teachers to be reflective problem solvers.

Action research—teachers examine their own teaching and their students' learning by engaging in a research project in their classroom. Through descriptive reporting, purposeful conversations, collegial sharing, and reflection, teachers improve classroom practice. (Miller and Pine, 1990)

Examining student work and scoring assessments—teachers examine student work to assess growth and to identify and plan their teaching strategies and curriculum.