Systemic vs. one-time teacher professional development: what does research say?

Research Note 15

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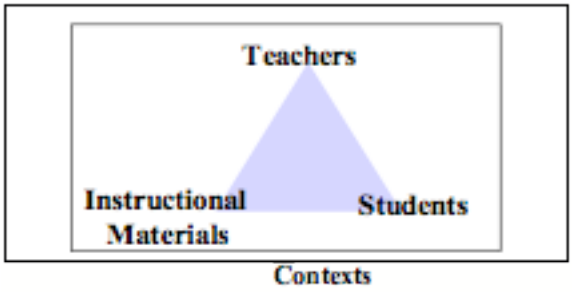
A growing consensus of researchers and practitioners has found that systemic, ongoing teacher professional development is more effective than traditional one-time workshops.

What is Effective Professional Development?

Effective professional development focuses on improving instructional practice by giving teachers new knowledge and techniques for assessing learning with the ultimate goal of improving the learning of students (Wei et al., 2009). Over the years, research has shown the need for an integrated professional development approach that touches all aspects of instruction and includes the time necessary to have a lasting impact and result in changes.

Figure 1 shows a model of instruction as a dynamic activity that occurs over time and through multiple interactions of teachers, students, and curricular materials within a specific school context. For professional development to lead to substantial instructional changes and improvements in student learning, it needs to (1) address all aspects of the instructional triangle and their interactions in context, (2) be implemented in a highly aligned manner and (3) include time for teachers to collaborate during the change process. The triangle in Figure 1 highlights the students, teachers, and instructional materials, but *the context* in which they interact is also essential to the success of the professional development. Every school has its own unique context, and this context needs to be considered carefully in professional development.

Figure 1. The Instructional Triangle: Instruction as interactions among the teacher, students, and instructional materials, in context.



Source: Cohen & Ball (1999, 2000)

Research has shown that one-time professional development workshops are often outside of the context of the school, not typically aligned with ongoing practice, and do not reliably lead to changes in classroom teaching (Loucks-Horsley, et al., 1999).

Teaching occurs in particulars: particular students interacting with particular teachers over particular ideas in particular circumstances. Teachers need to learn “in and from practice” (Ball & Cohen, 1999). Learning in and from practice allows other important components of effective professional development to occur.

First, it gives teachers time to collaborate with other teachers and school colleagues. Second, it allows more sustained learning and professional development to occur since it becomes part of the work rather than “an additional” piece of work. And third, it allows work to be well integrated in a very meaningful, concrete way that addresses specific problems teachers have in their own classroom. The importance of grounding teacher training and learning in ongoing practice is a necessary component in developing teachers’ expertise. (Putnam & Borko, 2000).

Examples of Successful Professional Development

A study by Saxe, Gearheart, and Nasir (2001) provides evidence for the effectiveness of professional development that integrates teacher knowledge, ongoing assessment of students, and opportunities for teachers to work together. This study compared three groups: two professional development programs on elementary school students' understandings of fractions plus a control group.

The two programs, Integrated Mathematics Assessment (IMA) and Collegial Support both offered teachers opportunities to work with other teachers around implementing a reform curriculum unit on fractions, but the IMA program also included a focus on subject matter knowledge for the teachers, pedagogy, and student thinking. The control group used a traditional textbook and methods instead of the reform curriculum unit and received no professional development support or time to work with others.

The study found that students of teachers in the IMA program showed the greatest gains in conceptual understanding of fractions. This work indicates that integrating new knowledge for teachers around pedagogy and content, along with time to work with colleagues in meaningful, guided ways, is one way to provide effective professional development that impacts students in positive ways.

Similar professional development strategies that focused on student thinking along with teachers' content knowledge and pedagogy are reported in the Cognitively Guided Instruction (CGI) program (Carpenter, Feneman, Peterson, Chiang, & Loef, 1989).

Researchers found that CGI teachers placed greater emphasis on problem-solving ability and less on computational skills, expected more multiple-solution strategies, listened to their students more, and knew more about their students' thinking than did non-CGI teachers. The students also performed significantly better than students being taught with other methods.

A study investigating California's decade-long campaign to improve elementary mathematics teaching showed that state policy had a constructive influence on teachers and students when there was alignment among the tests, curricula, and classroom practices, and when teachers had substantial opportunities to learn the practices proposed by the policy (Cohen & Hill, 2001). Without the right conditions and the time to learn, the professional development effort was not successful.

Professional Development Aligned to the School's Reform Effort

Reform efforts often include in-depth interactions between peers such as coaching and mentoring practices that are close to a teacher's classroom and centered on the reform effort (Cohen & Hill, 2001; Garet, Porter, Desimone, Birman, & Yoon, 2001; Penuel, Fishman, Yamaguchi, & Gallagher, 2007). Reform efforts are good ways to implement professional development (Loucks-Horsley, et al., 1998; Putnam & Borko, 2000). Since the reform affects everyone in the school, the work a teacher does to improve often aligns with the work being done in the rest of the school (Penuel, et al., 2007).

Fishman and colleagues (2003) describe a successful science professional development program undertaken in an urban systemic reform program, which focused on areas students needed to improve in, content and pedagogical knowledge, time for teachers to work together and learn, and a way to document improved student outcomes.

Professional Development and Technology

When teachers begin to use new instructional technology, such as graphing calculators, computers, or handheld devices, there is often a period of time when they feel lost and unsure what to do with the new technology. This has been documented as a common stage (Power & Thomas, 2007) and can last from six months to two years. Ongoing support can help decrease this "lost time."

In a study focusing on TI-Navigator™ system implementation in the classroom, teachers had 4 to 9 days of formal professional development, but teacher competence was greatly increased when the teachers had access to a mentor in their school, or to a mentor-teacher in the classroom (Sinclair, et al., 2008).

In addition, providing sustained support through mentors or coaches often improves the implementation of innovations. TI MathForward™ is a program that includes many elements of effective professional development, including ongoing coaching. In an implementation study of the TI MathForward program, teachers reported they valued the ongoing coaching and the feedback from coaches either during the course of informal conversation or in support of classroom work during observations. The teachers reported it helped them develop new approaches to solving mathematical problems (Penuel, et al., 2008).

Another way technology can help in professional development is by giving teachers online sites to use to interact with other teachers or professional development providers to support for their work (Schlager, et al., 2003; Dede, et al., 2009). Online teacher professional development can extend the reach of traditional teacher professional development in many ways.

For example, online professional development can allow more teachers to participate since travel is not necessary. For the same reason, it can also bring in expertise not normally available within a school, and it can provide just-in-time help, making it more job-embedded and in context as teachers need it. In addition, online teacher professional development efforts can be sustained over months and years.

Other Important Practices in Professional Development

Professional development should bring teachers, administrators, staff members and professional development providers together in a co-development process to create a culture with dispositions for continuous professional learning.

Having administrator support is essential for adoption of new teaching practices and continued use. Teachers need to be involved in the shaping of the professional development so they can insure it aligns with their goals. In addition, as part of this long-term, ongoing process, teachers need to continually and formatively assess both their own learning and that of their students. In some states, new teachers are taught how to specifically assess their own practice to continually improve (Wei, 2009).

A promising new practice is helping teachers learn techniques and pedagogy to successfully utilize formative assessments in their classrooms to be aware of what their students understand, and more importantly what they do not understand so they can guide students to understanding. In the context of formative assessment, teachers can help students understand how to self-regulate and assess their own learning. (Sanalan, et al., 2008).

How Much Time is Necessary?

There is never enough time in the school day (or year) for teachers to do all of the things that need to be done, but time is a necessary component for learning to occur. It takes extended time to implement changes in practice and classroom culture (Supovitz & Turner, 2000). However, by making professional development efforts align, and by including job-embedded time, improvement becomes possible.

Yoon et al., (2007) examined nine controlled studies of professional development efforts to determine how much time is necessary for an impact. Of course, in general, the more time invested, the better the results. Yoon and colleagues noted that when efforts were less than 30 hours, they showed no significant effects on student learning. Efforts that ranged between 30 and 100 hours, with an average of 49 hours, showed positive and significant effects on student achievement.

Yoon's work also found that professional development efforts that were directly related to a teacher's practice, that were integrated with other school reform efforts and that engaged teachers in collaborative communities, were also more effective.

For more information on two studies included in Yoon's research, see the above discussion on Saxe, et al., (2001) focusing on increasing students' conceptual understanding of fractions through increasing teachers' pedagogical and content knowledge and providing time for collegial support, and Carpenter, et al., (1989) focusing on cognitively guided instruction in mathematics teaching. Other studies included in Yoon's work focused on reading and writing.

What are the Most Effective Strategies for Sustained Teacher Learning?

No single strategy will always work in every school, for every teacher, all of the time. Local customization is necessary for the success of programs of teacher learning or professional development (Fishman, et al., 2003). Many professional development programs customize the offerings and include several strategies in one intervention, e.g., a workshop that supports formal learning combined with teacher coaching or planning time with colleagues. Having continual support while teachers are making changes, either in the form of a series of workshops or informal collegial support, or both, is essential.

Current research tells us that effective professional development models include improving teacher knowledge, providing job-embedded opportunities to collaborate around issues that are very proximate to the classroom and investing enough time to create learning (Wei, et al., 2009; Penuel et al., 2007).

A call for a change in the way we think about professional development is necessary. Instead of thinking about professional development as a quick effort, think about it as learning and realize that it takes time for learning to occur (Wei, et al., 2009). Creating and integrating all of the pieces—including enough time—may be a challenge, but by doing so, the results—more knowledgeable teachers and students who learn more—will be well worth the effort.

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