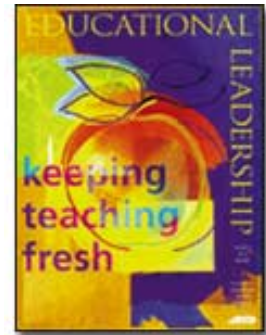




Designing Professional Development That Works

Evidence supporting the effectiveness of professional development is often anecdotal. A research-based study names six factors with great potential for achieving results.



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What's the best way to raise the academic achievement of our students? Standards-based reform emphasizes improved teaching as the best path to increased learning. But students' learning will be transformed only if teachers' classroom practices reflect high standards. Many teachers, however, are not prepared to implement appropriate teaching practices (Porter & Brophy, 1988).

Professional development plays a key role in addressing the gap between teacher preparation and standards-based reform; it is a key focus of U.S. efforts to improve education. Much of the professional development that is offered to teachers, however, simply does not meet the challenges of the reform movement (Corcoran, 1995; Darling-Hammond, 1995; Hiebert, 1999; Lieberman, 1996; Little, 1993; Sparks & Loucks-Horsley, 1989).

What Approaches Are Effective?

To identify effective staff development, we surveyed a nationally representative probability sample of more than 1,000 teachers who participated in professional development sponsored in part by the federal government's Eisenhower Professional Development Program. This program is Title II of the Elementary and Secondary Education Act and was funded at \$335 million in 1999. It focuses on developing the knowledge and skills of classroom teachers, mostly in mathematics and science. As part of the national evaluation, we also conducted six exploratory case studies and 10 in-depth case studies in five states (Garet, Birman, Porter, Desimone, & Herman, 1999).

By studying the literature and analyzing the survey data, we identified three structural features that set the context for professional development.

Form. Was the activity structured as a "reform" activity (study group, teacher network, mentoring relationship, committee or task force, internship, individual research project, or

teacher resource center, for example) or as a traditional workshop or conference?

Duration. How many hours did participants spend in the activity and over what span of time did the activity take place?

Participation. Did groups of teachers from the same school, department, or grade level participate collectively, or did teachers from different schools participate individually?

In addition to the structural features, we identified three core features that characterize the processes that occur during a professional development experience.

Content focus. To what degree did the activity focus on improving and deepening teachers' content knowledge in mathematics or science?

Active learning. What opportunities did teachers have to become actively engaged in a meaningful analysis of teaching and learning? For example, did they review student work or obtain feedback on their teaching?

Coherence. Did the professional development activity encourage continued professional communication among teachers and incorporate experiences that are consistent with teachers' goals and aligned with state standards and assessments?

Our analyses estimated the relationship between the characteristics of professional development and teacher outcomes, while holding constant the subject area (mathematics or science); school poverty level, percentage of minority students, and school levels (elementary, middle, and high schools); and teacher gender, certification, and years of experience. We hypothesized that by focusing on specific mathematics and science content, by engaging teachers in active work, and by fostering a coherent set of learning experiences, a professional development activity is likely to enhance the knowledge and skills of participating teachers and improve their classroom teaching practice. This, of course, serves the ultimate goal of improved student learning.

Using teachers' detailed descriptions of their professional development, we estimated a formal causal model to identify effective characteristics of professional development. We find support for our model in that the structural characteristics of professional development activities affect the core features of the activities. The core features, in turn, influence how successful the experience is in increasing teacher-reported growth in knowledge and skills and changes in teaching practice. (See Garet, Birman, Porter, Desimone, & Herman [1999] for the full model.)

Form

Recent literature on professional development emphasizes the importance of changing its form, suggesting that traditional approaches are less effective than reform approaches. Traditional formats are criticized for not giving teachers the time, the activities, and the content necessary for increasing their knowledge and for fostering meaningful change in their classroom practice (Loucks-Horsley, Hewson, Love, & Stiles, 1998). Reform activities, in contrast, are thought to be more responsive to how teachers learn (Ball, 1996) and have more influence on changing teaching practice (Darling-Hammond, 1995, 1996; Hargreaves & Fullan, 1992; Little, 1993;

Richardson, 1994; Sparks & Loucks-Horsley, 1989; Stiles, Loucks-Horsley, & Hewson, 1996).

We did find that activities of the reform type are more effective primarily because they are longer and thus have more content focus, active learning opportunities, and coherence. When traditional forms of activities, such as workshops or institutes, are longer, they, too, have better core features and are just as effective.

In the small, rural district of Rainforest, Washington, professional development with a traditional format—a five-day summer science institute—had high-quality, effective features.¹ The institute's activities extended over the subsequent school year through in-class observations, modeling, and coaching of teachers by the district's well-respected science coordinator. Because the district expected all science teachers, elementary through high school, to attend, collective participation also characterized the institute because the teachers shared the same learning experience.

Rainforest illustrates that the characteristics of the activity, not the form, matter. Effective staff development can be traditional workshops or can be innovative teacher immersion or network activities as long as it has appropriate duration, subject-matter content, active learning, and coherence.

Duration

Our research indicates that activities of longer duration have more subject-area content focus, more opportunities for active learning, and more coherence with teachers' other experiences than do shorter activities. Project Science, a professional development activity in Middle City, Wisconsin, extended throughout a full year. The project involved teams of teachers from different schools in developing and administering performance assessments.

The project included a summer institute and two-hour monthly meetings during the school year. These networking sessions focused on curriculum and learning issues and on the development of assessment instruments. In these meetings, teachers shared progress, difficulties, ideas, issues, and needs. Project Science illustrates how extended duration facilitates high-quality substance.

Collective Participation

Our study shows that professional development activities that include collective participation—that is, the participation of teachers from the same department, subject, or grade—are more likely to afford opportunities for active learning and are more likely to be coherent with teachers' other experiences.

Collective participation has a number of advantages. It enables teachers to discuss concepts and problems that arise during the staff development activity. In addition, collective participation gives teachers the opportunity to integrate what they learn with other aspects of their instructional content, because teachers from the same school, department, or grade are likely to share common curriculum materials, course offerings, and assessment requirements.

Collective participation also may contribute to a shared professional culture in which teachers in a school or teachers who teach the same grade or subject develop a common understanding

of instructional goals, methods, problems, and solutions (Ball, 1996; Newmann & Associates, 1996).

Maple City, Ohio, offered subject-specific, half- to full-day inservice activities by grade level. Teachers shared information and instructional practices, reviewed instructional materials, and engaged in hands-on activities to improve their skills. The activities supported an integrated approach that emphasized bridging instruction across contiguous grade levels.

Teacher-leaders helped teachers implement new practices by serving as mentors in their classrooms. Leaders planned with teachers, team taught, and gathered necessary supplies. In addition, teachers had time during the school day to get together to discuss what worked and what didn't. The opportunities for teachers from the same grade level at a school to participate together created a learning community.

Content

In our study, the degree to which professional development focuses on content knowledge is directly related to teachers' reported increases in knowledge and skills. Teachers do not find generic professional development that focuses on teaching techniques without also emphasizing content to be effective. Our findings are consistent with several recent studies that document the profound importance of content (Cohen & Hill, 1998; Kennedy, 1998).

Focusing on content means targeting a staff development activity on a specific subject area or on a subject-specific teaching method, such as increasing teachers' understanding of motion in physics or of the way elementary students solve story problems in mathematics. It avoids general teaching methods, such as lesson planning or grouping methods.

In Riverside, Washington, staff development focused on a 10-year effort to overhaul the elementary science curriculum. The work began in earnest in 1990, when many of the district's teachers attended 30-hour classes at a local university. The classes were intended to help teachers understand concepts in the life, earth, and physical sciences.

In response to teachers' enthusiasm for the courses, some teachers took advanced classes in these concepts over the next few years. By 1993, a core group of teachers began creating science curriculum kits that included instructions and materials. Teachers built some of the kits; they purchased others from outside sources. Now professional development in Riverside involves a "train-the-trainer" model, in which teachers observe classes taught by teachers who have expertise in the kits.

If teachers are expected to teach to new standards, including complex thinking skills, it is essential that they have a sophisticated understanding of the content and of how students learn that content. Professional development in Riverside meets that challenge.

Active Learning

In our national study, teachers whose professional development includes opportunities for active learning report increased knowledge and skills and changed classroom practice. Active learning encourages teachers to become engaged in meaningful discussion, planning, and

practice as part of the professional development activity (Lieberman, 1996; Loucks-Horsley et al., 1998). Active learning includes opportunities to observe and be observed teaching; to plan classroom implementation, such as practicing in simulated conditions and developing lesson plans; to review student work; and to present, lead, and write—for example, present a demonstration, lead a discussion, or write a report.

In West City, California, two skilled in-house facilitators coached and supported elementary teachers, including demonstrating lessons and helping with planning. Teachers who received intensive coaching generally spent one to two hours a week in prelesson discussion, demonstration lessons, and postlesson feedback.

In Texas, 6th grade teachers participated in the Physical Science Enhancement and Math Integration program offered by a local university. During a six-week summer institute, teachers kept journals, model classrooms helped teachers learn new strategies, and instructors videotaped teachers in the classroom and provided feedback. In addition, the project encouraged participants to form a support network during the school year. Finally, the activity leaders spent about 200 hours in the teachers' classrooms during the following school year, observing and offering guidance. These two programs illustrate the importance of active learning in professional development.

Coherence

In our study, the coherence of professional development with policies and other professional experiences is directly related to increased teacher learning and improved classroom practice. Education experts frequently criticize professional development on the grounds that the activities are disconnected from one another; an activity is more likely to be effective in improving teachers' knowledge and skills if it forms a coherent part of a wider set of opportunities for teacher learning and development.

Coherence indicates the extent to which professional development experiences are part of an integrated program of teacher learning—activities that are consistent with teacher goals, build on earlier activities, are followed by additional activities, and involve teachers in discussing their experiences with other teachers and administrators in the school. Activities are also coherent when they support national, state, and district standards and assessments.

The Riverside Elementary Science Kit project described earlier is an example not only of a content-focused activity, but also of professional development that is aligned with standards. By 1998, the teachers had prepared 31 science kits. Subsequent professional development workshops developed standards for scoring the student work included in the kits. After completing the workshops, the teachers understood which state and national standards the science kits addressed and what goals for student learning each kit embodied.

How Prevalent Are Effective Staff Development Practices?

Although our examples show that some schools and districts do offer high-quality staff development, teachers' professional development experiences tend overall to be a mix of high- and low-quality structural or core features. (Our frequency data refer to the percentage of

teachers who participate in professional development activities funded in part by the Eisenhower Professional Development Program; the characteristics of activities not supported by Eisenhower may differ.)

For example, the majority of teachers (79 percent) in our study participate in Eisenhower-supported staff development that is traditional in form; the median number of hours of an activity is 15; and most teachers (64 percent) participate in activities that last only a week or less. Further, few teachers (20 percent) participate in activities that include collective participation. Fifty-one percent of teachers participate in Eisenhower-supported activities that emphasize content, but relatively few (between 5 and 16 percent) report opportunities for specific active-learning activities, such as being observed teaching or leading a group discussion.

Further, although most teachers (80 percent) participate in Eisenhower-supported staff development that is aligned to state and district standards, is consistent with other goals (79 percent), and involves discussion with other teachers (73 percent), few experience other aspects of coherence. For example, only 35 percent of teachers are in activities that build on earlier activities. The number of teachers who experience professional development with all six characteristics of high-quality professional development is very small.

Why do so few professional development activities have these desirable features? First, providing activities with multiple high-quality features is challenging and requires a substantial amount of lead time and planning, which schools and districts may not always have. Second, these features are expensive. We estimate that it costs an average of \$512 to give a teacher a high-quality professional development experience, which is more than twice the amount that districts typically spend.

Our national probability sample results, backed by case studies of selected sites, support and extend previous work in identifying six key features of effective professional development. Specifically, our research indicates that professional development should focus on deepening teachers' *content knowledge* and knowledge of how students learn particular content, on providing opportunities for *active learning*, and on encouraging *coherence* in teachers' professional development experiences. Schools and districts should pursue these goals by using activities that have greater *duration* and that involve *collective participation*. Although reform *forms* of professional development are more effective than traditional forms, the advantages reform activities are explained primarily by the greater duration of the activities. Our research also identifies the high-quality characteristics that are more prevalent (coherence) and those that are less common (active learning).

Given the central role of teachers in making standards-based reform successful, it is essential that staff development provide the content and opportunities necessary to foster teacher learning and changes in practice. A major challenge is cost. Schools and districts understandably feel a responsibility to reach large numbers of teachers. But a focus on breadth in terms of the number of teachers reached comes at the expense of depth in terms of the quality of the experience. The questions, then, are, Should districts continue to spread professional development across as many teachers as possible? Or should they focus on a

smaller number of teachers so that they provide higher-quality, more influential professional development?

This is a tough choice for most schools and districts, where serving a smaller number of teachers is not a politically popular decision. But our results suggest a clear direction: To provide useful and effective professional development that has a meaningful effect on teacher learning and fosters improvements in classroom practice, schools and districts should focus funds on high-quality professional development experiences, either by serving fewer teachers or by investing more resources.

Endnote

¹ The city names are pseudonyms.

References

Ball, D. L. (1996). Teacher learning and the mathematics reforms: What we think we know and what we need to learn. *Phi Delta Kappan*, 77(7), 500–508.

Cohen, D. K., & Hill, H. C. (1998). *Instructional policy and classroom performance: The mathematics reform in California (RR-39)*. Philadelphia: Consortium for Policy Research in Education.

Corcoran, T. B. (1995). *Transforming professional development for teachers: A guide for state policymakers*. Washington, DC: National Governors Association.

Darling-Hammond, L. (1995). Changing conceptions of teaching and teacher development. *Teacher Education Quarterly*, 22(4), 9–26.

Darling-Hammond, L. (1996). What matters most: A competent teacher for every child. *Phi Delta Kappan*, 78(3), 193–201.

Garet, M., Birman, B., Porter, A., Desimone, L., & Herman, B. (with Suk Yoon, K.). (1999). *Designing effective professional development: Lessons from the Eisenhower Program*. Washington, DC: U.S. Department of Education.

Hargreaves, A., & Fullan, M. G. (1992). *Understanding teacher development*. London: Cassell.

Hiebert, J. (1999). Relationships between research and the NCTM standards. *Journal for Research in Mathematics Education*, 30(1), 3–19.

Kennedy, M. M. (1998). *Form and substance in in-service teacher education* (Research monograph no. 1). Arlington, VA: National Science Foundation.

Lieberman, A. (Ed.). (1996). Practices that support teacher development: Transforming conceptions of professional learning. In M. W. McLaughlin & I. Oberman (Eds.), *Teacher learning: New policies, new practices* (pp. 185–201).

New York: Teachers College Press.

Little, J. W. (1993). Teachers' professional development in a climate of educational reform. *Educational Evaluation and Policy Analysis*, 15(2), 129–151.

Loucks-Horsley, S., Hewson, P. W., Love, N., & Stiles, K. E. (1998). *Designing professional development for teachers of science and mathematics*. Thousand Oaks, CA: Corwin Press.

Newmann, F. M., & Associates. (1996). *Authentic achievement: Restructuring schools for intellectual quality*. San Francisco: Jossey-Bass.

Porter, A. C., & Brophy, J. E. (1988). Good teaching: Insights from the work of the Institute for Research on Teaching. *Educational Leadership*, 45(8), 75–84.

Richardson, V. (Ed.). (1994). *Teacher change and the staff development process: A case in reading instruction*. New York: Teachers College Press.

Sparks, D., & Loucks-Horsley, S. (1989). Five models of staff development for teachers. *Journal of Staff Development*, 10(4), 40–57.

Stiles, K., Loucks-Horsley, S., & Hewson, P. (1996, May). *Principles of effective professional development for mathematics and science education: A synthesis of standards, NISE Brief (Vol. 1)*. Madison, WI: National Institutes for Science Education.

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