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Professional development that changes practice

Professional development is a cornerstone of any reform efforts designed to increase teachers' capacity. Effective professional development requires substantial resources, but education budgets nationwide are limited. The federal government, states, districts, and schools have to make difficult choices about whether to sponsor shorter, less in-depth professional development that serves a large number of teachers or more effective, focused, and sustained professional development that serves a smaller number of teachers.

Two recent studies by Laura Desimone, Andrew Porter, Michael Garet, Beatrice Birman, and Kwang Suk Yoon support the idea that districts and schools might have to focus professional development on fewer teachers to provide the type of high-quality activities that are effective in changing teaching practice.

The researchers conducted a national cross-sectional study and a follow-up longitudinal study to (a) identify the key features of effective professional development activities, (b) determine the prevalence of such activities, and (c) examine the extent to which such activities influence teachers' classroom practice in mathematics and science. Both studies were conducted as part of an evaluation of the Eisenhower Professional Development Program (Title II of the

Elementary and Secondary Education Act). At the time of the study, the Eisenhower program was the federal government's largest investment solely focused on developing the knowledge and skills of classroom teachers.

Features of effective professional development

In their national study, Desimone and colleagues identified six key features of effective professional development. The first three are structural features that pertain to the form or organization of the activity:

1. **Reform type:** The extent to which the activity reflects a reform approach (e.g., study groups, teacher networks, mentoring relationships, committees or task forces, internships, individual research projects, or teacher research centers) rather than a traditional approach (e.g., workshops, courses, or conferences)
2. **Duration:** The duration of the activity, including the total number of contact hours and the span of time over which the activity takes place
3. **Collective participation:** The degree to which the activity emphasizes the collective participation of groups of teachers from the same school, department, or grade level, as opposed to the participation of individual teachers from many schools.

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FROM THE DIRECTOR

Research into practice

Welcome to a redesigned *Highlights* newsletter. It has been nine years since we have changed its look and feel.

The new look aims to better complement our web site www.wcer.wisc.edu. Our site is becoming an increasingly important mode of communication, and offers content beyond what we can squeeze into these eight pages.

Despite the updated look and title, *WCER Research Highlights* remains focused on the work of WCER—findings and products we believe practitioners, policymakers, and researchers will find useful in their work. The publication continues the *Highlights* tradition of focusing on brief, readable accounts of recently completed work. In most cases the interested reader is referred to readily accessible documents providing more complete coverage of what was learned and how.

This issue presents recent work in professional development for in-service and pre-service teachers. We hope you enjoy the new look and find the newsletter readable and useful. Your comments are welcome. The editor can be reached at pbaker@wisc.edu.

WCER recently launched an online working paper series to achieve broader, more rapid dissemination of WCER research. The WCER Working Paper Series includes a variety of publications, from manuscripts-in-progress ultimately destined for publication in professional journals to technical documents such as instruments, surveys, questionnaires, and handbooks. All working papers are available in PDF format.

The working paper site also links to the independent publication sites maintained by individual WCER projects, thus offering quick access to the full range of WCER publications.

The working paper series can be found at <http://www.wcer.wisc.edu/publications/workingpaper/>.

Andy Porter

The remaining three features are core features, or characteristics of the substance of the activity:

4. **Active learning:** The extent to which the activity offers opportunities for active learning—that is, opportunities for teachers to become actively engaged in the meaningful analysis of teaching and learning (e.g., by reviewing student work or obtaining feedback on their teaching)
5. **Coherence:** The degree to which the activity promotes coherence in teachers' professional development by incorporating experiences that (a) align with teachers' goals and state standards and assessments and (b) encourage continuing professional communication among teachers
6. **Content focus:** The degree to which the activity emphasizes improving and deepening teachers' content knowledge in mathematics and science

Analyzing national, cross-sectional data, the researchers found that these six key features of effective professional development were related to increases in teachers' self-reported knowledge and skills and to changes in teaching practice. Activities of the reform type were more likely to involve collective participation and longer duration, and activities with collective participation and longer duration were more likely to offer active learning opportunities, coherence, and a content focus. These features, in turn, were related to how successfully the experience increased teacher-reported growth in knowledge and skills and changes in teaching practice.

The research determined, however, that most district-supported professional development activities did not have the six high-quality characteristics. An average of only 23% of teachers participating in Eisenhower-assisted professional development were in reform types of professional development. The average time span of professional development activities was less than a week. The average number of contact hours was 25, and the median was 15 hours. Most activities did not involve collective participation or emphasize content; and most activities had limited coherence and a small number of active learning opportunities.

Impact of professional development on classroom practice

Desimone and colleagues also collected longitudinal data over a 3-year period (1996–99) from a sample of teachers in 30 schools



in 10 districts and five states to document teaching practices in mathematics and science before and after a professional development activity and to determine the extent to which participation in the activity predicted changes in teaching practice.

The longitudinal data enabled the researchers to analyze relationships

Laura Desimone

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Enhancing school capacity through professional development

How do schools, as organizations, affect teachers' learning and practice, and student achievement? How can professional development enhance school capacity?

Bruce King, Fred Newmann, and Peter Youngs recently documented the ways professional development can address three key dimensions of school capacity: teachers' knowledge, skills and dispositions; teachers' professional community; and program coherence.

(Principal leadership and technical resources are other dimensions of their model of school capacity, but this study focused on the three dimensions that seemed especially susceptible to improvement through professional development.)

- 1. Teachers' knowledge, skills, and dispositions.** Staff members must be professionally competent in instruction and assessment appropriate to the curriculum for their students, and they must hold high expectations for all students' learning.
- 2. Professional community.** Teachers' individual knowledge, skills, and dispositions must be put to use in an organized, collective enterprise. A strong professional community consists of (a) clear shared goals for student learning, (b) collaboration and collective responsibility among staff members, (c) reflective professional inquiry by staff members, and (d) opportunities for staff members to influence the school's activities and policies.
- 3. Program coherence.** A school's instructional capacity improves when its programs for student and staff learning are coherent, focused on clear learning goals, and sustained over a period of time.

WCER researchers King and Newmann (with Peter Youngs, now at Stanford University) recently concluded a study of professional development in seven low-achieving urban elementary schools. Given the poor track record of traditional approaches to professional development, they believed that the design of professional development should be grounded not only in a conception of



Bruce King

how individual teachers learn, but also in knowledge of how schools as organizations affect, and are affected by, teacher learning, teacher practice, and student achievement.

The researchers found that achieving the three dimensions of school capacity requires giving teachers high-quality professional development that is characterized by the following four conditions:

- 1. Specificity.** Learning is facilitated when teachers have the opportunity to concentrate on instruction and student outcomes in the specific contexts in which they teach. But too often, professional development presents information that teachers see as irrelevant to student learning in their specific school settings. Therefore, teachers often don't learn and apply what professional development programs offer.
- 2. Sustained opportunities.** Learning is enhanced when teachers have sustained opportunities to study, experiment with, and receive helpful feedback on specific innovations. Yet most professional development activities entail brief workshops, conferences, or courses that make no provision for follow-up and long-term feedback.
- 3. Peer collaboration.** Learning is improved when teachers collaborate with professional peers, both within and outside of their schools, and gain further expertise through access to external researchers and program developers. Yet traditional professional development relies almost exclusively on outside experts and materials, without integrating these resources into existing systems of peer collaboration.
- 4. Teacher input.** The opportunity for teachers to influence the substance and process of their professional development contributes to teacher learning. Such influence increases teachers' opportunity to connect professional development to specific conditions of their schools and facilitates a sense of ownership. Yet school, district, or state authorities often dictate professional development activities without significant input from teachers.



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Comparing the costs of professional development programs

There is growing consensus about the key features of effective professional learning. But many schools and districts provide numerous unfocused and ineffective professional development programs that are not aligned with goals for student learning.

Making good decisions about effective professional development involves considering the costs of various programs. Until recently, such cost comparisons have been difficult to conduct because many different measures have been used. However, Allan Odden and colleagues Sarah Archibald, Mark Fermanich and Alix Gallagher at WCER's Consortium for Policy Research in Education (CPRE) have developed a framework that allows one to compare the costs of different professional development programs. Educators using this framework can identify the full costs of each program and make better-informed decisions about investing in effective professional development.

The CPRE framework for cost comparison helps educators organize data relating to professional development and to include all the necessary information about professional development initiatives.

The framework begins with the six features of effective professional development identified by Desimone, Porter, and others (see accompanying story)—reform type, duration, collective participation, active learning, coherence, and content focus—then outlines the related costs.

Determining costs

Each of the six key features of effective professional development has associated costs. For example, reform type, duration, collective participation, and active learning require teacher and trainer/coach/mentor time. Further, all professional development entails expenditures for administration, materials and supplies, and miscellaneous items such as travel and fees.

The more comprehensive the type of professional development, the longer the duration, and the greater the collective

participation, the more time is required, and the higher the cost—and, importantly, the more effective the program. Time is the largest cost component of most professional development strategies.

The CPRE framework offers the following six categories for specifying the real costs of effective professional development:

1. **Teacher time.** Schools and districts face several kinds of expenses when paying for teachers' time for professional development. Teacher time can fall into two broad categories: time within and time outside the teacher contract. (It is important to note that not all the costs are *additional* expenses in all schools or districts.) Calculating the cost of student-free time within the regular teacher contract is ideally done at the school level by determining the percentage of regularly scheduled student-free time used for participation in professional development. Time for teacher professional development outside of the contract can be provided by paying substitutes to cover classes during the regular school day or by paying teachers stipends to participate in a professional development activity outside the contract day or year.
2. **Training and coaching.** The cost of training and coaching is either in salaries for trainers and/or coaches or in the contract cost of consultants. Training can vary from 1-day workshops to 3-week summer institutes. Expenses include providing or contracting out workshops, summer institutes, or other district-sponsored professional development classes. Many school designs include annual contracts for design-based technical assistance and training. Coaching is classroom practice that is often ongoing and assists teachers in active learning. It is often provided by a mentor or coach who increasingly works at the school site and by teachers who are paid a stipend to assume additional training or coaching roles.
3. **Administration.** This category includes any identifiable and substantial cost to the district or school for administering its professional development programs: full-time district staff in charge of administering professional development and a

Fermanich, Archibald, and Odden



percentage of other salaries when staff members spend at least 20% of their time (about 1 day per week) administering professional development.

4. **Materials, equipment, facilities.** This category includes the costs of materials and facilities needed for all forms of professional development, including the cost of any classroom materials required, as well as equipment and facility costs for workshops.
5. **Travel and transportation.** This category includes the costs teachers or other staff members incur to attend off-site professional development activities—for example, travel costs to meetings of professional associations, annual meetings of those involved in comprehensive school designs, or the weekly travel to cross-school and cross-district professional development network activities.

6. **Tuition and conference fees.** This category includes tuition reimbursement for university courses that qualify as professional development, fees for conferences that qualify as professional development, and fees for all conferences related to professional development. Many school designs have conferences in which participants have opportunities for active learning as well as an opportunity to deepen content knowledge.

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between teachers' professional development experiences and classroom practice, while controlling for prior differences in teachers' classroom practice.

The analysis focused on three areas of classroom practice: technology use; higher order instructional methods; and alternative student assessments. In each of these areas, the research team found that teacher participation in professional development that focused on a particular teaching practice predicted teachers' increased use of that practice in their classrooms. These effects were independent of teachers' prior use of these practices, the subjects they taught, and the school level.

The research team also examined the extent to which the six features of high-quality professional development increased the effectiveness of the professional development.

They found that technology-related professional development benefits when there is collective participation of teachers from the same school, department, or grade level. This finding is consistent with ideas about best practices and the ways teachers learn and implement new knowledge, which suggest that teachers benefit from relying on one another in developing technological skills.

The team's findings also support the idea that active learning—in which teachers are not passive recipients of information—boosts the effects of professional development activities. These findings agree with research indicating that teachers best develop a deeper understanding of how children think and learn by engaging in active learning, such as interacting with their colleagues on a regular basis to discuss their work and their students' learning.

Finally, the research results suggest a substantial benefit when teachers participate in reform types of professional development that focus on higher order instructional or alternative assessment methods.

Import of the findings

The study indicates that changes in teaching would occur if teachers experienced consistent, high-quality professional development. However, this research also determined that most teachers do not experience such activities and that most schools lack a coherent, coordinated approach to professional development.

An increased emphasis on the importance of strategic, systematic planning for professional development might encourage districts and schools to focus efforts on high-quality professional development. In particular, districts and schools could go a long way toward developing high-quality professional development if they set priorities for professional development activities over time, within the constraints of limited resources; learned more about the features of effective professional development; and built the infrastructure to design and implement the activities that teachers need to improve student learning.

The multiyear evaluation of the Eisenhower Program was conducted by the American Institutes for Research under contract with the U.S. Department of Education's Planning and Evaluation Service.

Findings from the longitudinal study were originally published in *Educational Evaluation and Policy Analysis*, vol. 24, no. 2 (Summer 2002). See also Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal* 38(4) (2001, Winter).





Portfolios as professional development tools

Teaching portfolios are a potentially powerful way to promote learning and self-reflection among teachers. States are beginning to require the use of portfolios with preservice teacher education students, and sample student portfolios are being used more often in the accreditation of teacher education programs. In preservice teacher education programs, portfolios have been used within individual courses, for decisions about continuation within a program and admission to student teaching, and within practicums and student teaching.

Portfolios contain different kinds of evidence. Items might include tests, observations and attestations of student teaching, and performance work samples. The value of portfolios lies in their ability to promote meaningful teacher growth and provide a better means of assessing prospective teachers' teaching.

Yet UW-Madison education professor Kenneth Zeichner and student colleague Susan Wray write that, without a clear sense of the specific quality of reflection associated with portfolio use, the quality of teaching assessments using portfolios is limited.

To make portfolios more valuable as tools for assessing professional development, Zeichner and Wray suggest several dimensions along which teacher educators and researchers should describe the conditions of portfolio use in their particular programs. Research on teaching portfolios can and should become more sensitive to the influence of the portfolio context on student teacher development and the quality of teaching assessments.

Several questions need to be addressed—for example: What are the purposes for which portfolios are created? Who determines what goes into portfolios? To what degree is the portfolio content specified beforehand and to what degree is content decided by the portfolio compiler? It should be noted that portfolios range from idiosyncratic collections of materials by individual teachers

(sometimes referred to as “scrapbook” portfolios) to standardized presentations of particular kinds of evidence required by teacher educators and assessors (for example, the portfolios used for certification by the National Board for Professional Teaching Standards).

Another question to be addressed: How should peer mentors be involved in portfolio development in teacher education programs? One common way is to devote time during weekly student teaching seminars to examining and discussing artifacts that will eventually go into student teachers' portfolios. In the Professional Development School Partnership at the UW-Madison, teacher education students bring specific kinds of portfolio artifacts to their field seminars several times during the semester. For example, materials might show how students have incorporated knowledge of the community context into their instruction. In addition to these peer discussions, students have individual conferences with their supervisors about their portfolios.

Emerging issues

Teaching portfolios have been employed in teacher education programs for a relatively short time, but a number of issues have emerged. For example, there is sometimes conflict between the purposes teacher educators and their students expect portfolios to serve. Some student teachers are most concerned about using their portfolios to gain employment, whereas teacher educators are most concerned about using portfolios to promote professional development and to assess teaching. Students' focus on the “showcase” aspects of portfolios and on presenting a favorable image to prospective employers may conflict with the goal of using portfolios for professional development and/or assessment.



Ken Zeichner



Susan Wray

This tension can be resolved by using separate portfolios to address the different purposes. Students could construct two separate teaching portfolios, or they could select items from a learning and development

portfolio for use in an employment portfolio after they have completed their degree program.

Another issue has to do with fostering student teachers' sense of ownership in their portfolios. Leaving portfolio construction mainly to students sometimes causes problems—superficial reflection about teaching or limited evidence on which to base an assessment of teaching. But when portfolio contents are tightly specified, student teachers may not develop a sense of ownership. In this case, student teachers are more likely to see their portfolios as a diversion from their teaching and their students. Teacher educators have responded by trying to seek a balance between specifying portfolio content and letting students determine their portfolio content. Some educators have concluded that the most effective teaching portfolios include a combination of prescribed and self-selected evidence.

Future research

One recent innovation is the move toward electronic teaching portfolios. Zeichner and Wray are following 14 students over their five semesters in the UW-Madison elementary education program and documenting how the construction and use of electronic portfolios influences their development as teachers. While electronic technology does present some opportunities, particular varieties of available software impose certain limitations, and providing prospective teachers with the skills they need to construct electronic portfolios presents some challenges.

There has been some study of the process of portfolio construction, at the University of Colorado, for example, but Zeichner and Wray are unaware of any study of the nature of portfolio *communities*, as teacher education students and their mentors share and discuss various aspects of teaching portfolios at different points in their construction.

Most student teachers and teachers who construct teaching portfolios claim that the portfolios have caused them to reflect more about their teaching. But closer study of the nature and quality of this reflection is needed, says Zeichner. Educators need to learn more about the nature and quality of reflection that emerges under different conditions of portfolio use.

Findings from this study originally appeared in *Teaching and Teacher Education*, vol. 15, no. 5 (July 2001), pp. 613–621.

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Many researchers, practitioners, and policymakers agree that professional development should change to reflect these conditions, but the actual conduct of professional development has been slow to respond.

And while learning by individual teachers will be enhanced if professional development were more consistent with these conditions, an approach to professional development that focuses only on the learning of individual teachers would still be insufficient to advance achievement across a substantial proportion of students. Teachers must also learn to exercise their individual knowledge, skills, and dispositions to advance the collective work of the school under a set of unique conditions.

Professional development can enhance each dimension of school capacity. “It’s not a question of whether schools adopt an external model for improvement, develop one themselves, or some combination,” King noted. “The key is that schools advance dimensions of capacity by pursuing comprehensive school-wide professional development that is focused and sustained over time.”

Findings from this study were originally published in the *Phi Delta Kappan*, April 2000, pp. 576–580. *The American Journal of Education*, vol. 108, 2003, *Teaching and Teacher Education*, vol. 18, 2002, and *Educational Administration Quarterly*, vol. 38, 2002, contain additional articles from the study.

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Production

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Implications of using the framework

Using these six rubrics can help clarify cost differences across professional development of different kinds or across several sites. For example, by using this framework CPRE researchers have identified professional development costs in a number of Cincinnati schools.

As fiscal research on professional development evolves, Odden and colleagues hope that more educators will use this cost framework to identify the full scope of professional development spending that already is occurring. Districts and schools are already investing a lot. The hope is that with such information, schools and districts can make better informed investment decisions about professional development programs and spending.

Findings from this research were originally published in the *Journal of Education Finance*, vol. 28, no.1 (Summer 2002), pp. 51-74, and a shorter version in the *Journal of Staff Development*, vol. 23, no. 2 (Spring 2002), pp. 53–58.

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School of Education • University of Wisconsin–Madison
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