Current Models for Evaluating Effectiveness of Teacher Professional Development

Recommendations to State Leaders from Leading Experts
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Recommendations to State Leaders from Leading Experts

Summary Report of a CCSSO Conference

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Council of Chief State School Officers
The Council of Chief State School Officers (CCSSO) is a nonpartisan, nationwide, nonprofit organization of public officials who head departments of elementary and secondary education in the states, the District of Columbia, the Department of Defense Education Activity, and five U.S. extra-state jurisdictions. CCSSO provides leadership, advocacy, and technical assistance on major educational issues. The Council seeks member consensus on major educational issues and expresses their views to civic and professional organizations, federal agencies, Congress, and the public.

State Education Indicators
The Council is a strong advocate for improving the quality and comparability of assessments and data systems to produce accurate indicators of the progress of our elementary and secondary schools. The CCSSO education indicators project is providing leadership in developing a system of state-by-state indicators of the condition of K–12 education. Indicators activities include collecting and reporting statistical indicators by state, tracking state policy changes, assisting with accountability systems, and conducting analyses of trends in education.

CCSSO also works with states on studies and reports to analyze effects of state education policies and programs. This study is conducted under a grant to the Council of Chief State School Officers from National Science Foundation, Grant # REC 0438359. This CCSSO study is also possible because of the excellent cooperation and coordination by staff in each participating state department of education.
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Rationale
In April 2008 CCSSO invited 10 leaders in the field of research and evaluation of teacher professional development to meet with state education program managers and evaluators to present and discuss models for evaluating effects of professional development. Recent developments with state data systems, use of experimental designs in education research, and use of surveys and assessments has provided the tools for improved methods of evaluating professional development. The two-day conference provided an opportunity for leaders from states to learn how they can apply the models in their state programs. CCSSO had three objectives for the conference:

- provide guidance for state leaders on recent research and evaluation models and how to use findings from research to develop quality, effective professional development programs for teachers
- identify sources of assistance to states for evaluation designs, data collection tools, and use of evaluations
- disseminate information and materials on recent products, materials, and reports useful to program managers and evaluators of professional development

States have responsibility for setting policies and making decisions on the kinds of professional development that will be supported and implemented under various funding sources. States also can take leadership in evaluating current professional development programs so that funds and program designs are based on evidence of what is working to improve teacher knowledge and skills and advance the quality of teaching in science and mathematics. CCSSO received a grant from the National Science Foundation to plan and conduct a meeting that would bring together research and evaluation experts and state leaders for professional development in mathematics and science education. The following summary of presentations and discussions from the April conference are intended to provide a wider audience with information about its recommendations and results. Please refer to the appendix for a list of participants. More information about the CCSSO work on improving evaluation of professional development and information about the April 2008 conference are available on the CCSSO website here.

Presentations on Models
Each of the sessions from the conference included a presentation by the invited expert, followed by a discussion with state leaders. Each session focused on a different approach to research and evaluation of teacher professional development.
Determining the Effectiveness of Professional Development: Substantive and Methodological Findings and Challenges, with Implications for Evaluations

Laura Desimone, University of Pennsylvania

What do we know about what works in professional development? And what does not? What makes professional development effective? How can we use that information to improve evaluation of professional development? These are the questions that Laura Desimone sought to answer with her presentation. First, based on her own research, including the National Study of the Eisenhower Teacher Professional Development program, and a review of findings from other recent research on effective professional development for teachers, Desimone listed the characteristics of high-quality professional development:

- offered for a **longer duration and greater frequency**
- involves teachers directly for more hours in **active, engaged learning** activities and environments
- **focused on a particular content area**, such as geometry or astrophysics, and allows teachers to gain knowledge on how to teach the content to their students
- **coherent to teachers’ needs and circumstances**
- involves teachers learning from their peers through **collective participation**

She also described how effective management and implementation of professional development programs and activities insure that high-quality professional development will work with sufficient supports in a sustained manner with the maximum of effect on teachers. Putting what research has defined as the characteristics of high-quality professional development together with research findings on effective education reform models, Desimone offered **six suggestions for improving evaluations of professional development**:

- Use inclusive definitions of professional development and measure the quality of teacher learning experiences.
- Design or participate in multi-method longitudinal and impact studies with mediating outcomes.
- Include a focus on subject-matter content.
- Use a conceptual framework.
- Account for state and district policy.
- Use self-report surveys that are focused on specific teacher behaviors, activities, and practices.

The full presentation is available at [http://www.cesso.org/content/pdfs/FindingsfromRecentResearch-Desimone.pdf](http://www.cesso.org/content/pdfs/FindingsfromRecentResearch-Desimone.pdf)
A research team composed of five partner organizations (American Institutes for Research, MDRC, REDA International, Inc., Sopris West, and Core) is currently conducting a five-year study that examines the impact of professional development on elementary schools and teachers. The use of an experimental design in this study was presented by Mike Garet, and he discussed with state participants when this kind of study is appropriate and important. The professional development initiative worked with school teams composed of second grade teachers, school reading specialists and special education teachers, and principal or vice principal. The design featured measurement of effects for two versions of professional development. The table below reveals the research design for the study.

<table>
<thead>
<tr>
<th></th>
<th>Treatment Group A</th>
<th>Treatment Group B</th>
<th>Control Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Treatment</strong></td>
<td>Institutes &amp; seminars only</td>
<td>Institutes &amp; seminars + coaching</td>
<td>“business as usual,” professional development provided by district</td>
</tr>
<tr>
<td><strong>Treatment assignment</strong></td>
<td>Randomly assigned schools to treatment conditions separately within each of the 6 participating districts</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td><strong># of schools</strong></td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td><strong>Context</strong></td>
<td>Schools of districts using Open Court or Houghton Mifflin’s Nation’s Choice or Legacy of Literacy; excluded districts with substantial coaching programs, and excluded schools participating in Reading First</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>School characteristics</strong></td>
<td>Focused on high-poverty schools (&gt; 50% of students eligible for free lunch)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Unit of analysis</strong></td>
<td>School</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The research questions examine the difference among the three groups:

- What is the impact of institutes and seminars on teacher knowledge, classroom instruction, and student achievement? (compare Group A to Group C)
- What is the added value of coaching in improving teacher knowledge, classroom instruction, and student achievement? (compare Group B to Group A)
- What is the impact of the combination of institutes and seminars plus coaching? (compare Group B to Group C)
- Does the impact of professional development differ for teachers with lower or higher knowledge as measured at baseline?
- Do teacher knowledge and classroom instruction mediate the impact of professional development on student achievement?
Sharing lessons learned from the ongoing study, Dr. Garet offered the following suggestions to program evaluators:

- Increase the precision of the underlying theory of instruction and the specificity and intensity of the intervention, thus improving the alignment of measures and increasing the chance of getting large effect on proximal mediators.
- Conduct the study in contexts in which the curricular fit and support for the professional development are high, reducing mixed messages.
- Consider the effect size for teacher knowledge or practice needed to obtain the desired impact on achievement.
- Develop “packages” of related measures of teacher knowledge, instructional practice, and achievement.

More information about the study is available from the presentation http://www.ccsso.org/content/pdfs/UsingExperimentalDesigns_Garet.pdf

**Improving State Management of Evaluations for Teacher Professional Development**

*Stephen Pruitt, Georgia Department of Education*

As the director of academic standards at the Georgia Department of Education, Stephen Pruitt was directly responsible for providing the means for the state to meet its **15-point mission**: to “lead the nation in improving student achievement by functioning as a service-oriented and policy-driven agency that meets the needs of all local school systems as they go about the business of preparing all students for a college or career…. .” His presentation zeroed in on Goal 8: “significantly improve math and science achievement of middle and high school students.” Using three levers at his disposal—Math Science Partnership grants, Science Mentor programs, and **School Keys: Unlocking Excellence through the Georgia School Standards**—Mr. Pruitt demonstrated how he was able to standardize the requests for professional development funding support and set implementation and evaluation requirements and procedures. As an example he pointed out the use of a **standard Math and Science Partnership (MSP) project observation report** for site visits and a **partnership rubric** for ensuring that the partnership remains viable and on-track toward its mission.

The School Keys are the foundation for Georgia’s comprehensive, data-driven system of school improvement and support. Correlated to several well-known and respected research frameworks, the School Keys describe what Georgia school staffs need to know, understand, and be able to do, in the same manner that the Georgia Performance Standards describe what Georgia’s students need to know, understand, and be able to do. In particular, the School Keys provide standards for professional learning.

For more information on the Georgia model, see the full presentation http://www.ccsso.org/content/pdfs/ImprovingStateMngmtofEvals_Pruitt.pdf
Models for Evaluating MSP Projects
Norman L. Webb, University of Wisconsin-Madison

Using the life-cycle stages of a program (planning, implementation, impact), Norman Webb raised the corresponding evaluation design considerations. For example, at the planning stage of a program, one should consider overall the compatibility between the program design and evaluation design. Specifically in the selection of teachers and schools (all, volunteers, purposeful) to receive the program, one should consider how that would match with evaluation designs that are experimental or quasi-experimental—considered the “gold” and “silver” standards of research design. At the implementation stage, Dr. Webb points to Thomas Guskey’s five critical levels of evaluating professional development and his recommendations for the kinds of measures for each level that record linkages between the professional development and intermediate and ultimate outcomes:

1. participants’ reactions
2. participants’ learning
3. organization support for change
4. participants’ use of new knowledge and skills
5. student learning outcomes

Dr. Webb offered several issues to consider when evaluating the design and evaluation of professional development, including

- time frame
- proof-of-concept studies
- breadth vs. depth
- formative studies
- aligned measurement instruments
- living with imperfection
- analytic horizon mismatch with funding

More of Dr. Webb’s presentation is available at http://www.ccsso.org/content/pdfs/AnalyzingStateAchievementData_Webb.pdf
School-Based Learning and Development
Stephanie Hirsh and Joellen Killion, National Staff Development Council

The National Staff Development Council has established five characteristics of effective professional learning in the Standards for Staff Development produced by this large professional organization:

- **Results-driven**: Clear expectations for what students are expected to know and do, for what educators must know and be able to do to ensure student success, and for what professional development must offer to enable educators to develop the knowledge and skills to develop drive students to achieve.
- **Standards-based**: NSDC standards address the content and pedagogical knowledge and skills educators must learn, but also speak to the process that supports adult learning and the context in which educators learn.
- **Content-rich**: Professional development is grounded in content-specific pedagogy.
- **School-centered**: Learning is taking place within the school through professional learning communities.
- **Job embedded**: Professional learning activities are ingrained into the day-to-day lives of teachers.

More information about NSDC’s standards is available at [http://www.nsdc.org/standards/index.cfm](http://www.nsdc.org/standards/index.cfm)

Ms. Hirsh and Ms. Killion recommended that evaluation of staff development use multiple sources of information to guide improvement and demonstrate its impact. Among the dependent variables evaluators might consider are teacher knowledge, skill, disposition, and instructional practice/behavior, as well as student learning in the form of knowledge, skill, disposition, and behavior. They noted that the greatest challenge is unlocking the respective black boxes of teacher and student interpretation and utilization of available understandings and skills.

To view their presentation, go to [http://www.ccsso.org/content/pdfs/School-basedLearningandDev_NSDC.pdf](http://www.ccsso.org/content/pdfs/School-basedLearningandDev_NSDC.pdf)
Using the Surveys of Enacted Curriculum to Measure Changes in Teacher Practice and Content Coverage

John Smithson, Wisconsin Center for Education Research

The Surveys of Enacted Curriculum (SEC) collects data on instructional content, instructional activities, teacher professional development, and teacher characteristics, opinions, and beliefs from teachers in K-12 mathematics, science, English language arts & reading, and social studies. Data generated from the SEC allow for teacher reflection on his/her own practices, establishes a platform for teacher collaboration and planning, and provides comparable data on classroom instruction in relation to state standards. The curriculum data can be combined with other data sources, such as student achievement, to provide a rich resource for research and evaluation with professional development initiatives.

One example was presented showing the use of data from the online SEC system to examine changes in teacher instruction and their relationship to the quality of professional development. Teachers in the treatment group who were participating in the Missouri PRISM (MSP project) were compared to non-MSP teachers in the same districts.

The teacher groups were compared over time using the following key measures:

- number of hours of participation in formal coursework and institutes
- indicators of quality professional development (e.g., active engagement in professional development, content-focused material, collective participation)
- instructional practice (e.g., use of educational technology, students analyze information, synthesize/integrate information)

To access John Smithson’s presentation, go to [http://www.ccsso.org/content/pdfs/UsingSECtoMeasureTeacherPractice_Smithson.pdf](http://www.ccsso.org/content/pdfs/UsingSECtoMeasureTeacherPractice_Smithson.pdf).

For more information about the Surveys of Enacted Curriculum, go to [http://www.secsurvey.org](http://www.secsurvey.org)
Development and Use of Content-Specific Assessments of Teacher Knowledge – or – How Do You Know if They’re Learning What You Want Them to Learn?

Sean Smith, Horizon Research, Inc.

Sean Smith directly addressed the question of how researchers and educators can determine the program impact on teacher content knowledge. Often, evaluators are challenged with how to assess teacher learning because of (1) the lack of well-established instruments to measure teacher content knowledge, (2) a professional culture that is adverse to measuring teacher knowledge, and (3) a lack of agreement in the education community on what “it” is —what teacher phenomenon they are attempting to capture. Dr. Smith outlined six domains of teacher knowledge, including

- disciplinary content knowledge
- representing ideas
- student thinking about the content
- strategies to diagnose the thinking of a particular group of students
- sequencing ideas for students
- content-specific strategies that move students’ thinking forward

Smith highlighted a number of assessments on teacher knowledge in math and science, including Learning Mathematics for Teaching (LMT), Diagnostic Teacher Assessments in Mathematics and Science (DTAMS), Knowledge of Algebra for Teaching (KAT), and Misconception Oriented Standards-based Assessment Resource for Teachers (MOSART). During the question-answer session, conference participants who had used or reviewed teacher assessments discussed appropriate use of the assessments and their limitations, and a need was identified for improved assessments for high school teachers.

Dr. Smith’s complete presentation is available at http://www.ccsso.org/content/pdfs/DevandUseofTeacherAssessments_Smith.pdf.

CCSSO has profiled a number of tools and instruments for evaluation, including assessments of teacher knowledge, which are available here on the CCSSO project’s website under “Evaluation Tools for Professional Development.”
Using Longitudinal Data Systems for Evaluating School Improvement and Teacher Initiatives  
*Gary Cook, Wisconsin Center for Education Research*

Gary Cook provided an overview of longitudinal data systems, explaining what they are, what kinds of data and data systems are necessary to have longitudinal data, and examples of their use in research or program evaluation. Key to making any links between teacher initiative and student outcomes is a data system that matches data using unique student identifiers with unique teacher identifiers, as specified by the Data Quality Campaign, [http://www.dataqualitycampaign.org/](http://www.dataqualitycampaign.org/).

Dr. Cook then cited three studies as illustrative of the promises and challenges in using longitudinal data.

### Study 1: Non-Traditional Teacher Preparation Program Comparison

- **Alternate teacher certification program for Milwaukee Public Schools called MTEC.**
- **At issue is whether non-traditional teachers have negative effect on student achievement.**
- **Research Question:** Are gains in student reading/math scores different controlling for important variables?  
  
  **NO. Maybe.**

One study design had attempted to compare effects of traditional and nontraditional teacher preparation programs on student achievement, but the researchers were challenged by the lack of essential data elements to characterize the teacher programs. Therefore, they could not answer the research question, “Are gains in student reading/math scores related to differences in how teachers are prepared for teaching?”

In another study, the researchers were investigating the nature of ELL students’ growth in English as measured by state ELP assessments. They were able to conduct the analyses, but there were gaps in the information available (e.g., state data sets had no identifiers for poverty at the student level). Several key ideas in preparation and planning were discussed. Although longitudinal data analyses are very powerful, they require thoughtful planning of questions, measures, data preparation, and management. Longitudinal data studies generally require partnering with those with expertise and access to the systems, but the returns on the investment can be worthwhile in that more specific questions can be addressed and more nuanced analyses are possible.

See more of Gary Cook’s presentation at [http://www.cesso.org/content/pdfs/UsingLDSforSIEval_Cook.pdf](http://www.cesso.org/content/pdfs/UsingLDSforSIEval_Cook.pdf)
Cross-State Analysis of Program Evaluation Findings  
*Rolf Blank and Nina de las Alas, CCSSO*

Rolf Blank and Nina de las Alas presented the latest findings from a two-year study that reviewed and analyzed results from evaluations of 25 teacher professional development initiatives in 14 states. The study was conducted in two phases, to answer the following questions:

- **Phase I:** How can quality of professional development be compared across programs and states? What is the extent of variation in quality found in a voluntary sample of programs highly rated within their states?
- **Phase II:** What are the evaluation designs and tools being used across programs and states? What are the effects that are reported from professional development as measured by teacher knowledge gains, change in instructional practices, or improvements in student achievement?

A detailed account of the study’s methodology for analysis of quality of programs is available in the [2007 report](http://www.ccsso.org/content/pdfs/cross-state_study_rpt_final.pdf). Of particular note are the Program Review Rubric and its corresponding guide that reviewers used to analyze the documents. Findings from the second phase of the study showed that about one-third of program evaluations reported measurable effects of teacher professional development, and seven reports documented measurable results on student outcomes.

A paper summarizing study findings and recommendations for state leaders is available at [http://www.ccsso.org/content/pdfs/cross-state_study_rpt_final.pdf](http://www.ccsso.org/content/pdfs/cross-state_study_rpt_final.pdf).
**Breakout Discussion Questions**

**Breakout Session I**

The Tuesday afternoon breakout session focused on how states could apply experimental research designs to evaluate professional development impact. Specifically, states gathered around tables to reflect and share in response to the following questions:

- What kinds of evaluation models are used in your state to measure the outcomes of PD?
- How do the evaluations in your state compare to the experimental design described in Dr. Garet’s presentation?
- How do evaluations of PD in your state measure teacher practice?
- How do evaluation of PD in your state measure student achievement?
- Do you have plans to change the expectation for evaluation of PD in your state?
- What challenges and issues must be faced for your state to improve the evaluation of PD?

Through these questions, participants discussed the current and past professional development evaluation models in their states or projects. For the most part, states had some promising evaluations, with a few that have attempted or are attempting to gauge impact of professional development on student outcomes. However, the school-based experimental design presented by Dr. Garet is still a model that states and districts hope to aspire to, given the limited resources states have, the challenges of recruiting whole schools to a study, and the data requirements that must be met in order to make any linkages to professional development possible.

**Breakout Session II**

The Wednesday morning breakout session took the workshop’s presentations as a whole and raised the following items for consideration:

- what was the most useful information gleaned from the workshop
- comparisons of past and current evaluations of professional development conducted in states against the evaluations presented at the workshop
- rating data collection systems (with individual student- and teacher-level data) in the states
- areas that CCSSO can follow up and assist states in applying effective models for evaluation of professional development

Generally, participants found all the information provided at the workshop to be very useful, given that states continue to struggle with having high-quality professional development programs available to teachers statewide and with having strong evaluations designs that would produce measurable outcomes on teachers and students. States look to the gold standard of experimental designs as the goal for evaluations. Among the challenges that states face is having data collection systems that could support experimental and quasi-experimental evaluation designs. Participants look to CCSSO to
• continue to champion better reporting practices
• assist in garnering resources for improved data collection systems that support better evaluations and for better tools to measure teacher and student changes
• raise awareness of better practices and policies that support high-quality professional development and their evaluations

Details about the breakout sessions are available at
http://www.cesso.org/content/pdfs/DiscussionQuestions0408.pdf
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